DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	1	153
				(2) HWY. 290 - OUACHITA RIVER BRIDGE (S)				

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

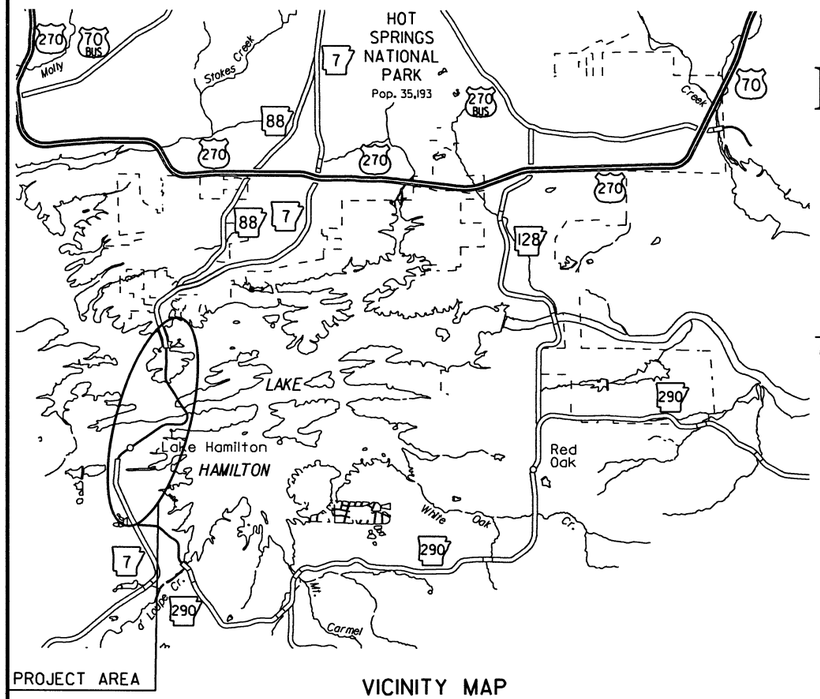
HWY. 290 - OUACHITA RIVER BRIDGE (S)

GARLAND COUNTY

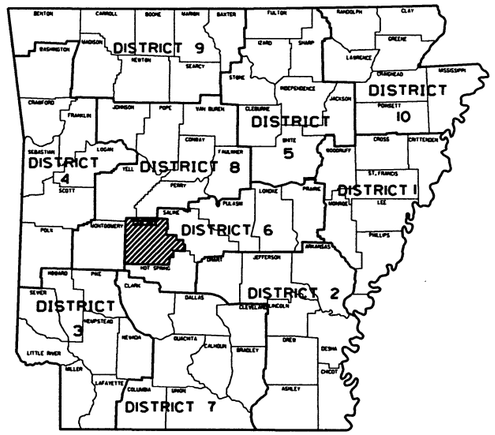
ROUTE 7 SECTION 9

F.A.P. CMF-0026(27)

JOB 060432

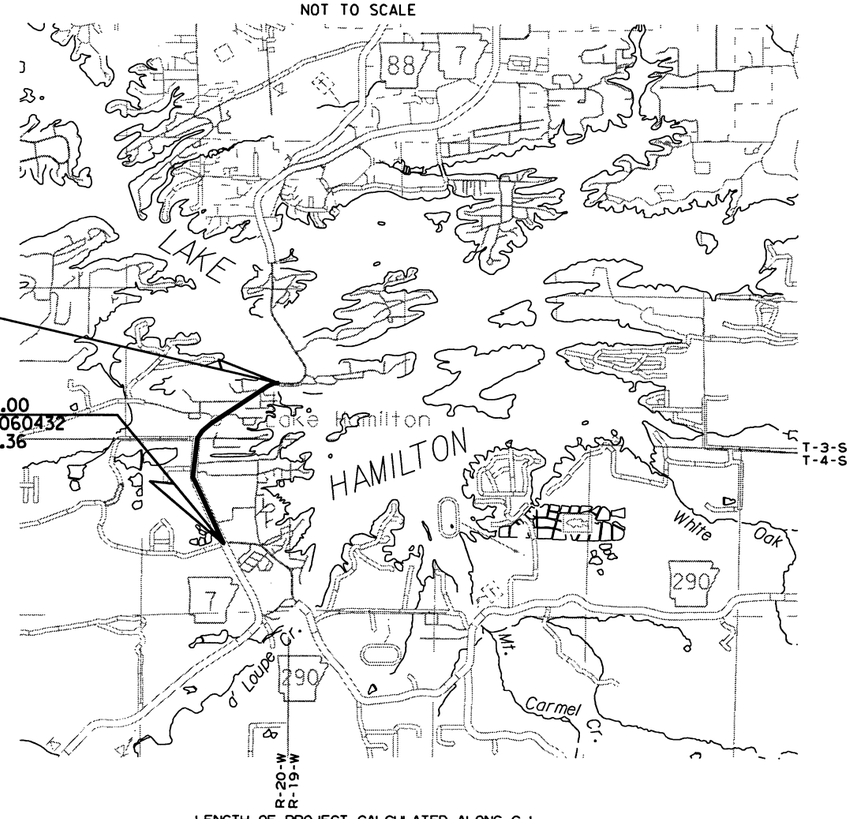


VICINITY MAP



ARK. HWY. DIST. NO. 6

NOT TO SCALE



STA. 177+95.00
END JOB 060432

STA. 103+35.00
BEGIN JOB 060432
LOG MILE 2.36

DESIGN TRAFFIC DATA

DESIGN YEAR	2037
2017 ADT	10,800
2037 ADT	11,900
2037 DHV	1573
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	3%
DESIGN SPEED	45 MPH

	BEGIN PROJECT	MID-POINT OF PROJECT	END PROJECT
LATITUDE	N 34°24'42"	N 34°25'19"	N 34°25'41"
LONGITUDE	W 93°05'38"	W 93°05'52"	W 93°05'17"

LENGTH OF PROJECT CALCULATED ALONG C.L.

GROSS LENGTH OF	PROJECT	7460.00	FEET	OR	1.413	MILES
NET	ROADWAY	7460.00			1.413	MILES
NET	BRIDGES	0.00			0.000	MILES
NET	PROJECT	7460.00			1.413	MILES

P.E. JOB 060432

APPROVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7836
M. E. BANKS

3-6-17

DEPUTY DIRECTOR
AND CHIEF ENGINEER

3/2/2017 r060432.dgn

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

3-6-17

INDEX OF SHEETS

SHEET NO.	TITLE
1	TITLE SHEET
2	INDEX OF SHEETS AND STANDARD DRAWINGS
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7 - 17	SPECIAL DETAILS
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27 - 35	MAINTENANCE OF TRAFFIC
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40 - 47	QUANTITIES
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69	TRAFFIC SIGNAL NOTES
70 - 76	SIGNALIZATION PLAN SHEETS
77 - 153	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	2-27-14
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-9D	DETAILS OF DROP INLETS	8-22-02
FPC-9E	DETAILS OF DROP INLETS (TYPE C)	8-22-02
FPC-9M	DETAILS OF DROP INLET (TYPE MO)	8-22-02
FPC-9S	DETAILS OF DROP INLET & JUNCTION BOX (TYPE ST)	7-26-12
MB-1	MAILBOX DETAILS	11-18-04
PBC-1	PRECAST CONCRETE BOX CULVERTS	1-28-15
PCC-1	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING	2-27-14
PCM-1	METAL PIPE CULVERT FILL HEIGHTS & BEDDING	2-27-14
PM-1	PAVEMENT MARKING DETAILS	5-12-16
PU-1	DETAILS OF PIPE UNDERDRAIN	12-08-16
RCB-1	REINFORCED CONCRETE BOX CULVERT DETAILS	7-26-12
RCB-2	EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS	11-20-03
RCB-3	METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS	10-12-95
SD-1	ANTENNA POLE	2-27-14
SD-4	LOOP DETECTOR INSTALLATION	9-12-13
SD-5	CONTROLLER CABINET UTILITY DRAWER	9-12-13
SD-6	HEAVY DUTY PULL BOX	9-02-15
SD-7	SPAN WIRE ASSEMBLY WOOD POLE	2-27-14
SD-8	SIGNAL HEAD PLACEMENT	12-08-16
SD-9	SERVICE POINT	9-12-13
SD-11	STEEL POLE WITH MAST ARM	12-08-16
SE-2	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC	10-18-96
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SI-2	DETAILS OF SPECIAL ITEMS	5-12-16
TC-1	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	9-02-15
TC-2	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	9-02-15
TC-3	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	9-02-15
TC-4	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	2-27-14
TC-5	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER	10-15-09
TEC-1	TEMPORARY EROSION CONTROL DEVICES	12-15-11
TEC-2	TEMPORARY EROSION CONTROL DEVICES	6-02-94
TEC-3	TEMPORARY EROSION CONTROL DEVICES	11-03-94
WF-2	WIRE FENCE WATER GAPS	4-20-79
WF-3	CHAIN LINK FENCE	11-17-10
WF-4	WIRE FENCE TYPE C AND D	8-22-02
WR-1	WHEELCHAIR RAMPS NEW CONSTRUCTION AND ALTERATIONS	11-10-05
W-X003-1	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS	5-10-66
W-X15	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS	6-13-63
W-X153-1	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS	5-10-66
R-115X-0	DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS	8-14-63
R-200X-0	DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS	2-15-63

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

3-22-17

GOVERNING SPECIFICATIONS

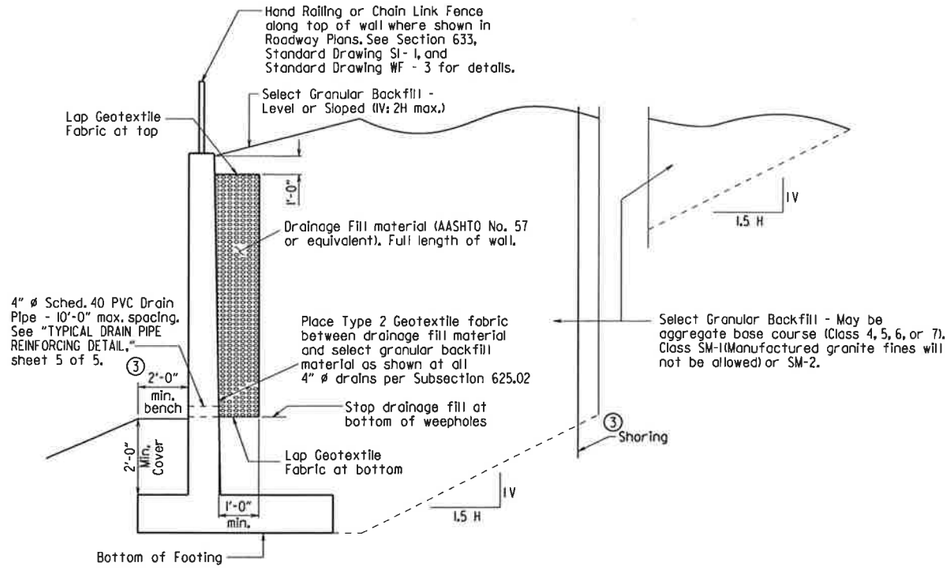
ARKANSAS STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2014, AND THE FOLLOWING SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS:

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 - TRAINING PROGRAM - JOB 060432
FHWA-1273__	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273__	SUPPLEMENT - WAGE RATE DETERMINATION
100-3_____	CONTRACTOR'S LICENSE
102-2_____	ISSUANCE OF PROPOSALS
108-1_____	LIQUIDATED DAMAGES
108-2_____	WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
303-1_____	AGGREGATE BASE COURSE
400-1_____	TACK COATS
410-1_____	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
604-1_____	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1_____	PIPE CULVERTS FOR SIDE DRAINS
620-1_____	MULCH COVER
JOB 060432__	AIRPORT CLEARANCE REQUIREMENTS
JOB 060432__	ANTENNA SUPPORT
JOB 060432__	ARCHITECTURAL FINISH
JOB 060432__	BIDDING REQUIREMENTS AND CONDITIONS
JOB 060432__	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 060432__	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 060432__	CABINET DRAWER ASSEMBLY
JOB 060432__	CARGO PREFERENCE ACT REQUIREMENTS
JOB 060432__	CONCRETE WALKS (TYPE SPECIAL)
JOB 060432__	COORDINATION OF WORK
JOB 060432__	CULVERT CLEAN OUT
JOB 060432__	DELAY IN RIGHT OF WAY OCCUPANCY
JOB 060432__	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 060432__	EDGE CARD VIDEO PROCESSOR
JOB 060432__	ELECTRICAL CONDUCTORS-IN-CONDUIT
JOB 060432__	ELECTRICAL CONDUCTORS FOR LUMINAIRES
JOB 060432__	EXTENSION FOR PIPE CULVERTS
JOB 060432__	FLEXIBLE BEGINNING OF WORK
JOB 060432__	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 060432__	GRAVITY BLOCK RETAINING WALL
JOB 060432__	LED COUNTDOWN PEDESTRIAN SIGNAL HEAD
JOB 060432__	LED LUMINAIRE ASSEMBLY (BUG UO TYPE)
JOB 060432__	LED TRAFFIC SIGNAL HEAD
JOB 060432__	MAINTENANCE OF TRAFFIC
JOB 060432__	MANDATORY ELECTRONIC CONTRACT
JOB 060432__	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 060432__	NESTING SITES OF MIGRATORY BIRDS
JOB 060432__	OFF-SITE RESTRAINING CONDITIONS FOR NORTHERN LONG-EARED BATS
JOB 060432__	PARTNERING REQUIREMENTS
JOB 060432__	PERCENT WITHIN LIMITS/PAVEMENT SMOOTHNESS
JOB 060432__	PROSECUTION AND PROGRESS - CALENDAR DAY CONTRACT WITH CPM
JOB 060432__	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT
JOB 060432__	SERVICE POINT ASSEMBLY (TRAFFIC CONTROL DEVICES)
JOB 060432__	SHORING
JOB 060432__	SHORING FOR CULVERTS
JOB 060432__	SITE USE (A+C METHOD) - CALENDAR DAY CONTRACT
JOB 060432__	SOIL STABILIZATION
JOB 060432__	STORM WATER POLLUTION PREVENTION PLAN
JOB 060432__	STREET NAME SIGN (MAST ARM MOUNTED)
JOB 060432__	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 060432__	SYSTEM LOCAL CONTROLLER
JOB 060432__	TEXTURED COATING FINISH
JOB 060432__	UTILITY ADJUSTMENTS
JOB 060432__	VALUE ENGINEERING
JOB 060432__	VIDEO DETECTOR (COLOR)
JOB 060432__	WARM MIX ASPHALT

GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U. S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.
5. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
6. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE 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. 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.
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.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
4-4-17				JOB NO.		060432	16	153
				①		SPECIAL DETAILS		



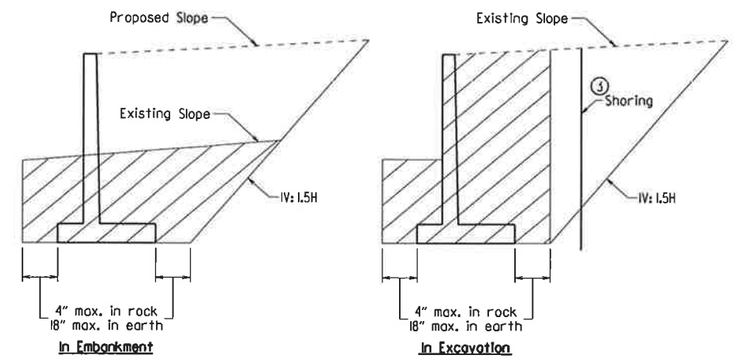
REINFORCED CONCRETE RETAINING WALL SECTION

N.T.S

① Provide edge relief around perimeter of Texture. Edge relief dimensions shall match manufacturers edge distance.

② Additional concrete required for architectural finish. See SP Job No. 060432 "Architectural Finish"

③ Except for the locations where shoring is required, the Contractor has the option of using a cut slope and/or shoring to maintain stability of the cut. Any excavation beyond the detailed pay limits or any shoring used will not be paid for directly, but shall be considered incidental to the item "Unclassified Excavation for Structures - Roadway".



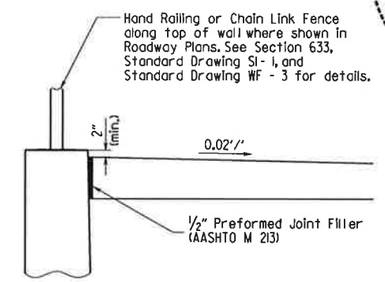
DETAILS OF EXCAVATION

N.T.S

NOTE: Hatched area denotes maximum limits of pay excavation.

Excavation required for area of Select Granular Backfill will be paid for under the pay item "Unclassified Excavation For Structures - Roadway".

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9233
4-4-17
CHARLES R. ELLIS



DETAIL OF SIDEWALK JOINT

N.T.S

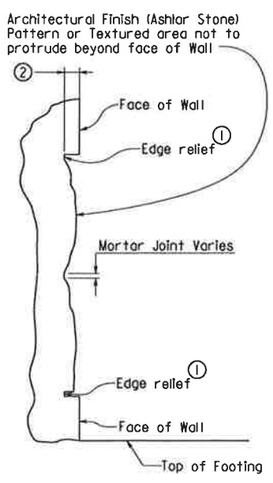
APPROXIMATE QUANTITIES FOR RETAINING WALL

(FOR INFORMATION ONLY)

	ITEM NO.	801	802	804	816	816	SP JOB 060432	SP JOB 060432	SP JOB 060432
WALL	Length of Wall	Unclassified Excavation for Structures - Roadway	Class S Concrete - Roadway	Reinforcing Steel - Roadway (Gr. 60)	Filter Blanket	Dumped Riprap	Architectural Finish	Textured Coating Finish	Shoring
STATION	LIN. FT.	CU. YD.	CU. YD.	POUND	SQ. YD.	CU. YD.	SQ. FT.	SQ. YD.	LUMP SUM
171+40	108	294	128	10,900	-	-	1,075	99	-
175+50	254	995	281	23,700	375	190	2,755	253	1
176+28	209	3,057	316	25,200	-	-	2,230	207	1

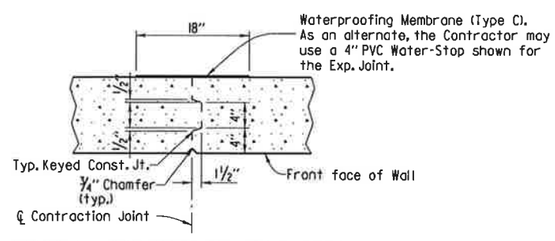
Tabular Data By: TMG Date: 2/15/2017

Checked By: JAC Date: 4/4/17



SECTION VIEW

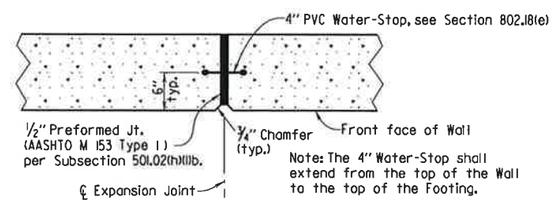
N.T.S.



TYPICAL CONTRACTION JOINT DETAIL

N.T.S.

Note: 20'-0" Max Sp. between Contraction Joints. Horizontal reinforcement shall be continuous through Contraction joints.



TYPICAL EXPANSION JOINT DETAIL

N.T.S.

Note: 60'-0" Max Sp. between Expansion Joints. Terminate horizontal reinforcement 2" from expansion jt.

Notes:

Wall texture shall be applied to the exposed surfaces of wall in accordance with SP Job No. 060432 "Architectural Finish" 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 Job No. 060432 "Architectural Finish".

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 Job No. 060432 "Textured Coating Finish" and in accordance with Subsection 802.19(b)(3).

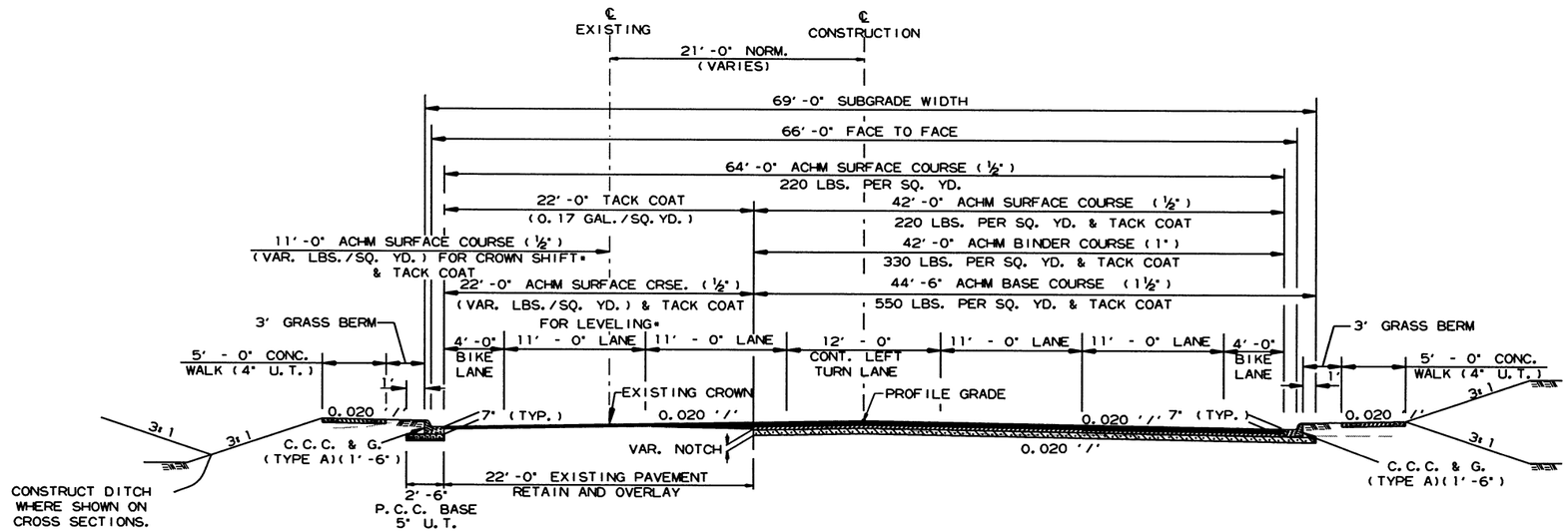
SHEET 4 OF 5
DETAILS OF REINFORCED CONCRETE RETAINING WALLS
SPECIAL DETAILS

PRINT DATE: 4/6/2017

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	5	153

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
3-9-17



* IF AND WHERE DIRECTED BY THE ENGINEER

TYPICAL SECTION OF IMPROVEMENT (CURB AND GUTTER) (NOTCH AND WIDEN ON RIGHT)

STA. 164+00.00 TO STA. 166+00.00

TRANSITION FROM:
STA. 129+00.00 TO STA. 142+82.00
STA. 143+67.00 TO STA. 164+00.00
STA. 166+00.00 TO STA. 170+98.00
STA. 173+60.00 TO STA. 177+95.00

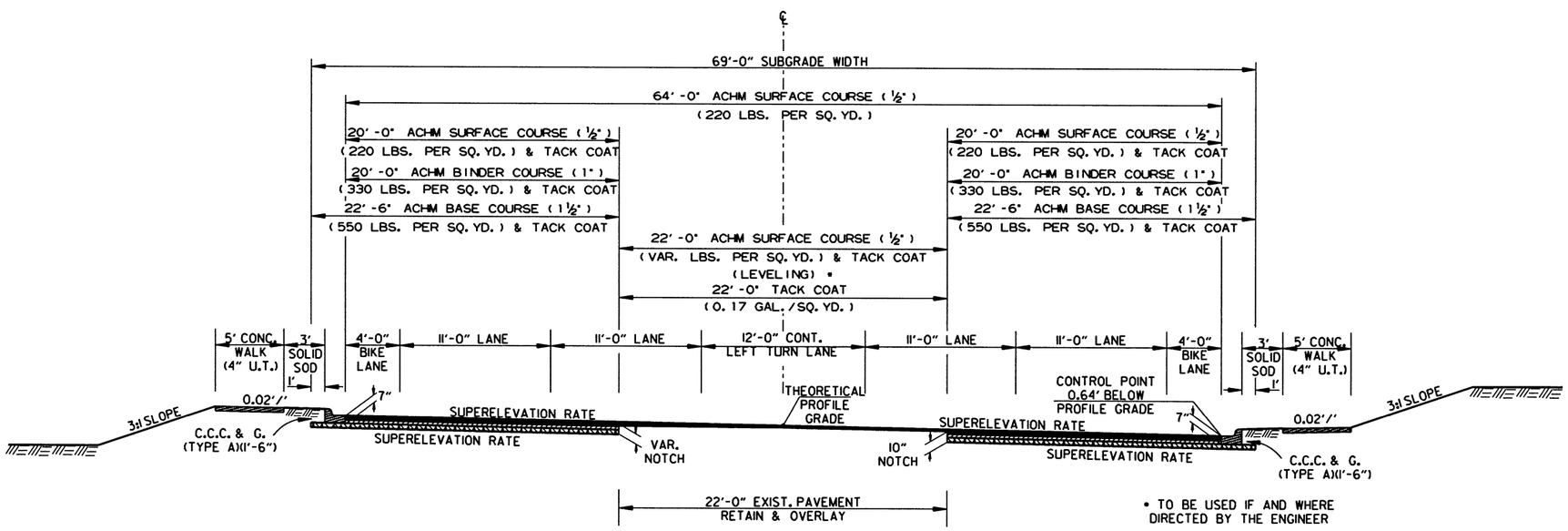
NOTES:

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

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.

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

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.



* TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

TYPICAL SECTION OF IMPROVEMENT SUPERELEVATION SECTION (NOTCH & WIDEN) (CURB & GUTTER)

STA. 122+80.67 TO STA. 134+80.94
STA. 137+15.15 TO STA. 151+19.11
STA. 168+50.00 TO STA. 177+95.00

TYPICAL SECTIONS OF IMPROVEMENT

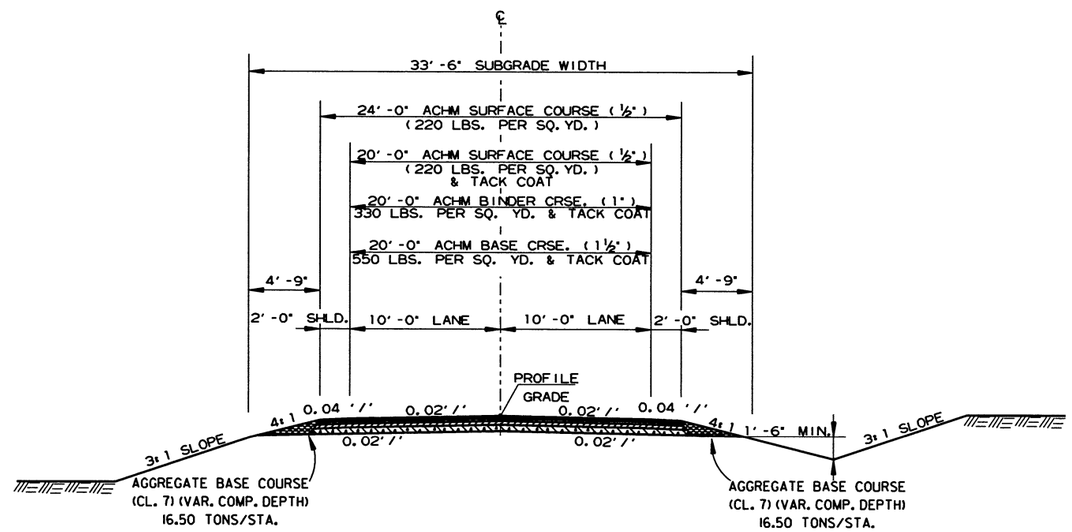
2/13/2017

R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	6	153

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-6-17



TYPICAL SECTION OF IMPROVEMENT
(FULL DEPTH) (OPEN SHOULDER)

PINE HILL ROAD
WOODLORE POINT

NOTES:

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

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

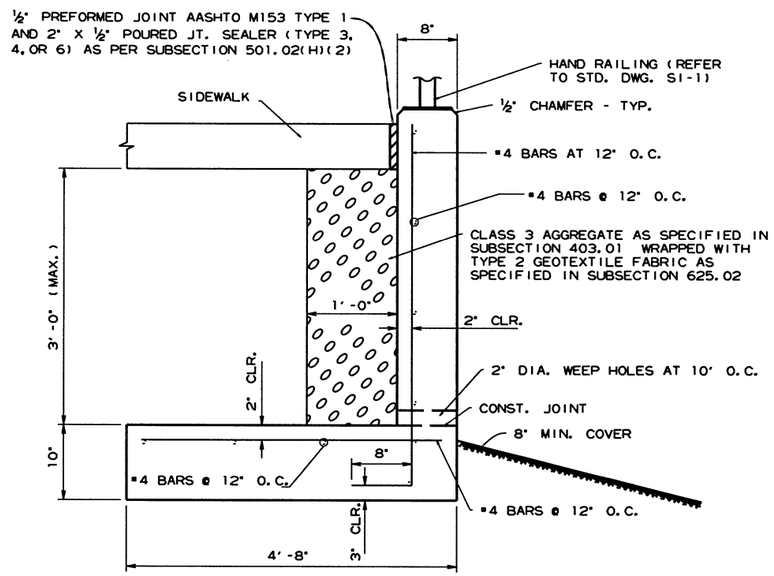
AFTER PLACING FINAL 2" OF SURFACE COURSE, THE EXISTING SLOPE SHALL BE REDRESSED AS DIRECTED BY THE ENGINEER PRIOR TO SEEDING IN ORDER TO MAINTAIN A UNIFORM SLOPE. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR VARIOUS CONTRACT ITEMS.

R060432.DGN 2/13/2017

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	7	153

(2) SPECIAL DETAILS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-6-17



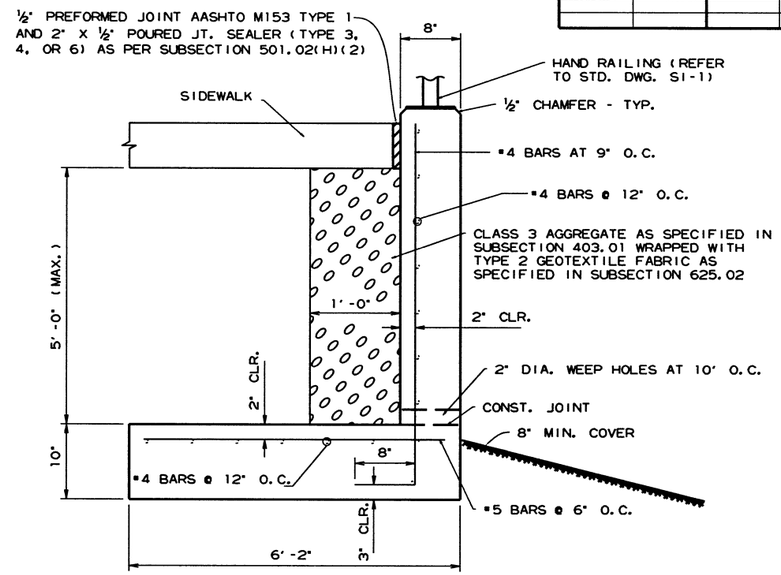
NOTES:
JOINTS IN THE WALL SHALL MATCH THE TYPE AND SPACING OF THE JOINTS IN THE WALK.

ALL CONCRETE SHALL BE CLASS S (F'C=3,500 PSI) AND SHALL BE POURED IN THE DRY.

REINFORCING STEEL SHALL BE AASHTO M31 OR M53, GRADE 60 (FY=60,000 PSI).

PAYMENT FOR THE WEEP HOLES, CLASS 3 AGGREGATE, TYPE 2 GEOTEXTILE FABRIC, PREFORMED JOINT FILLER, POURED JOINT SEALER, REINF. STEEL, AND CONCRETE SHALL BE INCLUDED IN THE UNIT BID PRICE PER SQ. YD. FOR CONCRETE WALKS (TYPE SPECIAL).

CONCRETE RETAINING WALL SPECIAL DETAIL
MAX HEIGHT 3'-0"



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JOINTS IN THE WALL SHALL MATCH THE TYPE AND SPACING OF THE JOINTS IN THE WALK.

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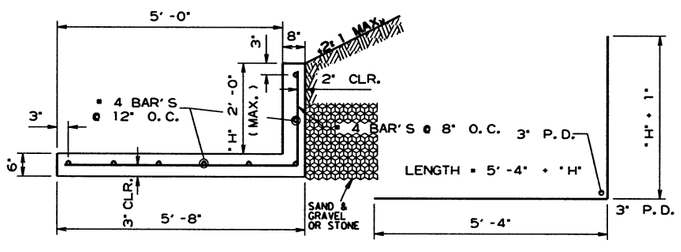
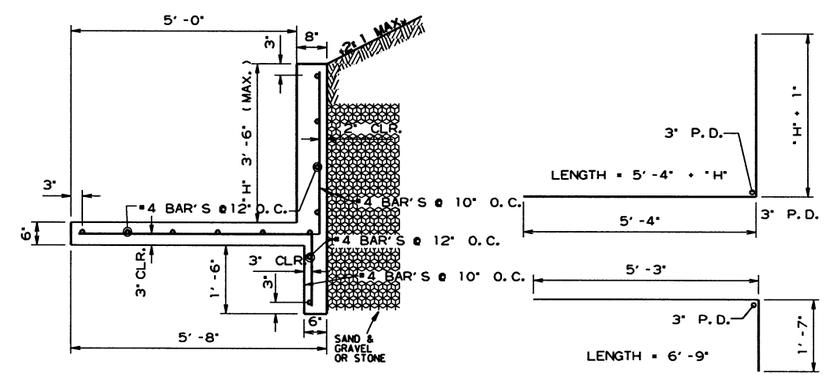
CONCRETE RETAINING WALL SPECIAL DETAIL
MAX HEIGHT 5'-0"



CONCRETE WALK (TYPE SPECIAL) DETAILS
MAX HEIGHT 2'-0"



CONCRETE WALK (TYPE SPECIAL) DETAILS
MAX HEIGHT 3'-6"

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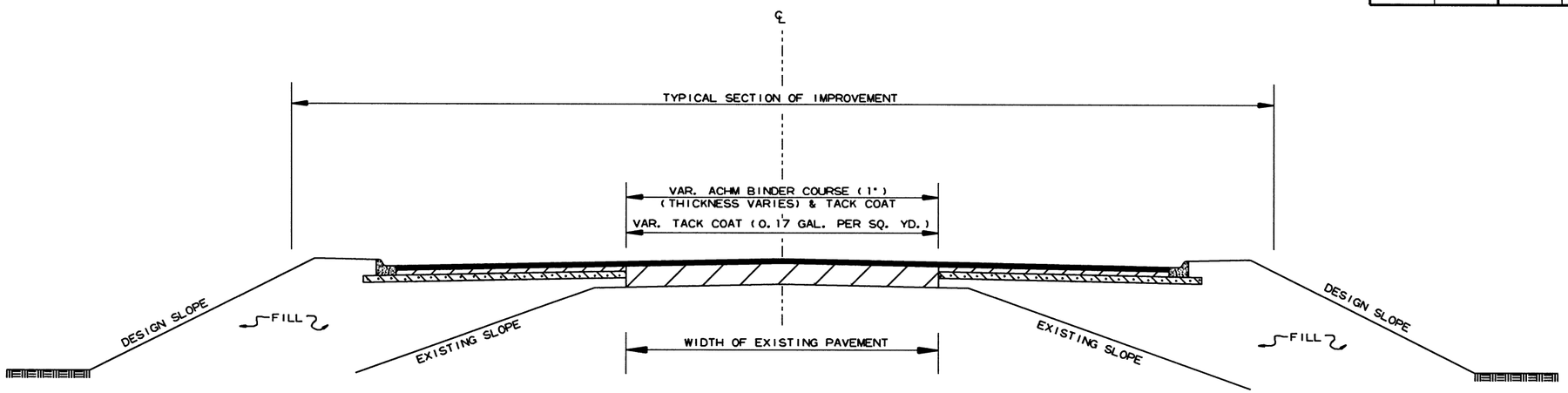
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	8	153

(2) SPECIAL DETAILS

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

3-6-17



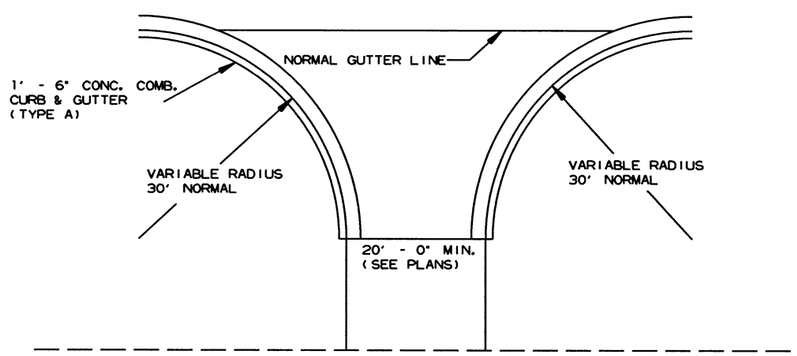
METHOD OF RAISING GRADE

NOTES:

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

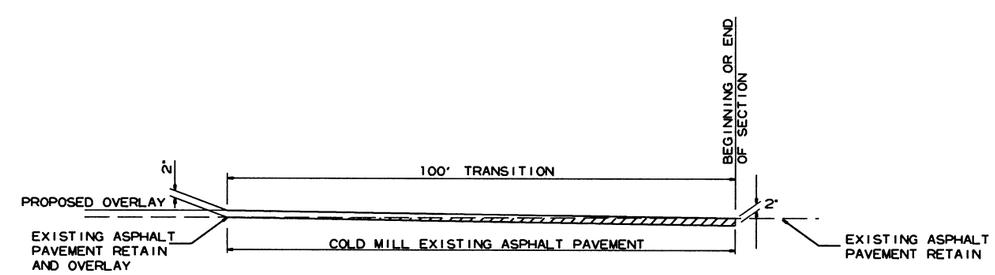
QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.

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, EDITION OF 2014.



DETAIL OF TURNOUTS ASPHALT STREETS
CURB & GUTTER SECTION

NOTE:
PAVEMENT STRUCTURE TO BE SAME AS MAIN LANES



DETAIL FOR TRANSITIONS

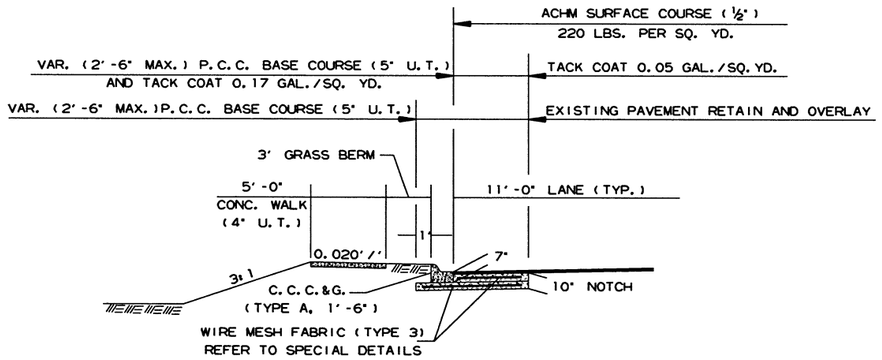
2/13/2017

R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	9	153

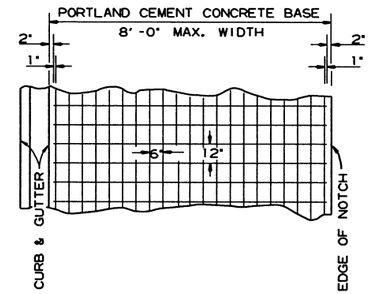
(2) SPECIAL DETAILS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-6-17



P.C.C. BASE WIDENING DETAIL

P.C.C. BASE WIDENING TO BE USED AS SHOWN ON THE PLANS.

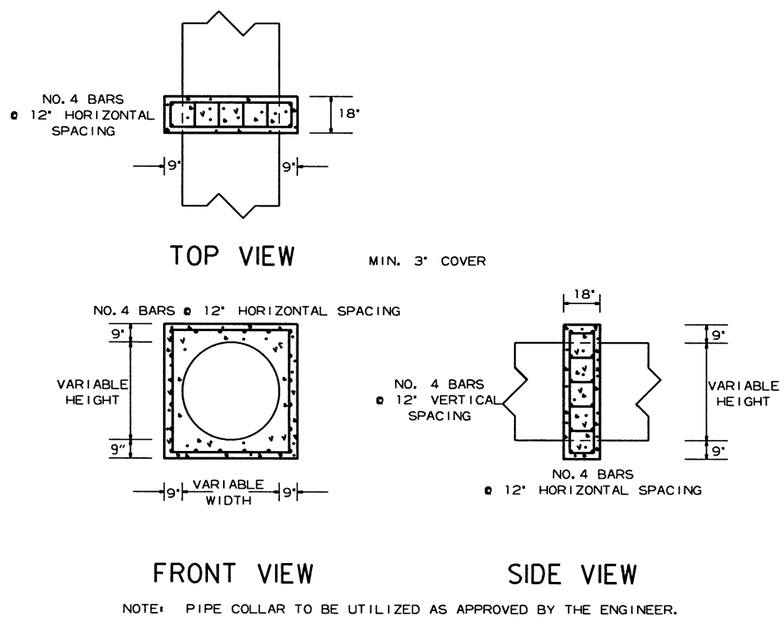


DETAIL OF REINFORCING STEEL FOR PAVEMENT (MESH FABRIC TYPE 3)

6" X 12" MESH FABRIC (TYPE 3) (W5.5 X W2.9) = 4.26 LBS./SQ. YD.

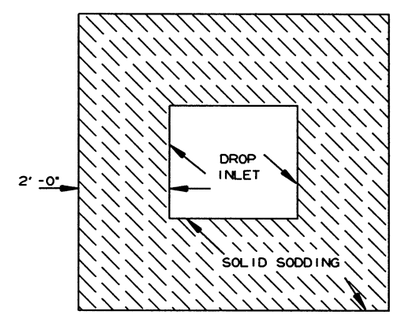
NOTES:

1. LAP MESH FABRIC MIN. 12" LONGITUDINALLY AND MIN. 6" TRANSVERSELY.
2. MESH FABRIC IS NOT REQUIRED WHEN WIDTH OF PORTLAND CEMENT CONCRETE BASE IS LESS THAN 12".
3. MESH FABRIC (TYPE 3) WILL NOT BE PAID FOR DIRECTLY, BUT FULL COMPENSATION THEREFORE WILL BE CONSIDERED INCLUDED IN THE CONTRACT PRICE BID PER SQ. YD. FOR PORTLAND CEMENT CONCRETE BASE (6" U.T.) & PORTLAND CEMENT CONCRETE BASE (6" U.T.).



NOTE: PIPE COLLAR TO BE UTILIZED AS APPROVED BY THE ENGINEER.

PIPE EXTENSION REINFORCED CONCRETE COLLAR DETAIL



DETAIL FOR SOLID SODDING AROUND DROP INLETS

2/13/2017

R060432.DGN

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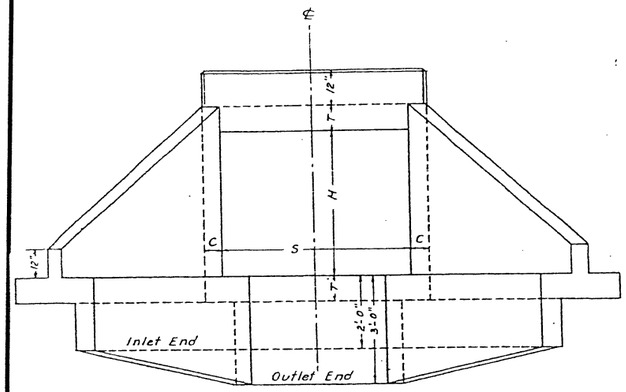
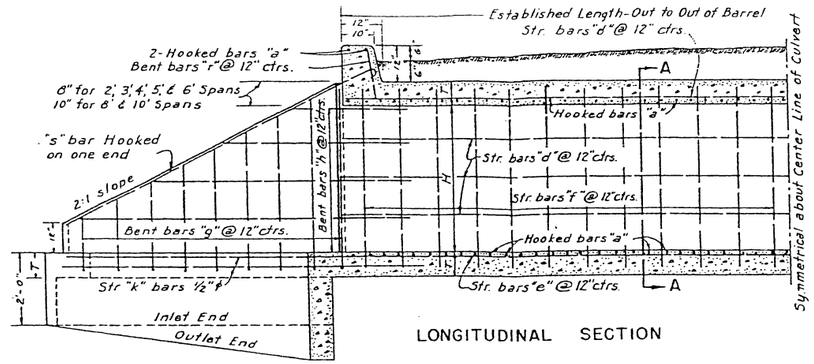
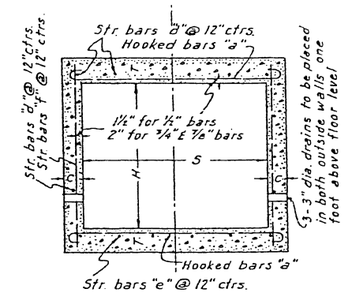
(2) SPECIAL DETAILS



END ELEVATION



LONGITUDINAL SECTION



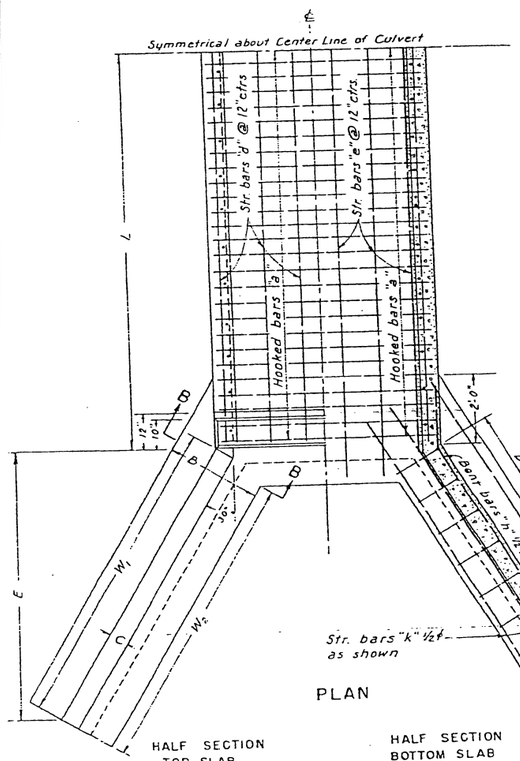
SECTION A - A

DIMENSIONS & QUANTITIES

SPAN	HEIGHT	AREA OF OPENING SQ. FT.	MINIMUM DEPTH OF COVER	THICKNESS OF TOP & BOTTOM SLAB	THICKNESS OF SIDE & WING WALLS	WIDTH OF FOOTING	LENGTH OF FOOTING	LENGTH OF WINGS	LENGTH OF WINGS FROM BACK OF HEADWALL	CONCRETE CU. YD. HEADWALLS WINGWALLS & FOOTING	CONCRETE CU. YD. PER LINEAR FT. OF BARREL	STEEL LB. HEADWALLS WINGWALLS & FOOTING	STEEL LB. PER LINEAR FT. OF BARREL	STEEL LB. ADD STEEL FOR LAPS
S	H	A	D	T	C	B	W_2	W_1	E					
2	2	4	20'-0"	6½"	6"	2'-6"	3'-6½"	3'-10"	3'-4"	2.38	.194	155	17.91	8.9
3	2	6	20'-0"	7"	6"	2'-6"	3'-6½"	3'-10"	3'-4"	2.65	.247	164	22.77	11.1
	3	9			6"		5'-10¾"	6'-2"	5'-4"	4.10	.284	243	25.43	13.4
4	2	8	16'-0"	7½"	6"	2'-6"	3'-6½"	3'-10"	3'-4"	2.90	.306	173	28.28	13.4
	3	12			6"		5'-10¾"	6'-2"	5'-4"	4.36	.343	251	30.94	15.6
	4	16			6"		8'-2"	8'-5½"	7'-4"	5.98	.380	352	33.60	17.8
5	2	10	10'-0"	8"	6"	2'-6"	3'-6½"	3'-10"	3'-4"	3.15	.370	189	34.56	15.6
	3	15			6"		5'-10¾"	6'-2"	5'-4"	4.60	.407	267	37.22	17.8
	4	20			6"		8'-2"	8'-5½"	7'-4"	6.29	.446	370	39.89	20.0
	5	25			7"	2'-9"	10'-8"	10'-9½"	9'-4"	8.79	.521	478	42.55	22.3
6	3	18	7'-0"	8½"	6"	2'-6"	5'-10¾"	6'-2"	5'-4"	4.94	.478	278	41.88	20.0
	4	24			6"		8'-2"	8'-5½"	7'-4"	6.61	.515	383	44.54	22.3
	5	30			7"	2'-9"	10'-8"	10'-9½"	9'-4"	9.14	.592	492	47.20	24.5
	6	36			7"	3'-0"	13'-1"	13'-1"	11'-4"	11.58	.635	611	49.86	26.7
8	3	24	5'-0"	10½"	7"	2'-7"	6'-3½"	6'-6½"	5'-8"	6.28	.724	334	60.81	24.5
	4	32			7"	2'-7"	8'-7¼"	8'-10¼"	7'-8"	8.25	.761	429	63.47	26.7
	5	40			7"	2'-9"	11'-0¼"	11'-2"	9'-8"	10.52	.810	536	66.13	28.9
	6	48			7"	3'-0"	13'-5½"	13'-5½"	11'-8"	13.08	.853	673	68.80	31.2
	7	56			7"	3'-4"	16'-0"	15'-9½"	13'-8"	16.03	.897	976	71.46	33.4
	8	64			8"	3'-10"	18'-8"	18'-1"	15'-8"	20.69	1.000	1168	74.81	35.6
10	4	40	4'-0"	11¾"	7"	2'-7"	8'-7¼"	8'-10¼"	7'-8"	8.97	.983	505	90.62	31.2
	5	50			7"	2'-9"	11'-0¼"	11'-2"	9'-8"	11.33	1.026	611	93.28	33.4
	6	60			7"	3'-0"	13'-5½"	13'-5½"	11'-8"	13.99	1.067	749	95.94	35.6
	7	70			7"	3'-4"	16'-0"	15'-9½"	13'-8"	17.27	1.112	1060	98.60	37.9
	8	80			8"	3'-10"	18'-8"	18'-1"	15'-8"	21.88	1.217	1253	101.26	40.1
	9	90			9"	4'-3"	21'-2"	20'-4½"	17'-8"	27.55	1.334	1740	111.86	42.3
	10	100			10"	4'-9"	23'-9½"	22'-8½"	19'-8"	34.78	1.463	2181	115.27	44.5

LAP NOTE:

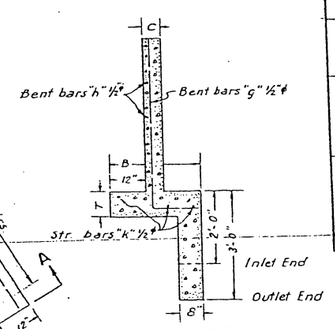
In computing quantities of steel from the above table add one lap for culverts up to 50' in length and one lap for each additional 25' in length.



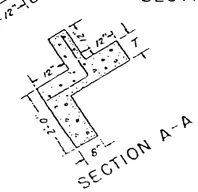
PLAN

HALF SECTION TOP SLAB

HALF SECTION BOTTOM SLAB & SIDE WALLS



SECTION B-B



SECTION A-A

NOTE:-

Angle of Wingwalls may be varied to conform to the natural or proposed inlet or outlet channel.

STEEL SCHEDULE

For Culvert 32' in Length Out to Out of Barrel

LENGTH OF SPAN	HEIGHT	"a" bars (3" for 2, 3, 4, 5, 6 & 8' Span; 6" for 10' Span; 2 in each headwall Balance in Top and bottom slab of barrel)					"d" bars (½" ϕ bars spaced at 12" Centers STRAIGHT; Top slab and Sidewalls)		"e" bars (Top of Bottom Slab)		"f" bars (STRAIGHT Vertical bars in Sidewalls)				"g" bars (Vertical bars in Wingwalls)								"h" bars (½" ϕ bars @ 12" Ctrs. Horizontal bars in Wingwalls)						½" ϕ bars STRAIGHT Top of Wing Footings		½" ϕ BENT Dowel Bar In Headwall		½" ϕ one in Top of each Wingwall	
																					X		Y				Z						
S	H	SIZE	SPACING	NUMBER	LENGTH	X	NUMBER	LENGTH	NUMBER	LENGTH	SIZE	SPACING	NUMBER	LENGTH	SIZE	SPACING	NUMBER	AV. LENGTH	Min.	Max.	Min.	Max.	NUMBER	AV. LENGTH	Min	Max	NUMBER	LENGTH	NUMBER	LENGTH	NUMBER	LENGTH
2	2	½" ϕ	6½"	122	3'-7"	2'-9"	5		3		½" ϕ	12"	64	2'-10"	½" ϕ	12"	16	3'-4"	1'-4"	2'-9"	1'-3"	1'-3"	12	4'-7"	1'-4"	3'-8"	12	5'-4"	6	3'-2"	4	5'-3"
3	2	½" ϕ	6"	132	4'-7"	3'-9"	6		4		½" ϕ	12"	64	2'-11"	½" ϕ	12"	16	3'-4½"	1'-4½"	2'-9½"	1'-3"	1'-3"	12	4'-7"	1'-4"	3'-8"	12	5'-4"	8	3'-2"	4	5'-3"
	3			132	4'-7"	3'-9"	8		4				64	3'-11"			24	3'-10½"	1'-6½"	3'-9½"	1'-3"	1'-3"	16	5'-11"	1'-4"	6'-0"	12	7'-8"	8	3'-2"	4	7'-9"
4	2	½" ϕ	5½"	144	5'-7"	4'-9"	7		5		½" ϕ	12"	64	3'-0"	½" ϕ	12"	16	3'-5"	1'-5"	2'-10"	1'-3"	1'-3"	12	4'-7"	1'-4"	3'-8"	12	5'-4"	10	3'-2"	4	7'-9"
	3			144	5'-7"	4'-9"	9		5				64	6'-0"			24	3'-11"	1'-7"	3'-10"	1'-3"	1'-3"	16	5'-11"	1'-4"	6'-0"	12	7'-8"	10	3'-2"	4	10'-3"
	4			144	5'-7"	4'-9"	11		5				64	5'-0"			36	4'-5"	1'-5"	4'-10"	1'-3"	1'-3"	20	7'-2"	1'-4"	8'-4"	12	10'-0"	10	3'-2"	4	5'-3"
5	2	½" ϕ	5"	158	6'-7"	5'-9"	8		6		½" ϕ	12"	64	3'-1"	½" ϕ	12"	16	3'-6"	1'-7"	2'-11"	1'-3"	1'-3"	12	4'-7"	1'-4"	3'-8"	12	5'-4"	14	3'-6"	4	7'-9"
	3			158	6'-7"	5'-9"	10		6				64	4'-1"			24	3'-11"	1'-5"	3'-11"	1'-3"	1'-3"	16	5'-11"	1'-4"	6'-0"	12	7'-8"	14	3'-6"	4	10'-3"
	4			158	6'-7"	5'-9"	12		6				64	5'-1"			36	4'-6"	1'-6"	4'-11"	1'-3"	1'-3"	20	7'-2"	1'-4"	8'-4"	12	10'-0"	14	3'-6"	4	12'-9"
	5			158	6'-7"	5'-9"	14		6				64	6'-1"			44	5'-2"	1'-7"	5'-11"	1'-4"	1'-6"	24	8'-5"	1'-4"	10'-8"	12	12'-4"	14	3'-6"	4	7'-9"
6	3	½" ϕ	5"	158	7'-7"	6'-9"	11		7		½" ϕ	12"	64	4'-2"	½" ϕ	12"	24	4'-1"	1'-5"	4'-3"	1'-3"	1'-3"	16	5'-11"	1'-4"	6'-0"	12	7'-8"	16	3'-6"	4	10'-3"
	4			158	7'-7"	6'-9"	13		7				64	5'-2"			36	4'-8"	1'-6"	5'-3"	1'-3"	1'-3"	20	7'-2"	1'-4"	8'-4"	12	10'-0"	16	3'-6"	4	12'-9"
	5			158	7'-7"	6'-9"	15		7				64	6'-2"			44	5'-4"	1'-7"	6'-3"	1'-4"	1'-6"	24	8'-5"	1'-4"	10'-8"	12	12'-4"	16	3'-6"	4	15'-3"
	6			158	7'-7"	6'-9"	17		7				64	7'-2"			52	5'-11"	1'-5"	7'-3"	1'-4"	1'-9"	28	9'-8"	1'-4"	13'-0"	12	14'-7"	16	3'-6"	4	8'-3"
8	3	⅝" ϕ	6"	132	9'-8"	8'-10"	13		9		½" ϕ	12"	64	4'-5"	½" ϕ	12"	28	4'-4"	1'-8"	4'-4"	1'-4"	1'-8"	16	6'-4"	1'-8"	6'-5"	12	8'-0"	20	3'-6"	4	10'-9"
	4			132	9'-8"	8'-10"	15		9				64	5'-5"			36	4'-11"	1'-9"	5'-4"	1'-4"	1'-8"	20	7'-6"	1'-8"	8'-9"	12	10'-4"	20	3'-6"	4	13'-3"
	5			132	9'-8"	8'-10"	17		9				64	6'-5"			44	5'-5"	1'-8"	6'-4"	1'-4"	1'-6"	24	8'-9"	1'-8"	11'-0"	12	12'-8"	20	3'-6"	4	15'-9"
	6			132	9'-8"	8'-10"	19		9				64	7'-5"			56	6'-0"	1'-7"	7'-4"	1'-4"	1'-9"	28	10'-0"	1'-8"	13'-4"	12	15'-0"	20	3'-6"	4	18'-3"
	7			132	9'-8"	8'-10"	21		9				64	8'-5"	⅝" ϕ	12"	64	6'-9"	1'-9"	8'-4"	1'-4"	2'-1"	32	11'-2"	1'-8"	15'-8"	12	17'-4"	20	3'-6"	4	20'-9"
	8			132	9'-10"	9'-0"	23		9				64	9'-5"			72	7'-5"	1'-7"	9'-2"	1'-5"	2'-6"	36	12'-5"	1'-8"	17'-11"	12	19'-8"	20	3'-6"	4	23'-3"
10	4	⅞" ϕ	9½"	86	12'-4"	10'-10"	17		11		½" ϕ	12"	64	5'-7"	½" ϕ	12"	36	5'-0"	1'-10"	5'-6"	1'-4"	1'-4"	20	7'-7"	1'-8"	8'-8"	12	10'-4"	24	3'-6"	4	10'-9"
	5			86	12'-4"	10'-10"	19		11				64	6'-7"			44	5'-6"	1'-8"	6'-6"	1'-4"	1'-6"	24	8'-9"	1'-8"	11'-0"	12	12'-8"	24	3'-6"	4	13'-3"
	6			86	12'-4"	10'-10"	21		11				64	7'-7"			56	6'-1"	1'-8"	7'-6"	1'-4"	1'-9"	28	10'-0"	1'-8"	13'-4"	12	15'-0"	24	3'-6"	4	15'-9"
	7			86	12'-4"	10'-10"	23		11				64	8'-7"	⅝" ϕ	12"	64	6'-11"	1'-10"	8'-6"	1'-4"	2'-1"	32	11'-2"	1'-8"	15'-8"	12	17'-4"	24	3'-6"	4	18'-3"
	8			86	12'-6"	11'-0"	25		11				64	9'-7"			72	7'-7"	1'-8"	9'-6"	1'-5"	2'-6"	36	12'-5"	1'-8"	17'-11"	12	19'-8"	24	3'-6"	4	20'-9"
	9			86	12'-8"	11'-2"	27		11				64	10'-7"			108	8'-7"	1'-8"	10'-6"	1'-6"	3'-0"	40	13'-7"	1'-8"	20'-2"	12	22'-0"	24	3'-6"	4	23'-3"
	10			86	12'-10"	11'-4"	29		11				64	11'-7"			136	9'-3"	1'-10"	11'-6"	1'-7"	3'-6"	44	14'-9"	1'-8"	22'-6"	12	24'-4"	24	3'-6"	4	25'-9"

NOTE: Lengths given above do not include lap.

REINFORCING STEEL:- To be deformed bars of structural or intermediate grade.

CHAMFER:- All exposed corners to have 3/4" Chamfer.

CONCRETE:- All Concrete to be Class "S".

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-6-17

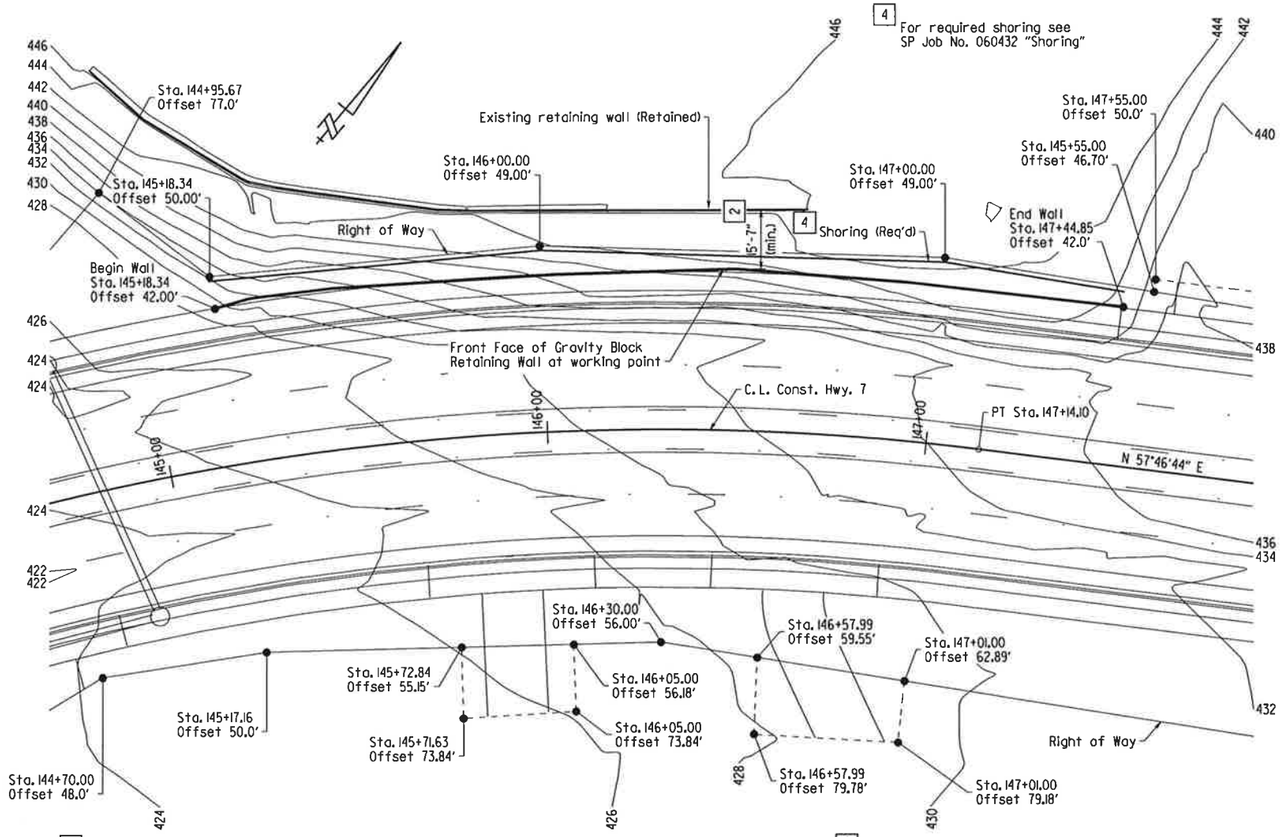
SPECIAL DETAILS FOR REINFORCED CONCRETE BOX CULVERTS

SINGLE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
3-17-17			

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		060432	11	153

1 SPECIAL DETAILS



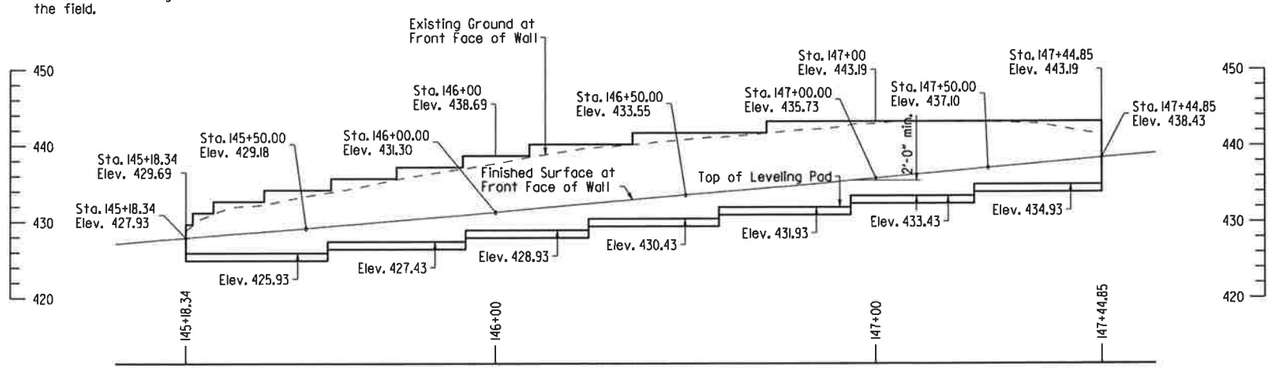
1 The Contractor has the option of using a cut slope in conjuction with the required shoring to maintain stability of the cut. Any excavation beyond the detailed pay limits will not be paid for directly, but shall be considered incidental to the pay item "Gravity Block Retaining Wall."

2 Location of existing wall shall be verified in the field.

PLAN

SCALE: 1" = 20'

3 Top 12 inches of wall backfill shall be comprised of low-permeability cohesive soils to limit seepage, with a maximum plasticity index (PI) of 20 to reduce potential tension cracks.



WALL ELEVATION

NO SCALE

NOTE: Stations shown are along C.L. Const. Hwy. 7.

General Notes

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 in the plans, Section and Subsection refer to the Standard Specifications.

Design Specifications: AASHTO LRFD Bridge Design Specifications (2012 Edition), with 2013 Interim Revisions

Seismic Performance Zone: 1

The front face of wall shall have a near vertical alignment.

Cap units shall have a face finish on both sides.

Backfill outside the pay limits of Unclassified Excavation for wall construction shall be select granular backfill. There shall be no direct payment for backfill outside the pay limit area.

The retaining wall, including all drainage fill, block in-fill materials, geotextile fabric, and leveling pad, shall be considered included in the pay item "Gravity Block Retaining Wall."

Drainage shall be provided behind the wall as specified in SP Job No. 060432 "Gravity Block Retaining Wall." If pipe underdrains are used for drainage, installation and details shall be in accordance with Std. Dwg. No. PU-1and Section 611. Work and materials required for pipe underdrains or drainage systems, preformed joint filler and joint sealer shall not be paid for directly, but shall be considered incidental to the item "Gravity Block Retaining Wall."

Details at obstructions and hand rail posts shall be provided by the Wall System Manufacturer.

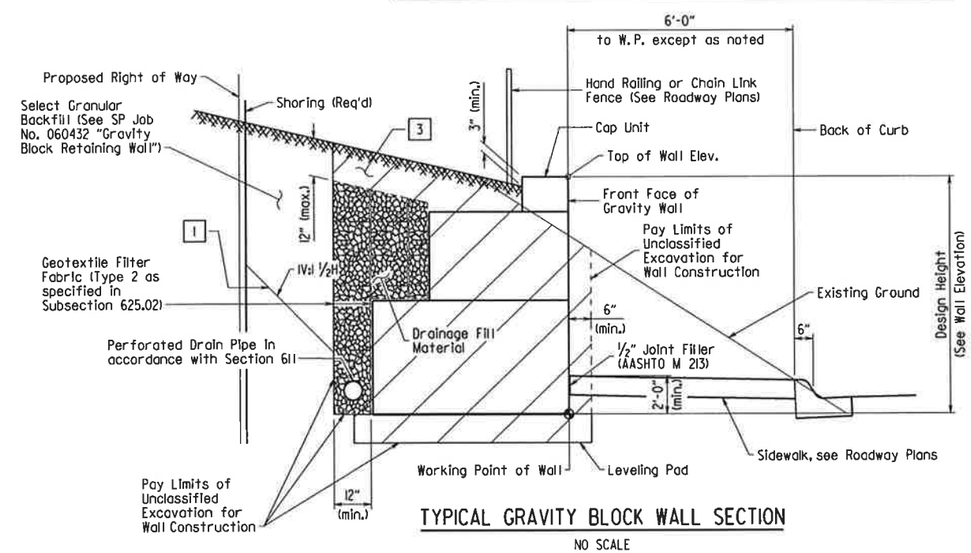
For details of hand railing, see Std. Dwg. SI-1. For details of chain link fence, see Std. Dwg. WF-3. See Roadway Plans for required locations.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
3-17-17
CHARLES R. ELLIS

APPROXIMATE QUANTITIES

(FOR INFORMATION ONLY)

ITEM NO.	801	SP JOB 060432	SP JOB 060432
	Unclassified Excavation For Structures - Roadway	Shoring	Gravity Block Retaining Wall
	CU. YD.	LUMP SUM	SQ. FT.
	600	1	2,509



TYPICAL GRAVITY BLOCK WALL SECTION

NO SCALE

HORIZONTAL CURVE DATA - C.L. CONST. HWY. 7

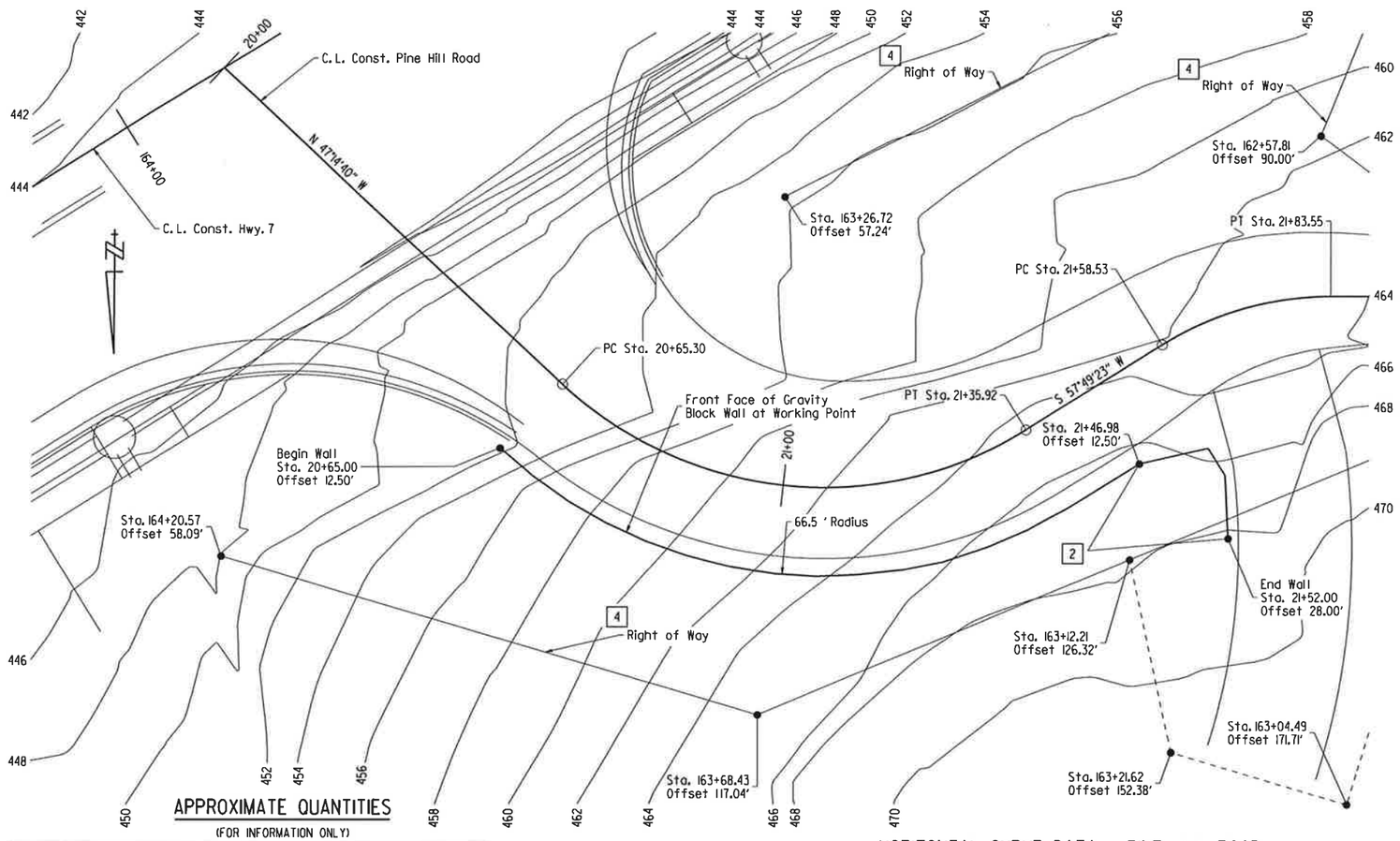
PC Sta. 141+20.14
PI Sta. 144+37.96
PT Sta. 147+14.10
D = 8°30'00"
T = 317.81'
L = 593.96'
R = 674.07'

SHEET 1 OF 2
GRAVITY BLOCK RETAINING WALL
STA. 145+18.34 TO STA. 147+44.85
SPECIAL DETAILS

PRINT DATE: 3/17/2017

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	12	153

1 SPECIAL DETAILS



PLAN

SCALE: 1" = 10'

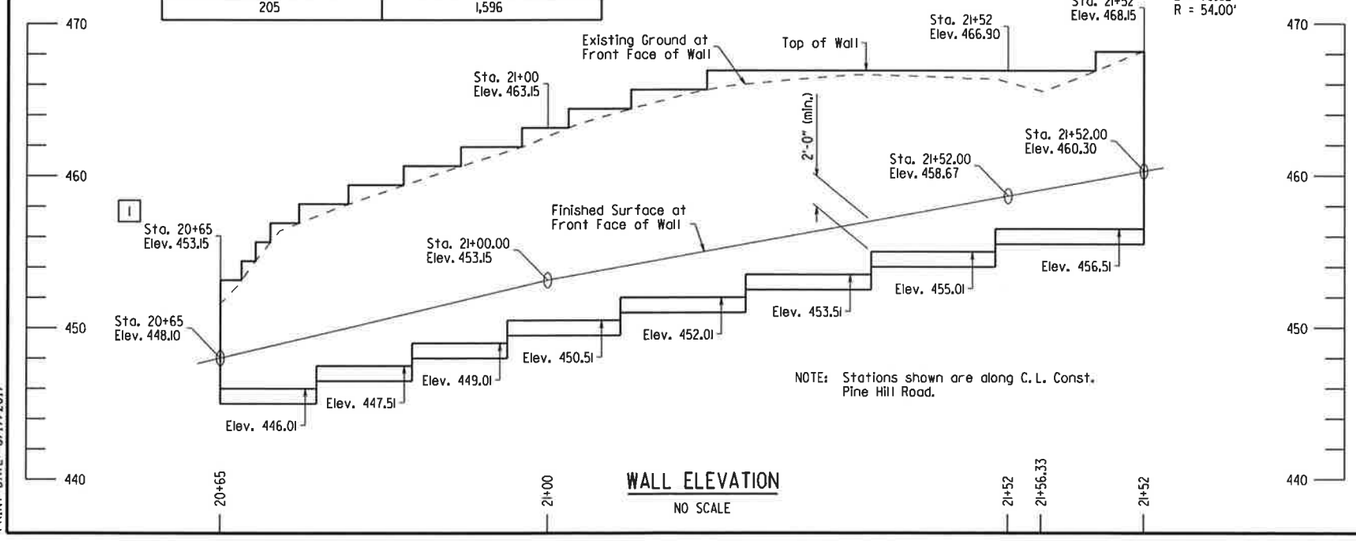
APPROXIMATE QUANTITIES

(FOR INFORMATION ONLY)

ITEM NO.	801	SP JOB 060432
	Unclassified Excavation For Structures - Roadway	Gravity Block Retaining Wall
	CU. YD.	SQ. FT.
	205	1,596

HORIZONTAL CURVE DATA - PINE HILL ROAD

PC Sta. 20+65.30
PI Sta. 21+06.68
PT Sta. 21+35.92
D = 106°06'12"
T = 41.39'
L = 70.62'
R = 54.00'



NOTE: Stations shown are along C.L. Const. Pine Hill Road.

WALL ELEVATION

NO SCALE

General Notes

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 in the plans, Section and Subsection refer to the Standard Specifications.

Design Specifications: AASHTO LRFD Bridge Design Specifications (2012 Edition), with 2013 Interim Revisions.

Seismic Performance Zone: 1

The front face of wall shall have a near vertical alignment.

Cap units shall have a face finish on both sides.

Backfill outside the pay limits of Unclassified Excavation for wall construction shall be select granular backfill. There shall be no direct payment for backfill outside the pay limit area.

The retaining wall, including all drainage fill, block in-fill materials, geotextile fabric, and leveling pad, shall be considered included in the pay item "Gravity Block Retaining Wall."

Drainage shall be provided behind the wall as specified in SP Job 060432 "Gravity Block Retaining Wall." If pipe underdrains are used for drainage, installation and details shall be in accordance with Std. Dwg. No. PU-1 and Section 611. Work and materials required for pipe underdrains or drainage systems, preformed joint filler and joint sealer shall not be paid for directly, but shall be considered incidental to the item "Gravity Block Retaining Wall."

Details at obstructions and hand rail posts shall be provided by the Wall System Manufacturer.

For details of hand railing, see Std. Dwg. SI-1. For details of chain link fence, see Std. Dwg. WF-3. See Roadway Plans for required locations.

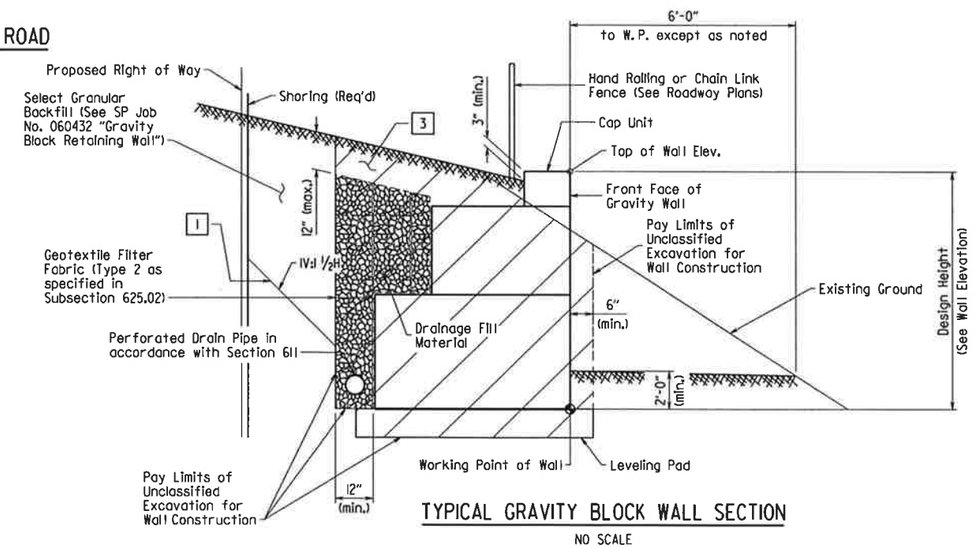
STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
3-17-17
CHARLES R. ELLIS

1 The Contractor has the option of using a cut slope and/or shoring to maintain stability of the cut. Any excavation beyond the detailed pay limits will not be paid for directly, but shall be considered incidental to the pay item "Gravity Block Retaining Wall."

2 Wall height and location in this area to be determined in the field and approved by the Engineer.

3 Top 12 inches of wall backfill shall be comprised of low-permeability cohesive soils to limit seepage, with a maximum plasticity index (PI) of 20 to reduce potential tension cracks.

4 Right of way stations and offsets are with respect to C.L. Const. Hwy. 7.



TYPICAL GRAVITY BLOCK WALL SECTION

NO SCALE

SHEET 2 OF 2
GRAVITY BLOCK RETAINING WALL
STA. 20+65 to 21+52
SPECIAL DETAILS

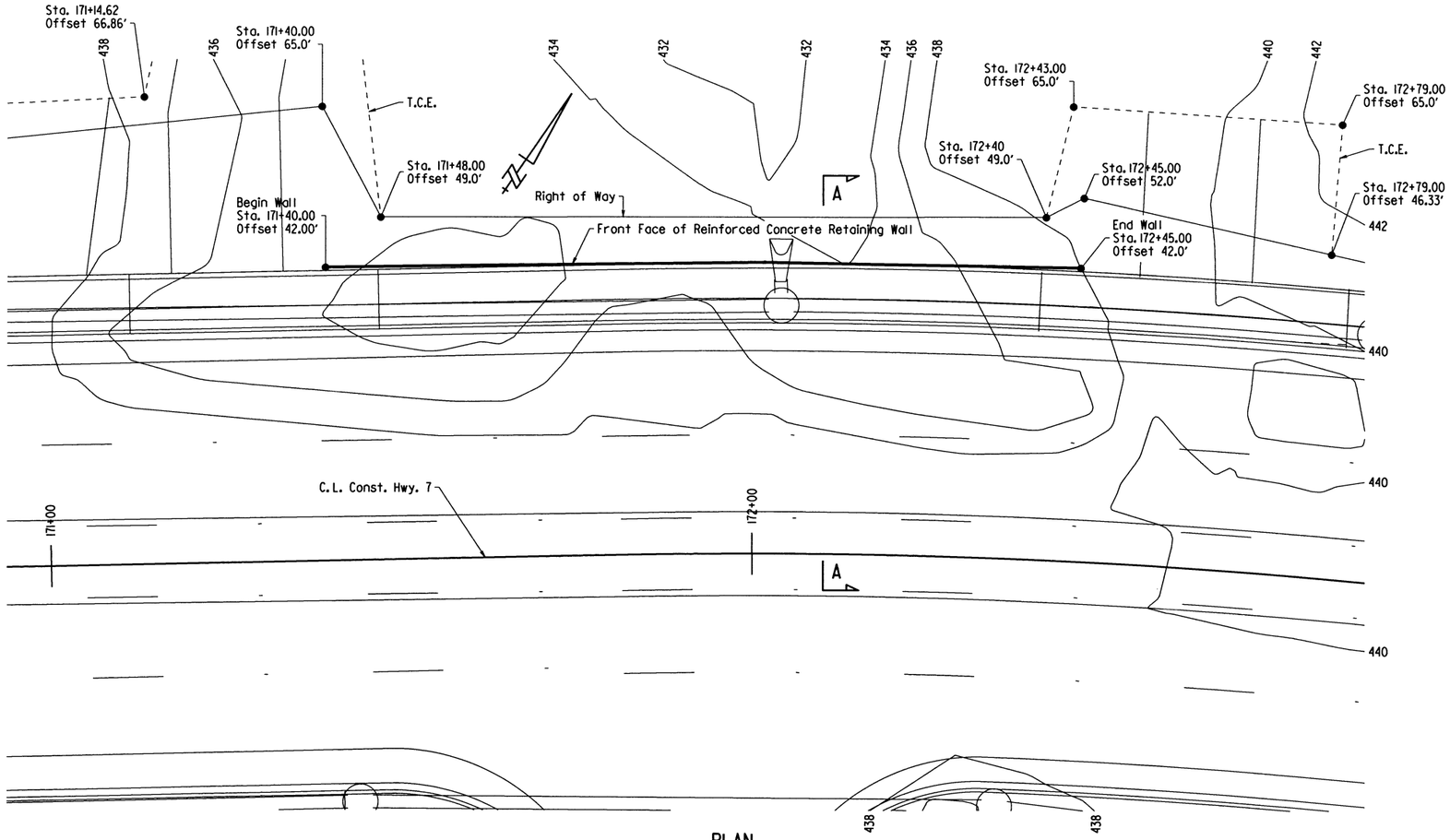
PRINT DATE: 3/17/2017

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.		060432	13	153

1 SPECIAL DETAILS

NOTE: For Details of Reinforced Concrete Retaining Wall, see sheet 4 of 5 and sheet 5 of 5.

STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
3-2-17
CHARLES R. ELLIS



HORIZONTAL CURVE DATA - C.L. CONST. HWY. 7

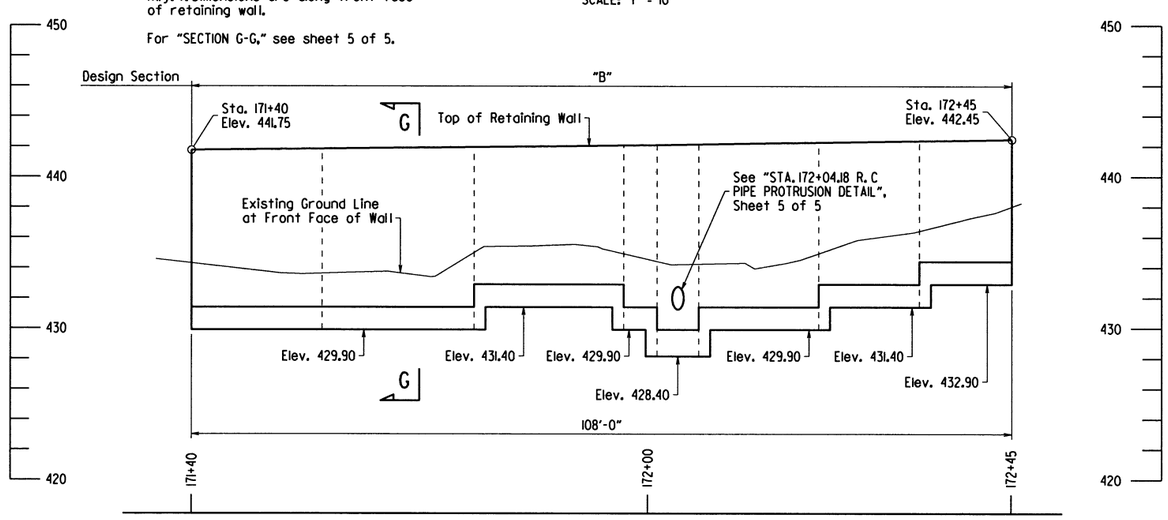
PC Sta. 171+81.46
PI Sta. 175+18.05
PT Sta. 178+26.63
D = 6°15'00"
T = 336.59'
L = 645.17'
R = 916.73'

PLAN

SCALE: 1" = 10'

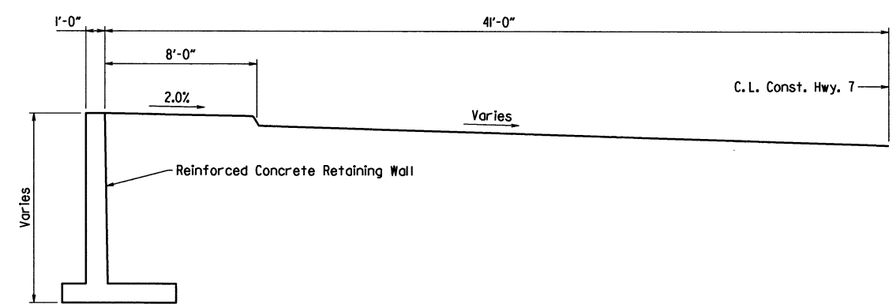
Note: Stations shown are along C.L. Const. Hwy. 7. Dimensions are along front face of retaining wall.

For "SECTION G-G," see sheet 5 of 5.



WALL ELEVATION

NO SCALE



SECTION A-A

NO SCALE

SHEET 1 OF 5
REINFORCED CONCRETE RETAINING WALL
STA. 171+40 TO STA. 172+45
SPECIAL DETAILS

PRINT DATE: 3/2/2017

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.		060432	14	153

1 SPECIAL DETAILS

NOTE: For Wall Elevations and Soil Borings, see Sheet 3 of 5.

For Details of Reinforced Concrete Retaining Wall, see sheet 4 of 5 and sheet 5 of 5.

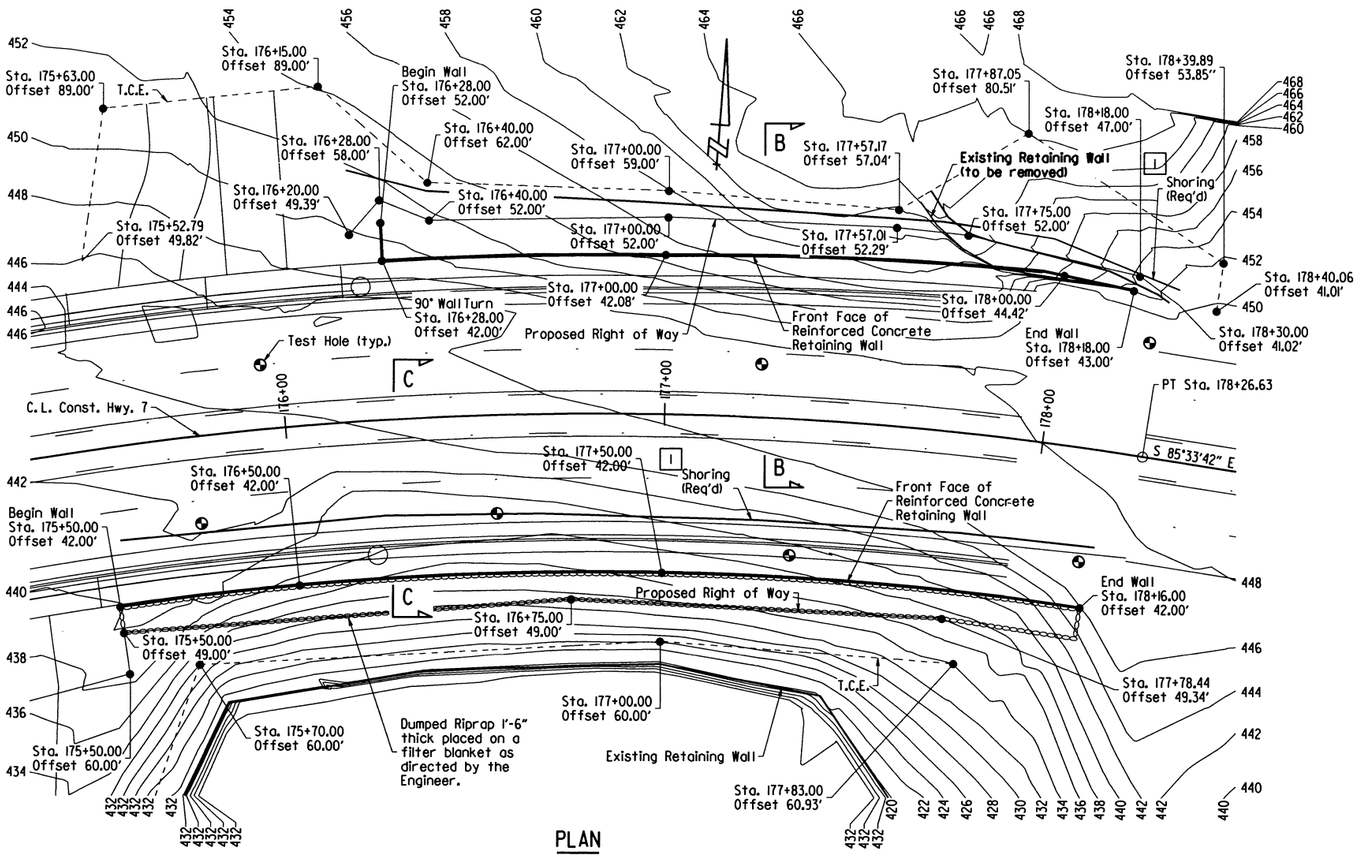
Locations of existing retaining walls shall be verified in the field.

1 For required shoring see SP Job No. 060432 "Shoring"

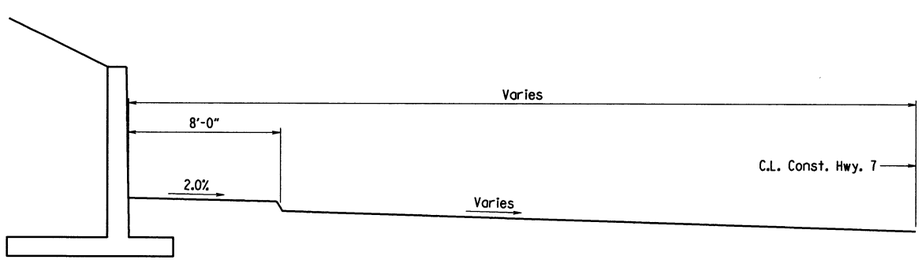
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
3-2-17
CHARLES R. ELLIS

HORIZONTAL CURVE DATA - C.L. CONST. HWY. 7

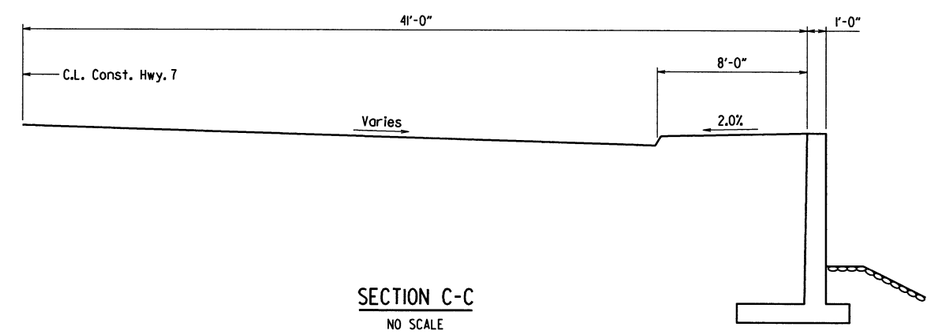
PC Sta. 171+81.46
PI Sta. 175+18.05
PT Sta. 178+26.63
D = 6°15'00"
T = 336.59'
L = 645.17'
R = 916.73'



PLAN
SCALE: 1" = 10'



SECTION B-B
NO SCALE



SECTION C-C
NO SCALE

SHEET 2 OF 5
REINFORCED CONCRETE RETAINING WALL
STA. 176+28.00 TO STA. 178+18.00 &
STA. 175+50.00 TO STA. 178+16.00
SPECIAL DETAILS

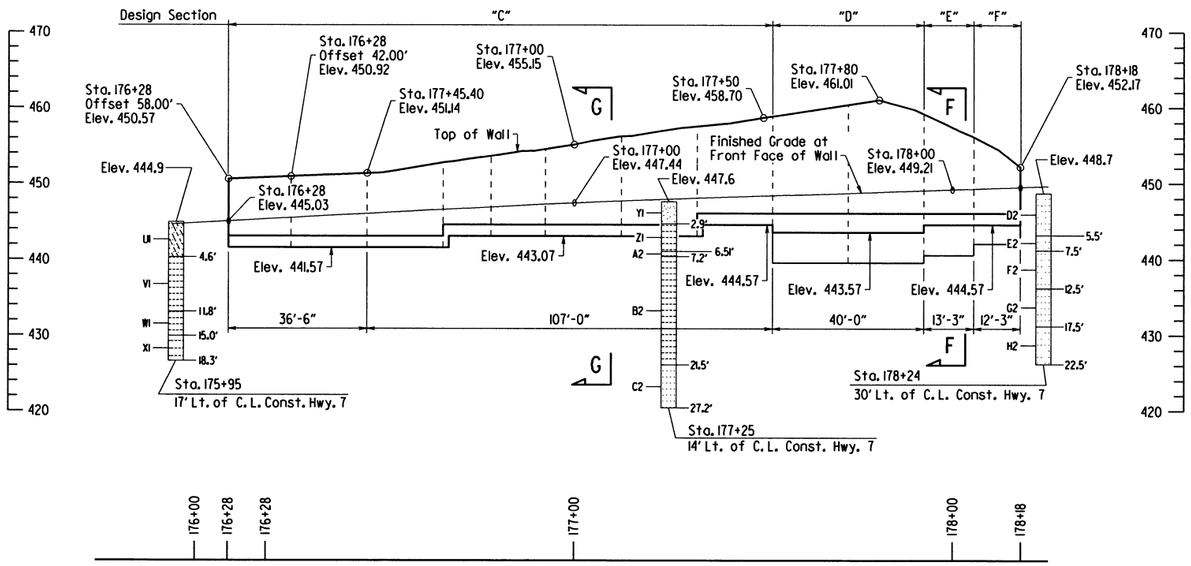
PRINT DATE: 3/2/2017

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.		060432	15	153

1 SPECIAL DETAILS

NOTE: For Details of Reinforced Concrete Retaining Wall, see sheet 4 of 5, and sheet 5 of 5.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9235
3-2-17
CHARLES R. ELLIS



WALL ELEVATION (LEFT)

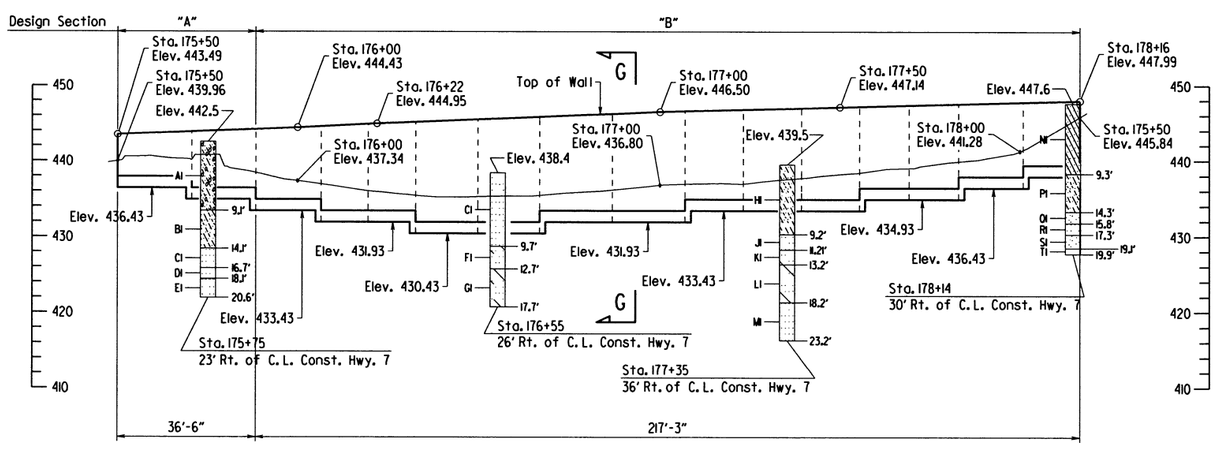
NO SCALE

NOTE: Stations shown are along C.L. Const. Hwy. 7. Dimensions are along front face of retaining wall.

For "SECTION F-F" and "SECTION G-G," see sheet 5 of 5.

BORING LEGEND

A1-Moist, Very Loose, Brown and Gray Gravel(Sandstone Fragments) with Clayey Sand
B1-Moist, Medium Dense, Reddish Brown and Gray Clayey Sand
C1-SANDSTONE - Light Brown, Poorly-Cemented
D1-SANDSTONE - Brown, Cemented
E1-SANDSTONE WITH GRAY HIGHLY WEATHERED SHALE SEAMS - Brown and Gray, Poorly-Cemented
F1-SANDSTONE WITH CLAY SEAMS - Brown, Thin Bedded, Weathered, Cemented, with Slight Dip and Fractured Layers
G1-SANDSTONE WITH CLAY SEAMS AND SHALE PARTINGS - Gray and Brown, Medium Bedded, Weathered, Cemented, with Moderate Dip and Fractured Layers
H1-Dry, Dense, Reddish Brown Clayey Sand
J1-SANDSTONE - Brown and Gray, Poorly-Cemented
K1-SANDSTONE WITH CLAY AND SHALE SEAMS - Gray and Brown, Thin Bedded, Weathered, Cemented with Poorly_Cemented Layers, with Moderate Dip
L1-SANDSTONE WITH CLAY AND SHALE SEAMS AND QUARTZ PARTINGS - Gray and Brown, Medium Bedded, Weathered, Cemented, with Moderate Dip and Fractured Layers
M1-SANDSTONE WITH QUARTZ LAYER AND SHALE PARTINGS - Gray, Medium Bedded, Slightly Weathered, Cemented, with Moderate Dip
N1-Moist, Stiff, Reddish Brown and Gray Clay with Sand
P1-Moist, Very Dense, Brown Sand with Clay
Q1-Moist, Very Dense, Brown Sand with some Clay
R1-Hard, Cemented Light Brown Sand
S1-Moist, Very Dense, Brown Sand
T1-SANDSTONE - Light Brown and Gray, Poorly- Cemented
U1-Dry, Very Dense, Gray Clayey sand
V1-SHALE - Gray, Highly Weathered, Soft
W1-SHALE - Gray, Highly Weathered, Medium Hard
X1-SHALE WITH WEATHERED SHALE LAYERS AND SANDSTONE SEAMS - Gray and Brown, Laminated, Medium Hard, with Moderate Dip, and Fractured Layers
Y1-Dry, Very Dense, Gray Sand
Z1-SHALE - Gray and Brown, Highly Weathered, Medium Hard
A2-SHALE - Gray and Brown, Laminated, Highly Weathered, Medium Hard, with Moderate Dip
B2-SHALE WITH WEATHERED SHALE LAYERS - Gray, Laminated, Medium Hard, with Moderate Dip, and Fractured Layers
C2-SANDSTONE - Gray, Medium Bedded, Slightly Weathered, Cemented, with Moderate Dip
D2-SANDSTONE - Light Gray and Brown, Poorly- Cemented
E2-SANDSTONE - Gray, Thin Bedded, Weathered, Cemented, with Steep Dip and Fractured Layers
F2-SANDSTONE WITH QUARTZ SEAMS - Gray, Thin Bedded, Weathered, Cemented, with Steep Dip and Fractured Layers
G2-SANDSTONE - Gray, Medium Bedded, Slightly Weathered, Cemented, with Moderate Dip and Vertically Fractured Layers
H2-SANDSTONE WITH QUARTZ SEAMS AND SHALE PARTINGS - Gray, Medium Bedded, Slightly Weathered, Cemented, with Moderate Dip and Fractured Layers



WALL ELEVATION (RIGHT)

NO SCALE

"N" VALUES

Sta. 175+95 - 17' Lt. of C.L. Const. Hwy. 7
5.1- 6.1, N=64
10.1- 11.1, N=29
14.6- 14.9, N=60(4")

Sta. 177+25 - 14' Lt. of C.L. Const. Hwy. 7
5.0- 6.0, N=96
6.5- 6.5, N=60(.01")

Sta. 178+24 - 30' Lt. of C.L. Const. Hwy. 7
4.5- 4.7, N=60(2")

Sta. 175+75 - 23' Rt. of C.L. Const. Hwy. 7
4.6- 5.6, N=4
9.6- 10.6, N=17
14.1- 14.4, N=60(4")
19.6- 20.6, N=49

Sta. 176+55 - 26' Rt. of C.L. Const. Hwy. 7
4.2- 5.2, N=90
8.7- 8.9, N=60(2")

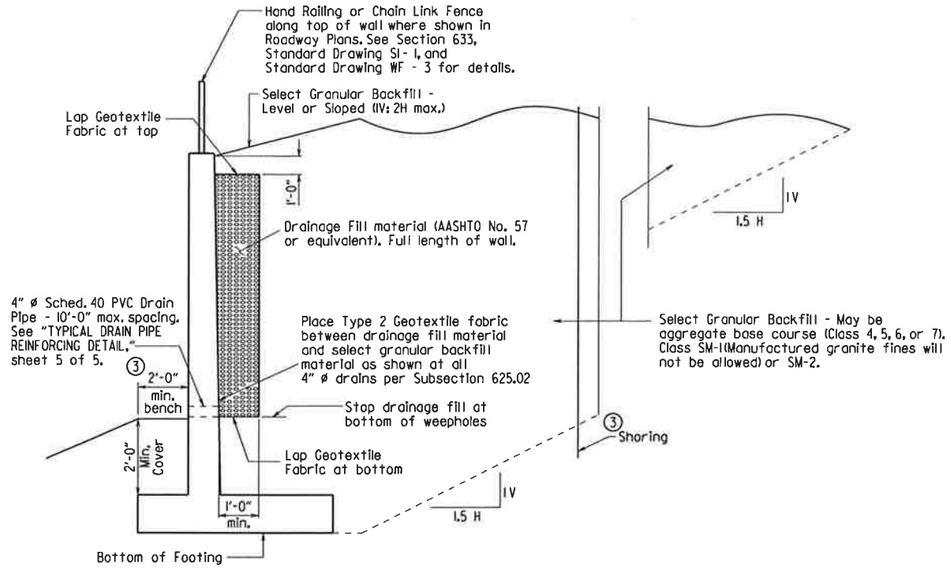
Sta. 177+35 - 36' Rt. of C.L. Const. Hwy. 7
4.7- 5.7, N=34
9.7- 9.9, N=60(2")
11.2- 11.2, N=60(.01")

Sta. 178+14 - 30' Rt. of C.L. Const. Hwy. 7
4.8- 5.8, N=15
9.8- 10.8, N=56
14.8- 14.9, N=60(1")
19.8- 19.9, N=60(1")

SHEET 3 OF 5
REINFORCED CONCRETE RETAINING WALL
STA. 176+28.00 TO STA. 178+18.00 &
STA. 175+50.00 TO STA. 178+16.00
SPECIAL DETAILS

PRINT DATE: 3/2/2017

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
4-4-17				JOB NO.		060432	16	153
				①		SPECIAL DETAILS		



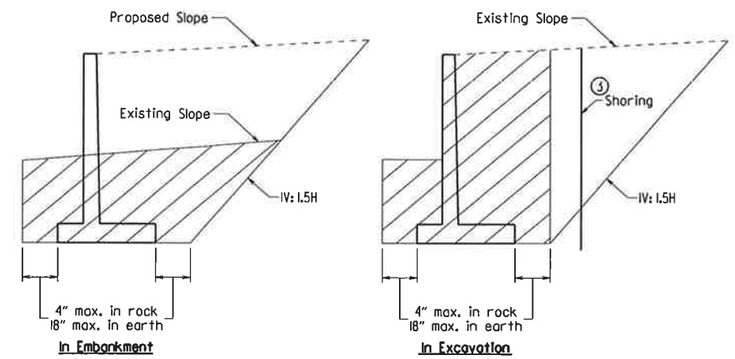
REINFORCED CONCRETE RETAINING WALL SECTION

N.T.S

① Provide edge relief around perimeter of Texture. Edge relief dimensions shall match manufacturers edge distance.

② Additional concrete required for architectural finish. See SP Job No. 060432 "Architectural Finish"

③ Except for the locations where shoring is required, the Contractor has the option of using a cut slope and/or shoring to maintain stability of the cut. Any excavation beyond the detailed pay limits or any shoring used will not be paid for directly, but shall be considered incidental to the item "Unclassified Excavation for Structures - Roadway".



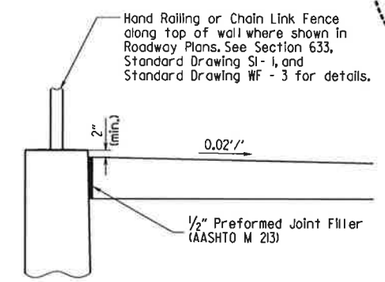
DETAILS OF EXCAVATION

N.T.S

NOTE: Hatched area denotes maximum limits of pay excavation.

Excavation required for area of Select Granular Backfill will be paid for under the pay item "Unclassified Excavation For Structures - Roadway".

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9233
4-4-17
CHARLES R. ELLIS



DETAIL OF SIDEWALK JOINT

N.T.S

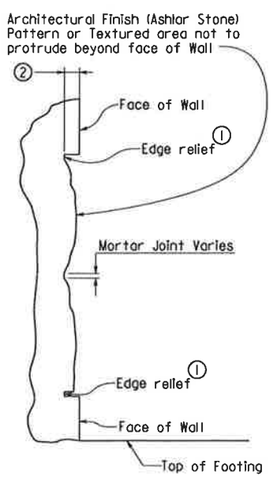
APPROXIMATE QUANTITIES FOR RETAINING WALL

(FOR INFORMATION ONLY)

	ITEM NO.	801	802	804	816	816	SP JOB 060432	SP JOB 060432	SP JOB 060432
WALL	Length of Wall	Unclassified Excavation for Structures - Roadway	Class S Concrete - Roadway	Reinforcing Steel - Roadway (Gr. 60)	Filter Blanket	Dumped Riprap	Architectural Finish	Textured Coating Finish	Shoring
STATION	LIN. FT.	CU. YD.	CU. YD.	POUND	SQ. YD.	CU. YD.	SQ. FT.	SQ. YD.	LUMP SUM
171+40	108	294	128	10,900	-	-	1,075	99	-
175+50	254	995	281	23,700	375	190	2,755	253	1
176+28	209	3,057	316	25,200	-	-	2,230	207	1

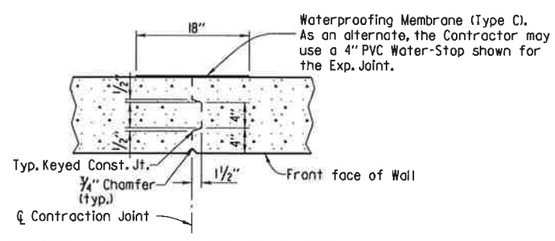
Tabular Data By: TMG Date: 2/15/2017

Checked By: JAC Date: 4/4/17



SECTION VIEW

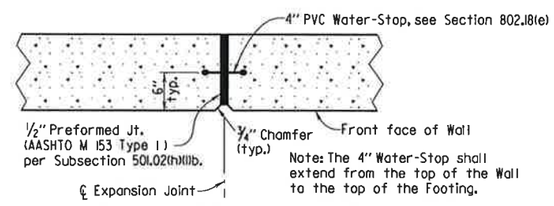
N.T.S.



TYPICAL CONTRACTION JOINT DETAIL

N.T.S.

Note: 20'-0" Max Sp. between Contraction Joints. Horizontal reinforcement shall be continuous through Contraction joints.



TYPICAL EXPANSION JOINT DETAIL

N.T.S.

Note: 60'-0" Max Sp. between Expansion Joints. Terminate horizontal reinforcement 2" from expansion jt.

Notes:

Wall texture shall be applied to the exposed surfaces of wall in accordance with SP Job No. 060432 "Architectural Finish" 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 Job No. 060432 "Architectural Finish".

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 Job No. 060432 "Textured Coating Finish" and in accordance with Subsection 802.19(b)(3).

SHEET 4 OF 5
DETAILS OF REINFORCED CONCRETE RETAINING WALLS
SPECIAL DETAILS

PRINT DATE: 4/6/2017

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.		060432	17	153

(1) SPECIAL DETAILS

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, 2014 Edition, with applicable supplemental specifications and special provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Sixth Edition (2012), with 2013 Interim Specifications.

SEISMIC ZONE: 1

CONCRETE: All concrete shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi. Exposed corners to be chamfered ¾" unless otherwise noted.

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

TEXTURED COATING FINISH: All exposed surfaces of the concrete retaining wall shall be given a Class 3 textured coating finish, as specified in SP Job No. 060432 "Textured Coating Finish," and in accordance with Subsection 802.19(3).

FOOTINGS: Top of footings for retaining walls shall be set 2'-0" below finished ground surface or lower. Foundations for footings shall be prepared in accordance with Section 801.04 concrete footings. Care shall be exercised to avoid shattering of rock faces by excessive blasting.

SELECT GRANULAR BACKFILL: Select granular backfill for retaining wall shall be aggregate base course (Class 4, 5, 6, or 7) or Class SM-1 (Manufactured granite fines will not be allowed) or SM-2.

MISC. ITEMS: Drainage fill material, geotextile fabric, waterstops, preformed joint material, waterproofing membrane, and the drain pipes shall not be paid for directly, but shall be considered subsidiary to other items of the contract.

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

See Sheets 1, 2, 3, and 4 for retaining wall details, elevation views and additional information.

The Engineer shall be notified if changes in footing elevations result in a total wall height greater than the design height, "H", of the design section.

TABLE OF RETAINING WALL VARIABLES

Design Section	(1) "H"	"T"	"B"	"D"	"K"	"W"	"Bar A" Size @ Sp.	"Bar B" Size @ Sp.	"Bar C" Size @ Sp.	"Bar D" Size @ Sp.	"Bar E" Size @ Sp.	Batter "F"
"A"	10'-0"	1'-0"	5'-3"	1'-6"	-	-	#5 @ 18"	#5 @ 18"	#5 @ 18"	-	-	1/4
"B"	15'-6"	1'-6"	9'-4"	1'-9"	-	-	#6 @ 10"	#6 @ 10"	#6 @ 12"	-	-	1/4
"C"	15'-0"	1'-6"	10'-1"	1'-9"	-	-	#6 @ 10"	#6 @ 10"	#7 @ 12"	-	-	1/2
"D"	17'-0"	6'-0"	13'-5"	2'-6"	5'-0"	2'-0"	#6 @ 10"	#6 @ 10"	#5 @ 9"	#5 @ 6"	#6 @ 9"	3/4
"E"	15'-0"	6'-0"	11'-1"	1'-6"	5'-0"	2'-0"	#5 @ 7"	#5 @ 7"	#5 @ 9"	#5 @ 6"	#6 @ 7"	1/2
"F"	12'-0"	6'-0"	9'-9"	1'-6"	4'-0"	2'-0"	#5 @ 10"	#5 @ 10"	#5 @ 18"	#5 @ 6"	#5 @ 7"	1/4

(1) Design height of the Section. Actual heights may vary in the field.

(2) Additional concrete required for architectural finish. See SP Job No. 060432 "Architectural Finish"

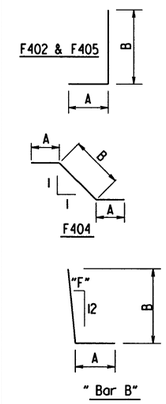
STATE OF ARKANSAS
Charles R. Ellis
REGISTERED PROFESSIONAL ENGINEER
No. 9235
3-2-17
CHARLES R. ELLIS

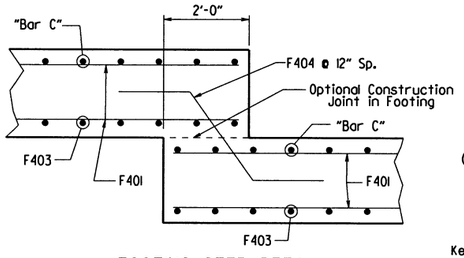
BAR LIST

MARK	LENGTH	A	B	P.D.
W401	("H"-"D"-3")			Str.
W402	AS REQUIRED			Str.
F401	AS REQUIRED			Str.
F402	3'-10"	8"	3'-3"	3"
F403	("B"- 6")			Str.
F404	5'-9"	1'-6"	2'-9"	3"
F405	"K" + 12"			Str.
F406	AS REQUIRED			Str.
D401	2'-6"			Str.
D601	5'-6"			Str.
"Bar A"	("H"-"D"-3")			Str.
"Bar B"	5'-0"	12"	4'-1"	3"
"Bar C"	("B"- 6")			Str.
"Bar D"	("K"+ "D" + 1'-9")			Str.
"Bar E"	("B" - 6")			Str.

BENDING DIAGRAMS

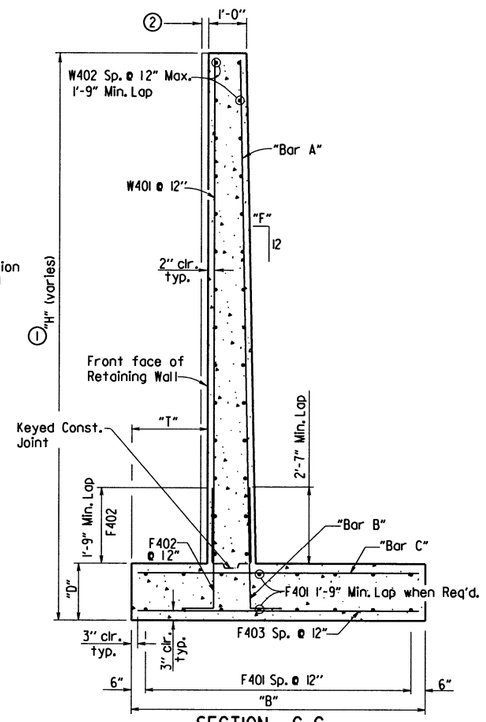
Dimensions are out to out of bars.





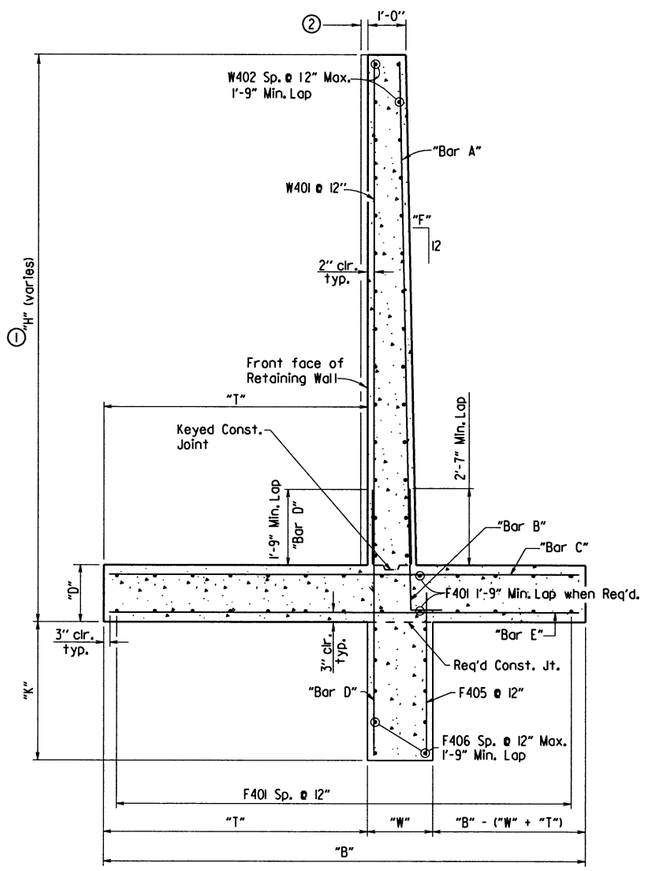
FOOTING STEP DETAIL

N.T.S.



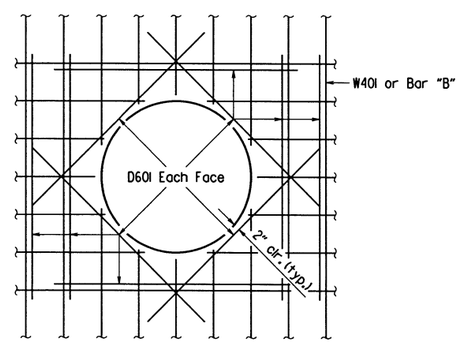
SECTION G-G

N.T.S



SECTION F-F

N.T.S



STA. 172+04 18" R.C. PIPE PROTRUSION DETAIL

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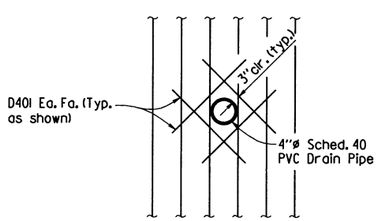


TYPICAL DRAIN PIPE REINFORCING DETAIL

N.T.S

SHEET 5 OF 5
DETAILS OF REINFORCED CONCRETE RETAINING WALLS
SPECIAL DETAILS

PRINT DATE: 3/2/2017

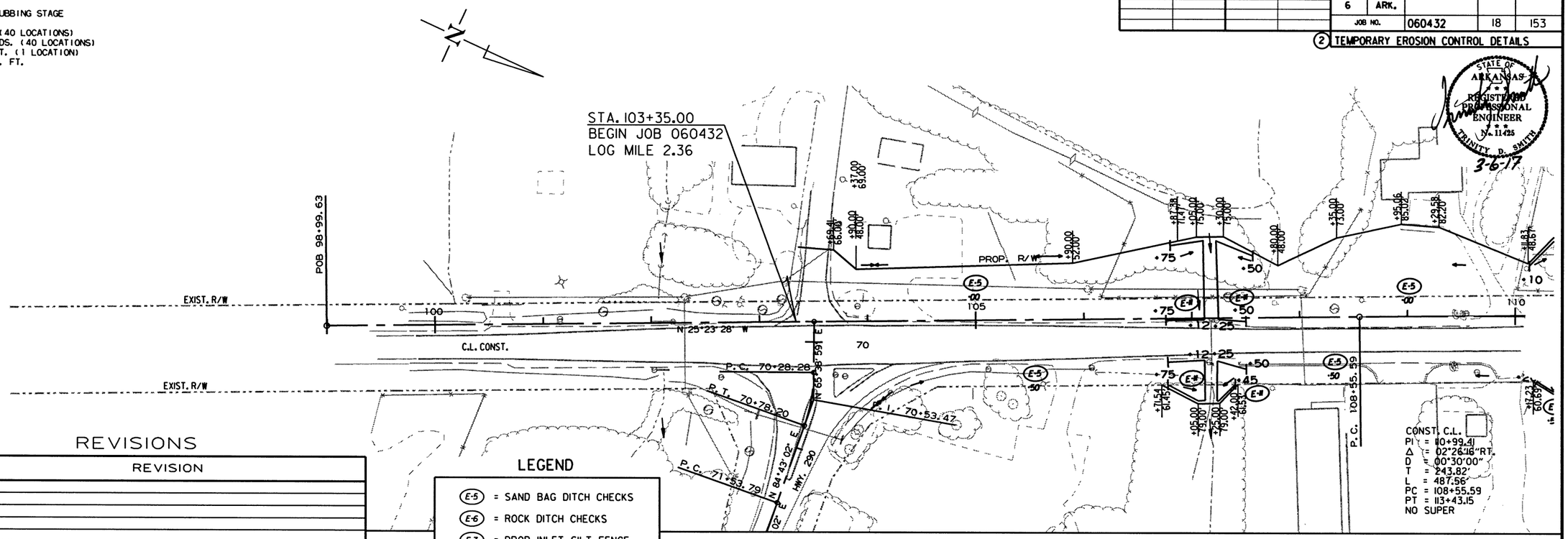
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	18	153

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-6-17

CLEARING AND GRUBBING STAGE

E-5 = 880 BAGS (40 LOCATIONS)
E-6 = 120 CU. YDS. (40 LOCATIONS)
E-7 = 25 LIN. FT. (1 LOCATION)
E-11 = 4535 LIN. FT.

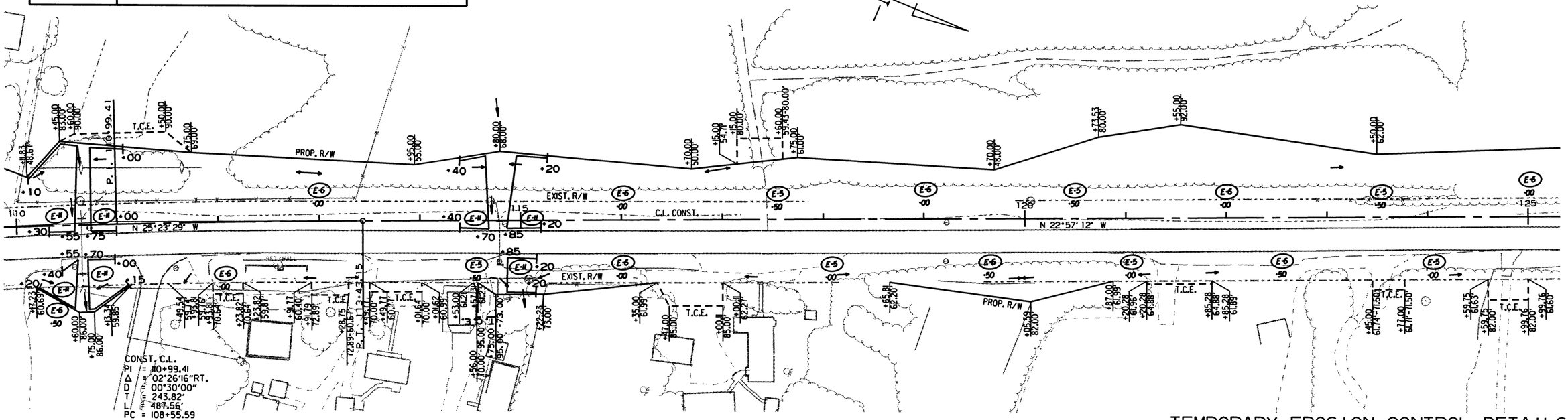


REVISIONS

DATE OF REVISION	REVISION

LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE



TEMPORARY EROSION CONTROL DETAILS
CLEARING AND GRUBBING STAGE

2/13/2017

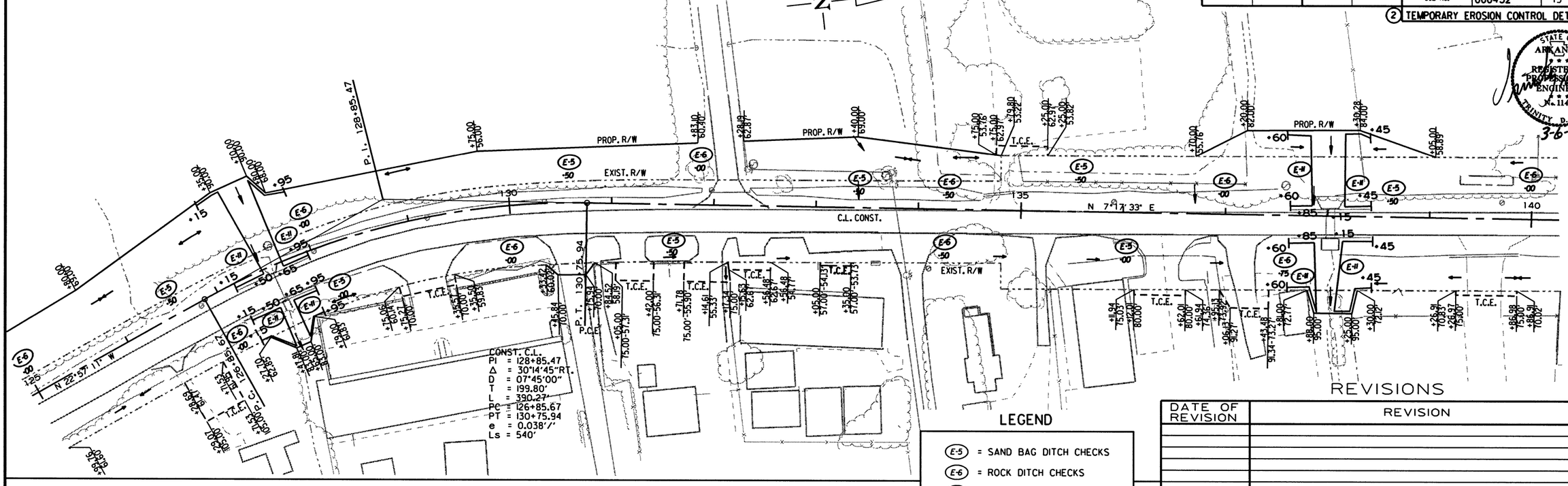
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		060432	19	153

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-6-17

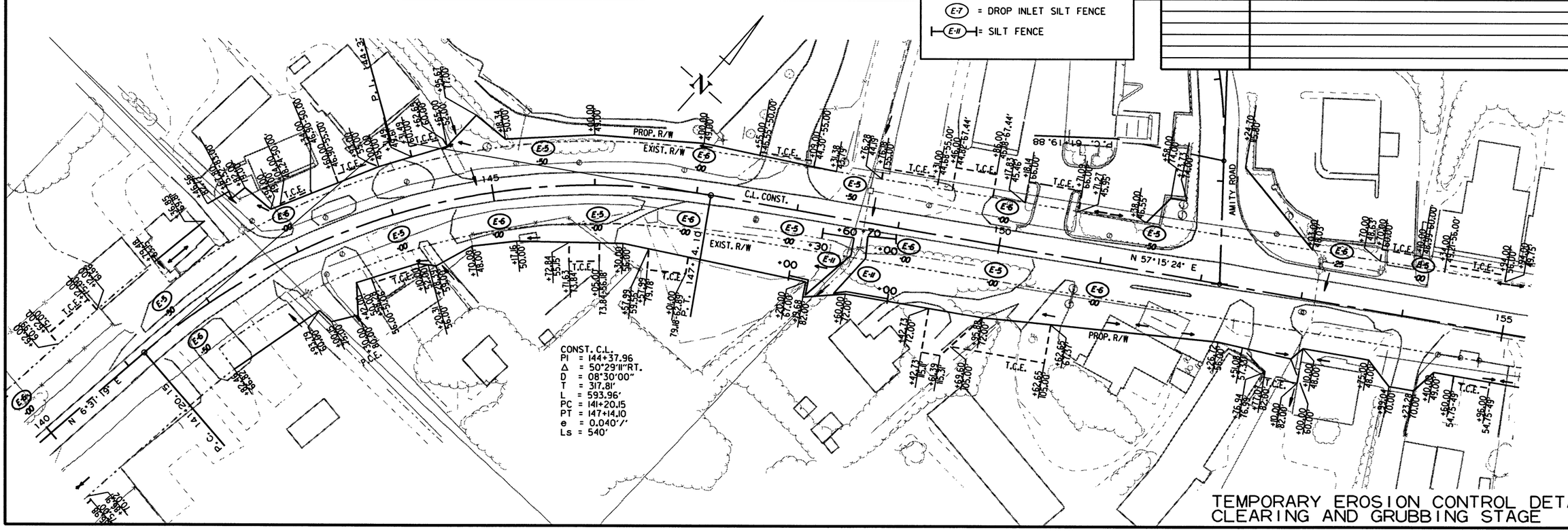


LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

REVISIONS

DATE OF REVISION	REVISION



TEMPORARY EROSION CONTROL DETAILS
CLEARING AND GRUBBING STAGE

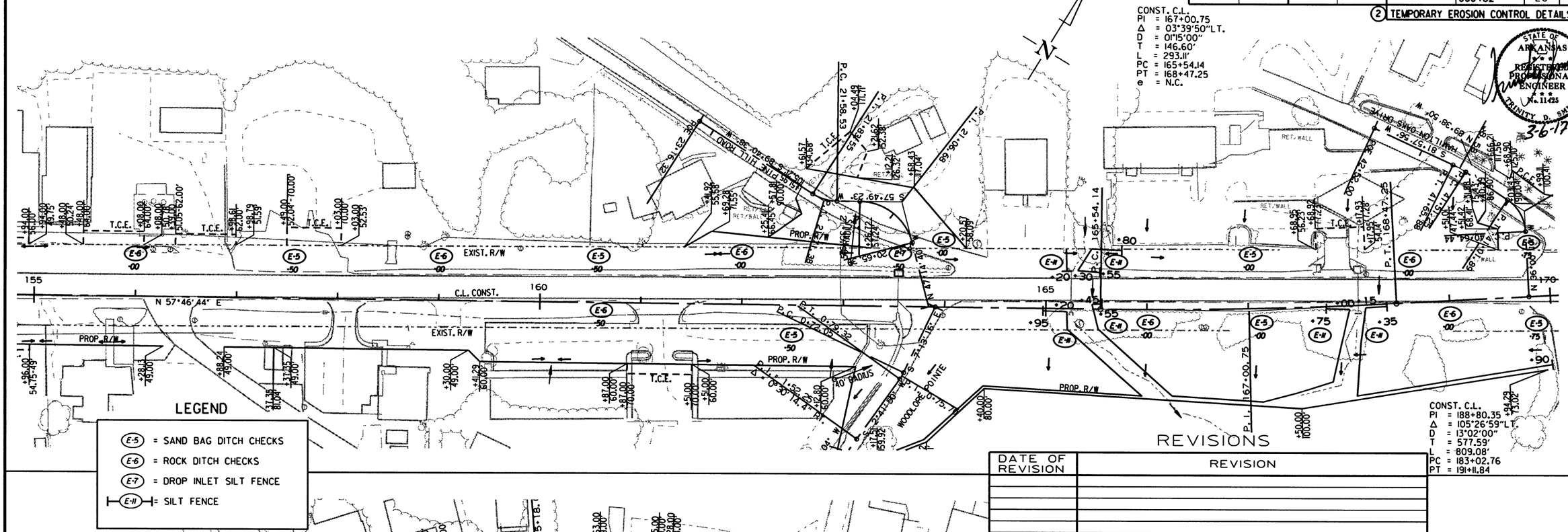
2/13/2017

R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	20	153

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-6-17



LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE

CONST. C.L.
PI = 175+18.05
Δ = 40°19'24" RT.
D = 06°15'00"
T = 336.59'
L = 645.17'
PC = 171+81.46
PT = 178+26.63
e = 0.038'/'
Ls = 540'

REVISIONS

DATE OF REVISION	REVISION

TEMPORARY EROSION CONTROL DETAILS
CLEARING AND GRUBBING STAGE

2/13/2017

R060432.DGN

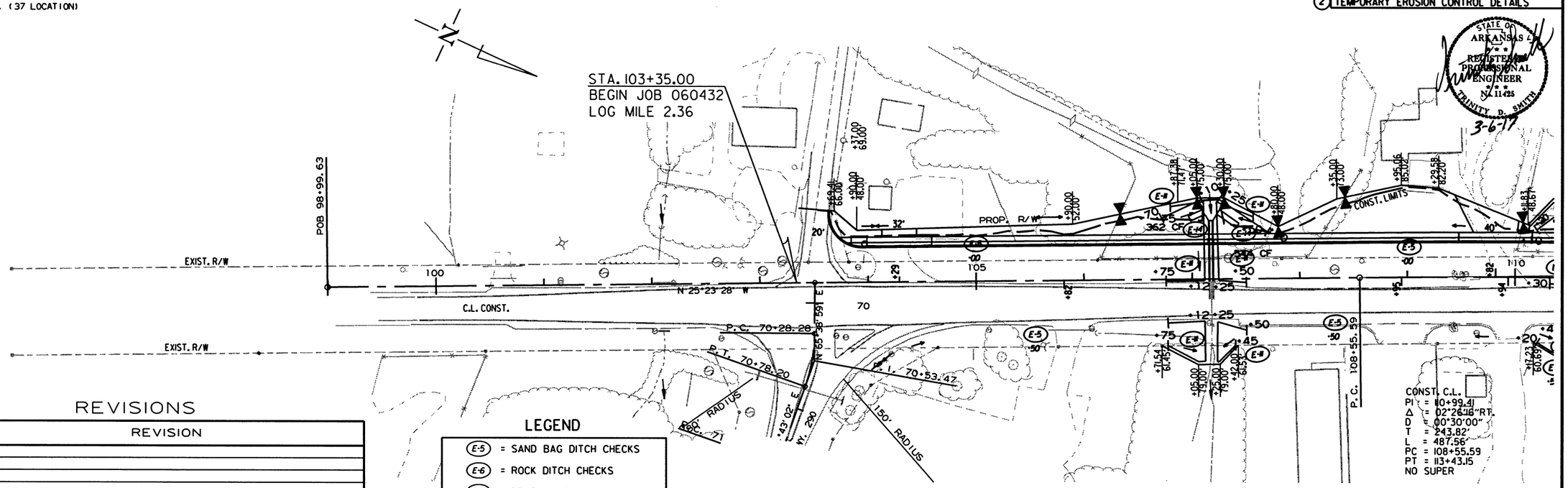
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	21	153

(2) TEMPORARY EROSION CONTROL DETAILS

STAGE 1

E-7 = 925 LIN. FT. (37 LOCATION)
E-11 = 760 LIN. FT.
E-14 = 334 CU. YDS.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER N. 11425 TRINITY D. SMITH 3-6-17

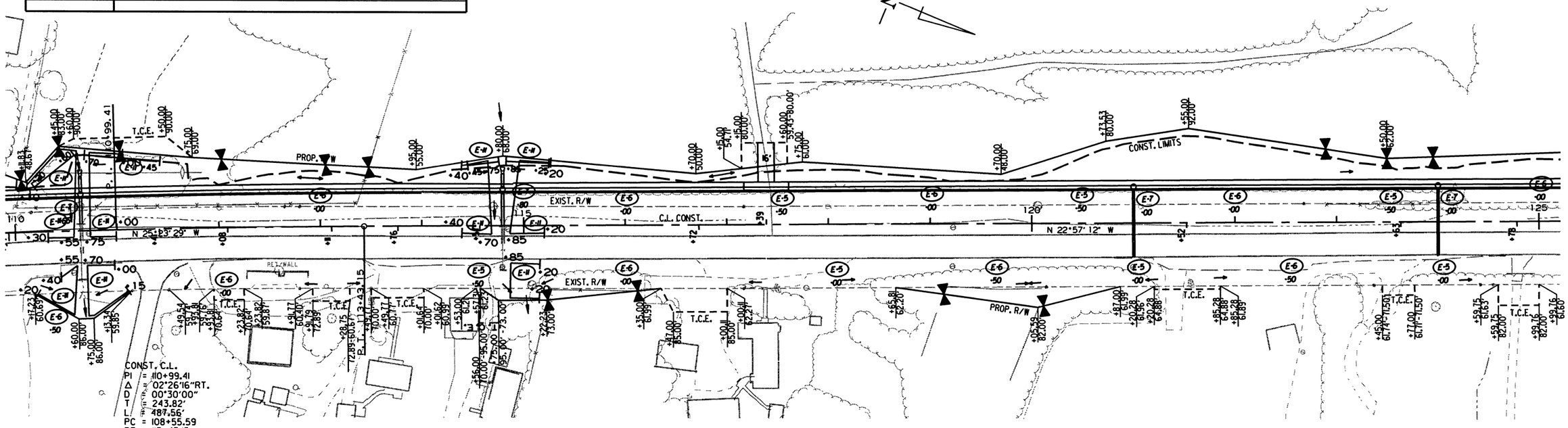


REVISIONS

DATE OF REVISION	REVISION

LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- (E-14) XX CU FT = SEDIMENT BASIN



TEMPORARY EROSION CONTROL DETAILS - STAGE 1

2/13/2017

R060432.DGN

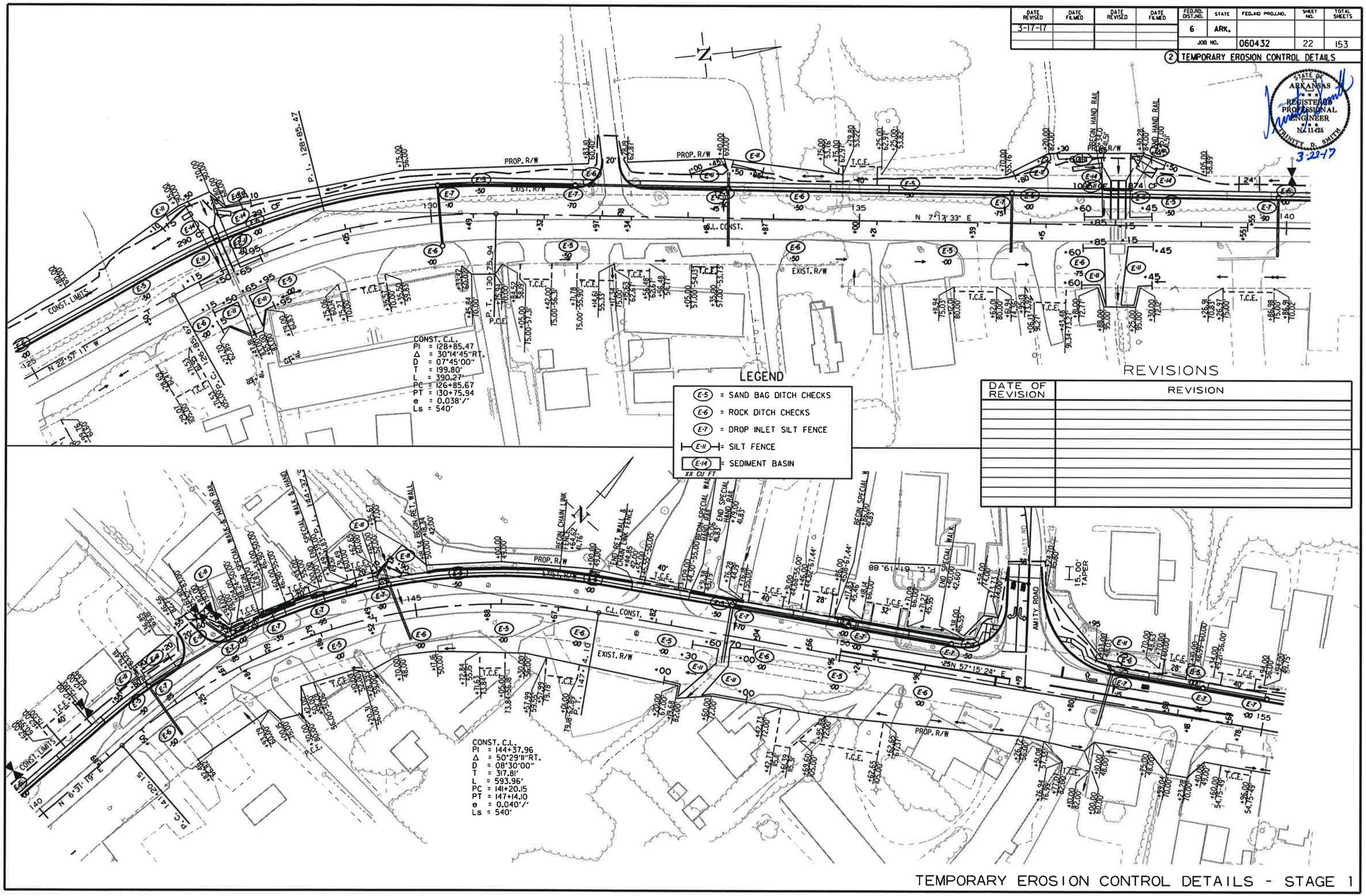
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
3-17-17			

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		060432	22	153

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER NO. 11425 TRINITY D. SMITH

3-22-17



REVISIONS

DATE OF REVISION	REVISION

2/13/2017

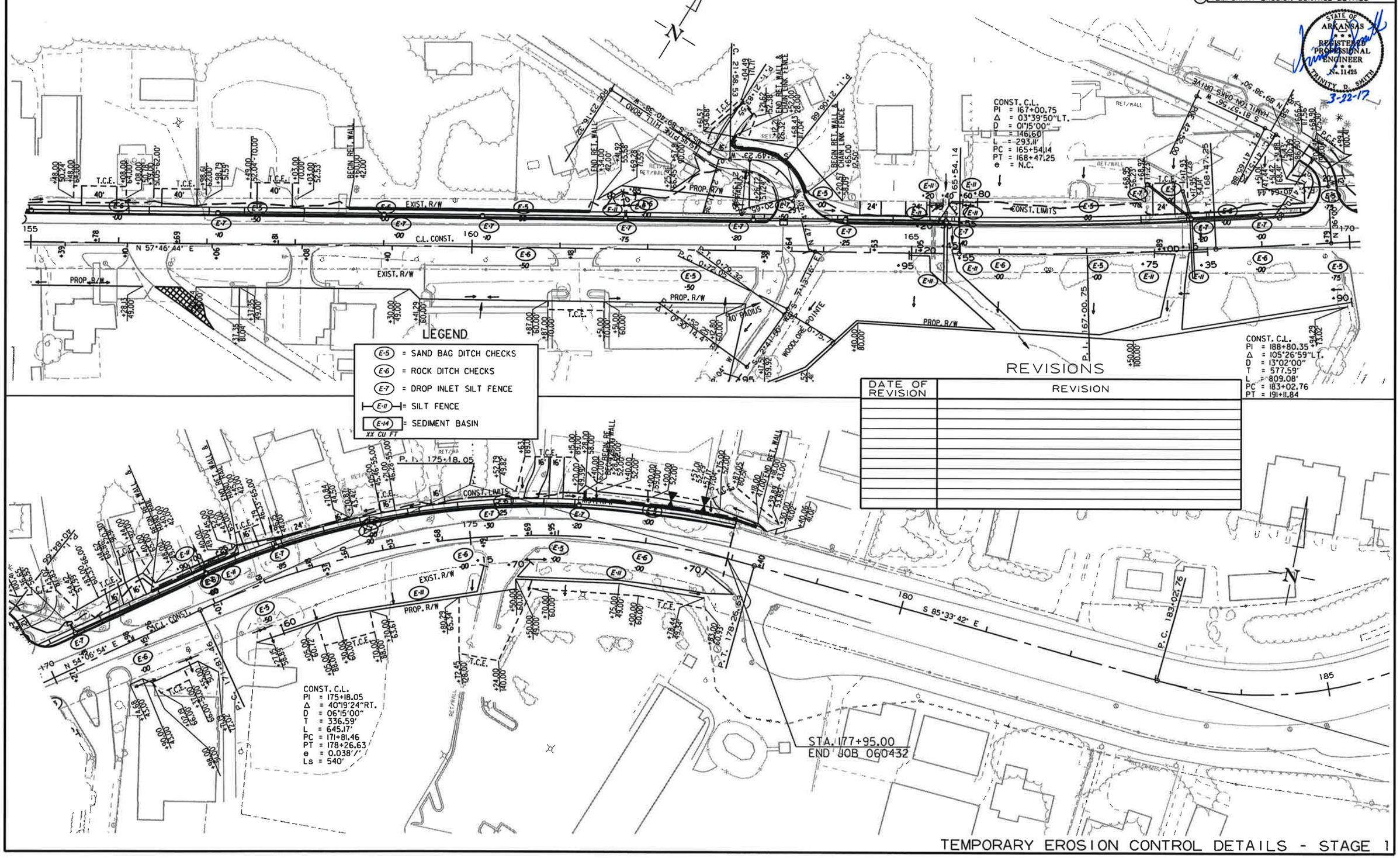
R060432.DGN

TEMPORARY EROSION CONTROL DETAILS - STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	23	153

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-22-17



LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- (E-14) = SEDIMENT BASIN (XX CU FT)

REVISIONS

DATE OF REVISION	REVISION

TEMPORARY EROSION CONTROL DETAILS - STAGE 1

2/13/2017

R060432.DGN

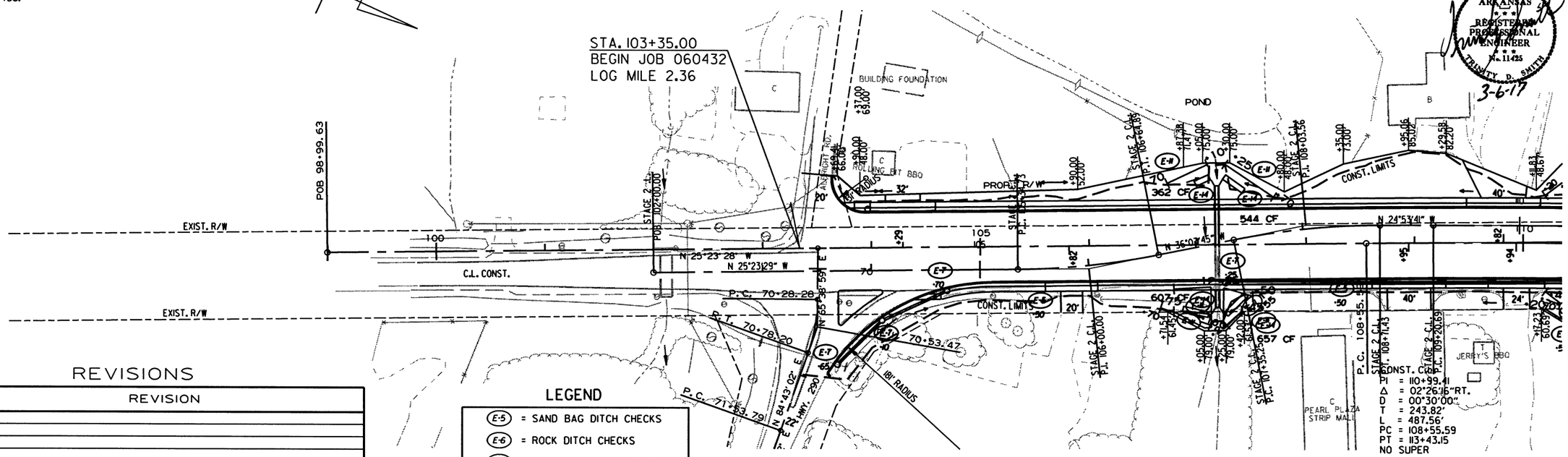
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	24	153

(2) TEMPORARY EROSION CONTROL DETAILS

STAGE 2

E-7 = 1025 LIN. FT. (41 LOCATION)
E-11 = 815 LIN. FT.
E-14 = 213 CU. YDS.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-6-17

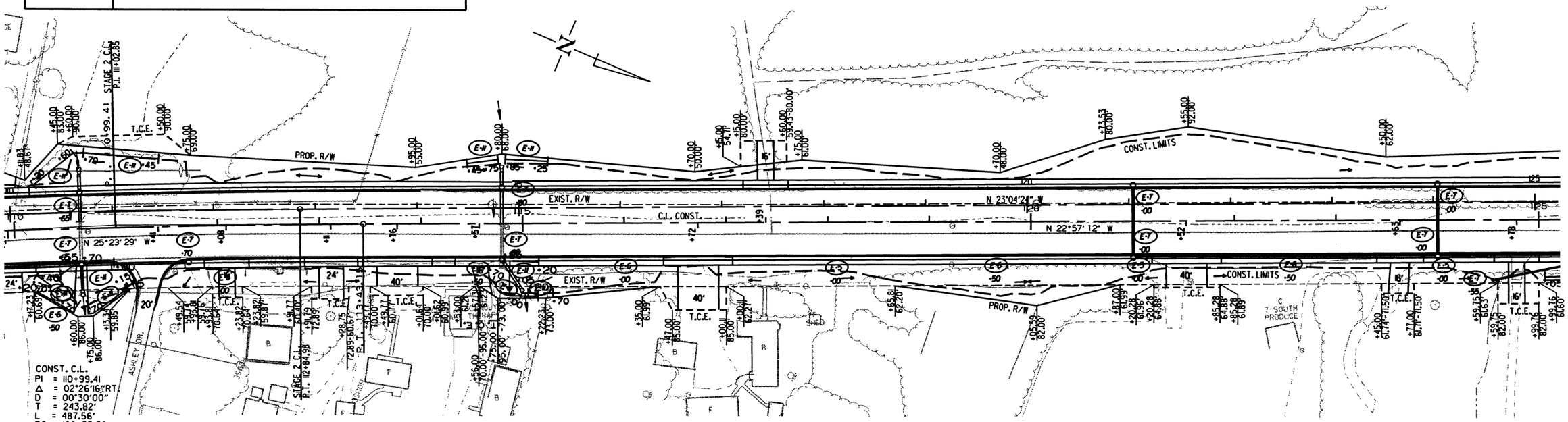


REVISIONS

DATE OF REVISION	REVISION

LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- (E-14) = SEDIMENT BASIN (XX CU FT)



TEMPORARY EROSION CONTROL DETAILS - STAGE 2

2/13/2017

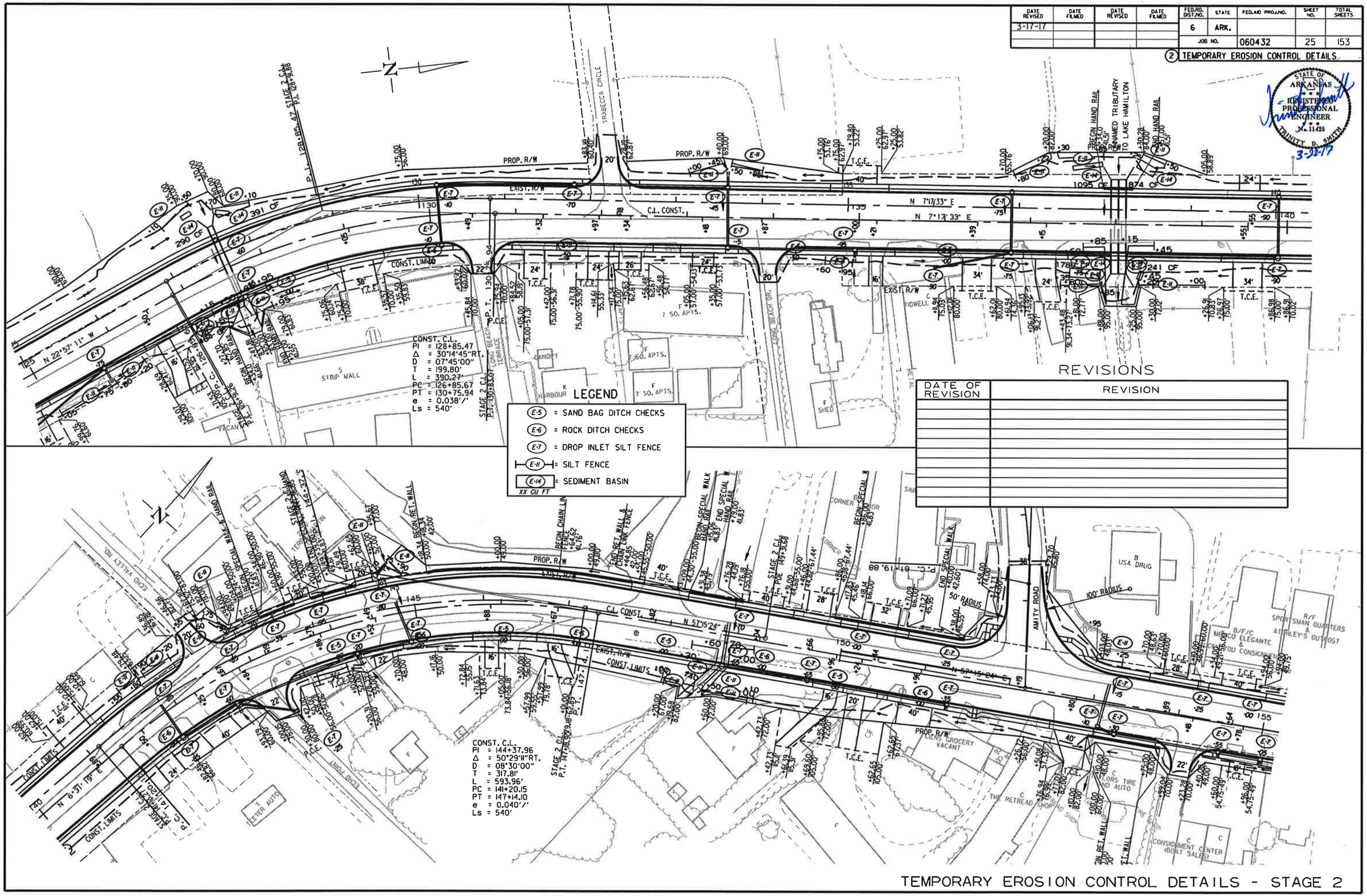
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
3-17-17			

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		060432	25	153

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-22-17



REVISIONS

DATE OF REVISION	REVISION

TEMPORARY EROSION CONTROL DETAILS - STAGE 2

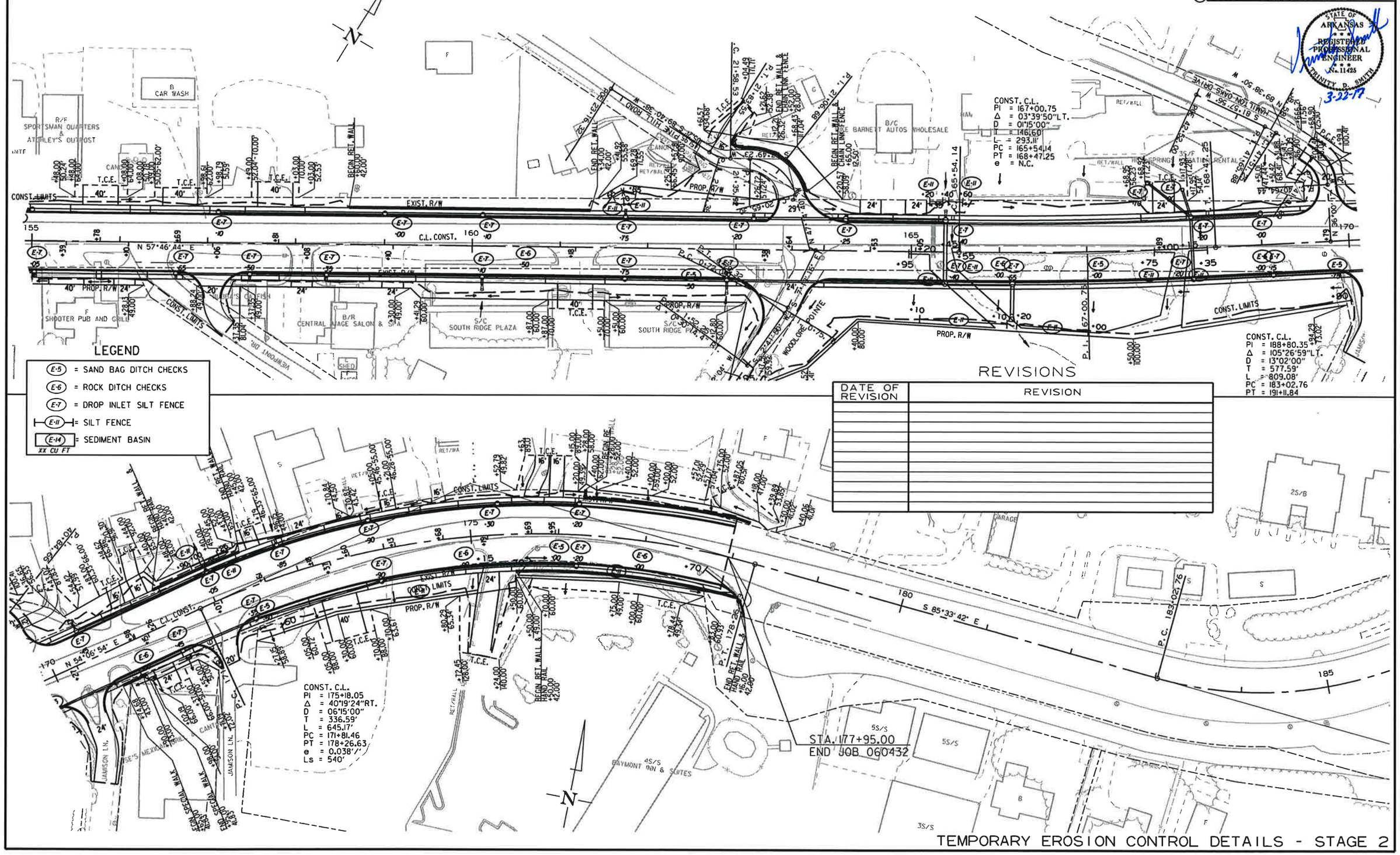
2/13/2017

R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	26	153

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-22-17



LEGEND

- (E-5) = SAND BAG DITCH CHECKS
- (E-6) = ROCK DITCH CHECKS
- (E-7) = DROP INLET SILT FENCE
- (E-11) = SILT FENCE
- (E-14) XX CU FT = SEDIMENT BASIN

REVISIONS

DATE OF REVISION	REVISION

TEMPORARY EROSION CONTROL DETAILS - STAGE 2

2/13/2017

R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	27	153

(2) MAINTENANCE OF TRAFFIC

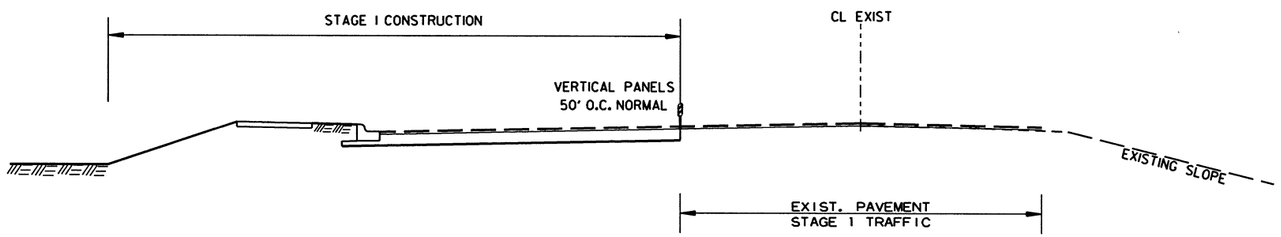
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-6-17

SEQUENCE OF CONSTRUCTION

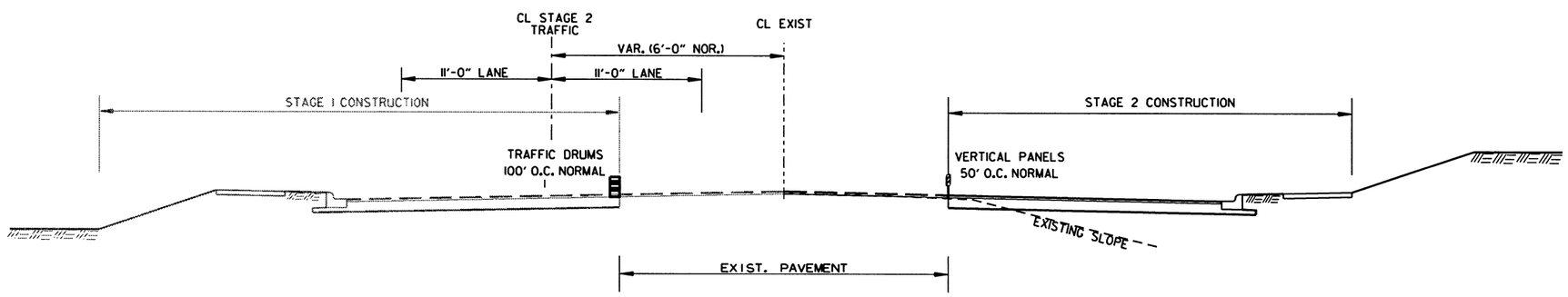
STAGE 1:
MAINTAIN TRAFFIC ON EXISTING CENTERLINE.
PLACE LEVELING COURSE AND CONSTRUCTION
PAVEMENT MARKINGS AS DIRECTED BY THE ENGINEER.
NOTCH AND WIDEN LT. OF EXISTING LANES.

STAGE 2:
SHIFT TRAFFIC TO STAGE 2 CENTERLINE.
NOTCH AND WIDEN RT. OF EXISTING LANES.

STAGE 3:
SHIFT TRAFFIC TO CONSTRUCTION CENTERLINE.
COLD MILL TRANSITION AREAS.
PLACE FINAL LAYER OF ACHM SURFACE COURSE.
INSTALL PERMANENT PAVEMENT MARKINGS.



STAGE 1 TRAFFIC



STAGE 2 TRAFFIC

MAINTENANCE OF TRAFFIC

R060432.DGN 2/23/2017

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	28	153

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
3-6-17

SEQUENCE OF CONSTRUCTION

STAGE 1:
MAINTAIN TRAFFIC ON EXISTING CENTERLINE.
PLACE LEVELING COURSE AND CONSTRUCTION PAVEMENT MARKINGS AS DIRECTED BY THE ENGINEER.
NOTCH AND WIDEN LT. OF EXISTING LANES.

STAGE 2:
SHIFT TRAFFIC TO STAGE 2 CENTERLINE.
NOTCH AND WIDEN RT. OF EXISTING LANES.

STAGE 3:
SHIFT TRAFFIC TO CONSTRUCTION CENTERLINE.
COLD MILL TRANSITION AREAS.
PLACE FINAL LAYER OF ACHM SURFACE COURSE.
INSTALL PERMANENT PAVEMENT MARKINGS.

QUANTITIES

STAGE 1:
SIGNS = 797.0 SQ. FT.

TRAFFIC DRUMS = 176 EACH (10' O.C.)
VERTICAL PANELS = 149 EACH (50' O.C.)

FURNISHING & INSTALLING PRECAST CONCRETE BARRIER WITH S.E.U. = 678 LIN. FT.

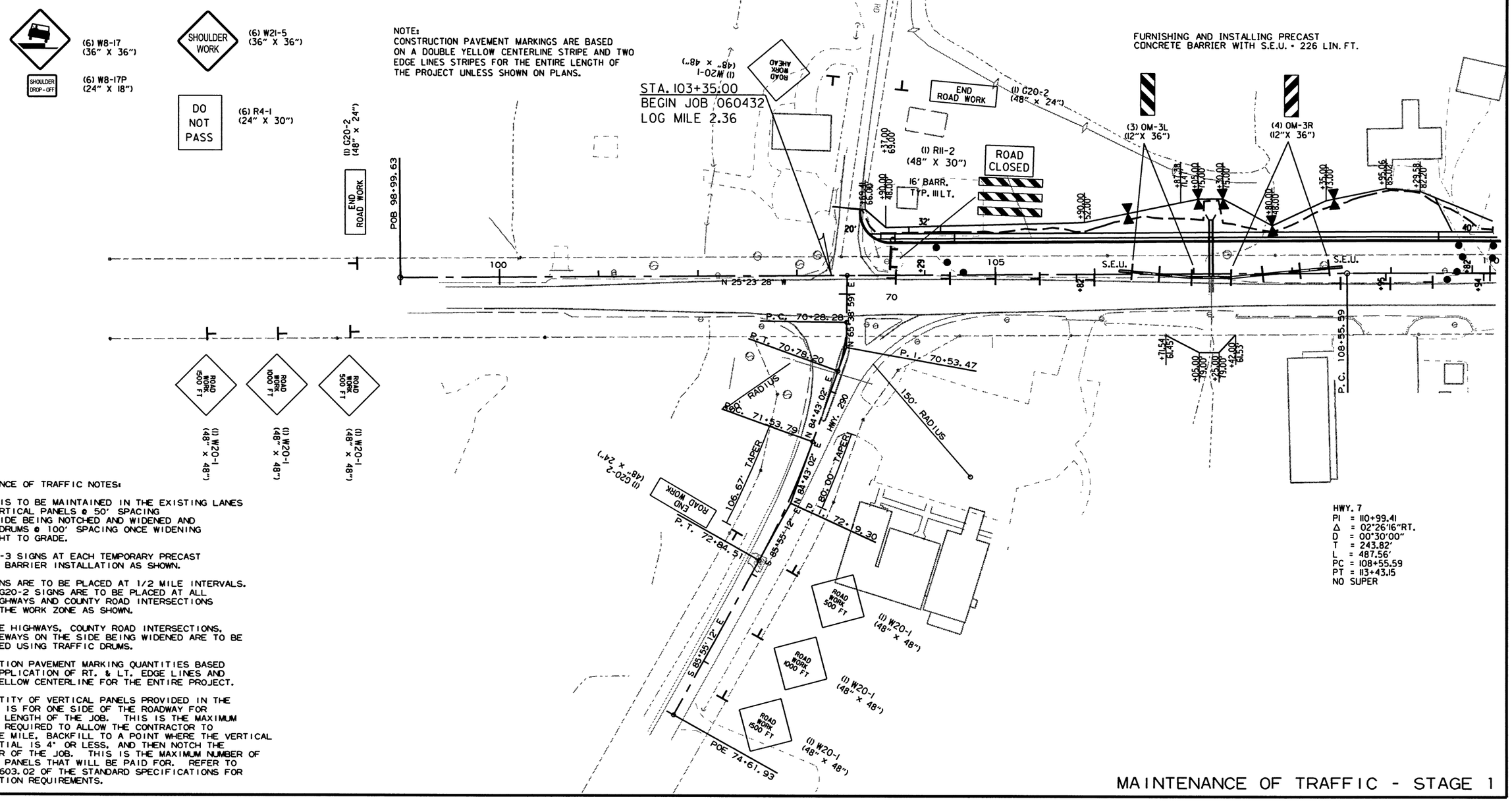
CONSTRUCTION PAVEMENT MARKINGS

STA. 103+35 TO STA. 150+00 AND STA. 154+65 TO STA. 177+95
6" WHITE = 13990 LIN. FT.
6" YELLOW = 13990 LIN. FT.

STA. 150+00 TO STA. 154+65
6" WHITE = 897 LIN. FT.
6" YELLOW = 1130 LIN. FT.
12" WHITE (STOP LINE) = 52 LIN. FT.
WORD = 3 EACH
ARROWS = 6 EACH

BARRICADES (TYPE III)
LT. = 2 EACH
RT. = 3 EACH

NOTE:
CONSTRUCTION PAVEMENT MARKINGS ARE BASED ON A DOUBLE YELLOW CENTERLINE STRIPE AND TWO EDGE LINES STRIPES FOR THE ENTIRE LENGTH OF THE PROJECT UNLESS SHOWN ON PLANS.



MAINTENANCE OF TRAFFIC NOTES:

TRAFFIC IS TO BE MAINTAINED IN THE EXISTING LANES USING VERTICAL PANELS @ 50' SPACING ON THE SIDE BEING NOTCHED AND WIDENED AND TRAFFIC DRUMS @ 100' SPACING ONCE WIDENING IS BROUGHT TO GRADE.

PLACE OM-3 SIGNS AT EACH TEMPORARY PRECAST CONCRETE BARRIER INSTALLATION AS SHOWN.

R4-1 SIGNS ARE TO BE PLACED AT 1/2 MILE INTERVALS. W20-1 & G20-2 SIGNS ARE TO BE PLACED AT ALL STATE HIGHWAYS AND COUNTY ROAD INTERSECTIONS THROUGH THE WORK ZONE AS SHOWN.

ALL STATE HIGHWAYS, COUNTY ROAD INTERSECTIONS, AND DRIVEWAYS ON THE SIDE BEING WIDENED ARE TO BE DELINEATED USING TRAFFIC DRUMS.

CONSTRUCTION PAVEMENT MARKING QUANTITIES BASED ON ONE APPLICATION OF RT. & LT. EDGE LINES AND DOUBLE YELLOW CENTERLINE FOR THE ENTIRE PROJECT.

THE QUANTITY OF VERTICAL PANELS PROVIDED IN THE CONTRACT IS FOR ONE SIDE OF THE ROADWAY FOR THE FULL LENGTH OF THE JOB. THIS IS THE MAXIMUM QUANTITY REQUIRED TO ALLOW THE CONTRACTOR TO NOTCH ONE MILE, BACKFILL TO A POINT WHERE THE VERTICAL DIFFERENTIAL IS 4" OR LESS, AND THEN NOTCH THE REMAINDER OF THE JOB. THIS IS THE MAXIMUM NUMBER OF VERTICAL PANELS THAT WILL BE PAID FOR. REFER TO SECTION 603.02 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.

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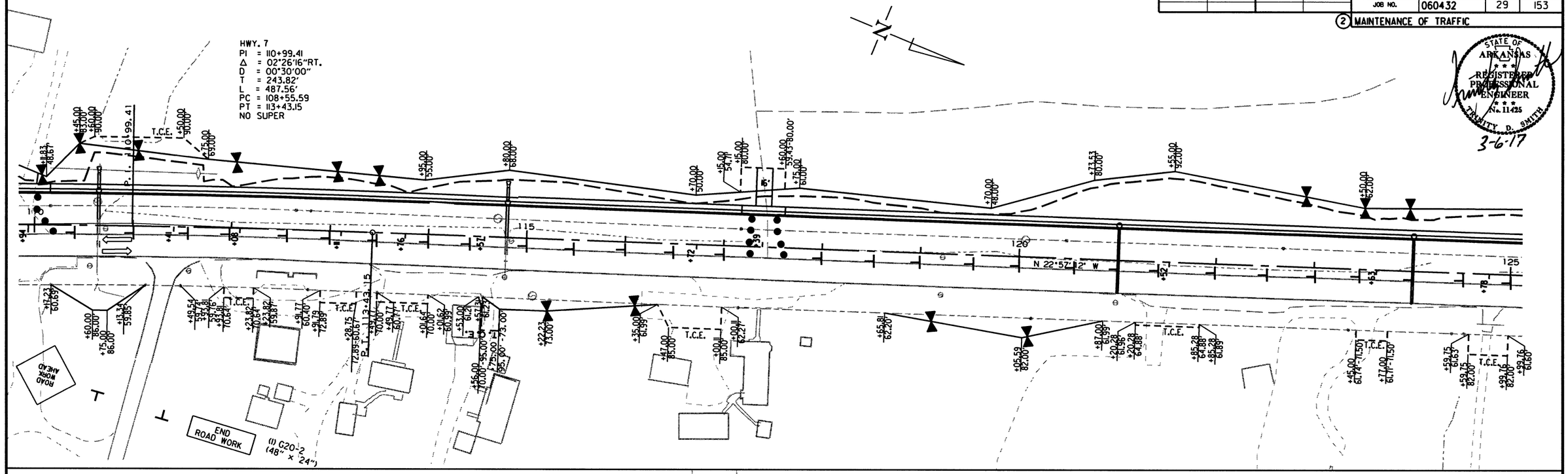
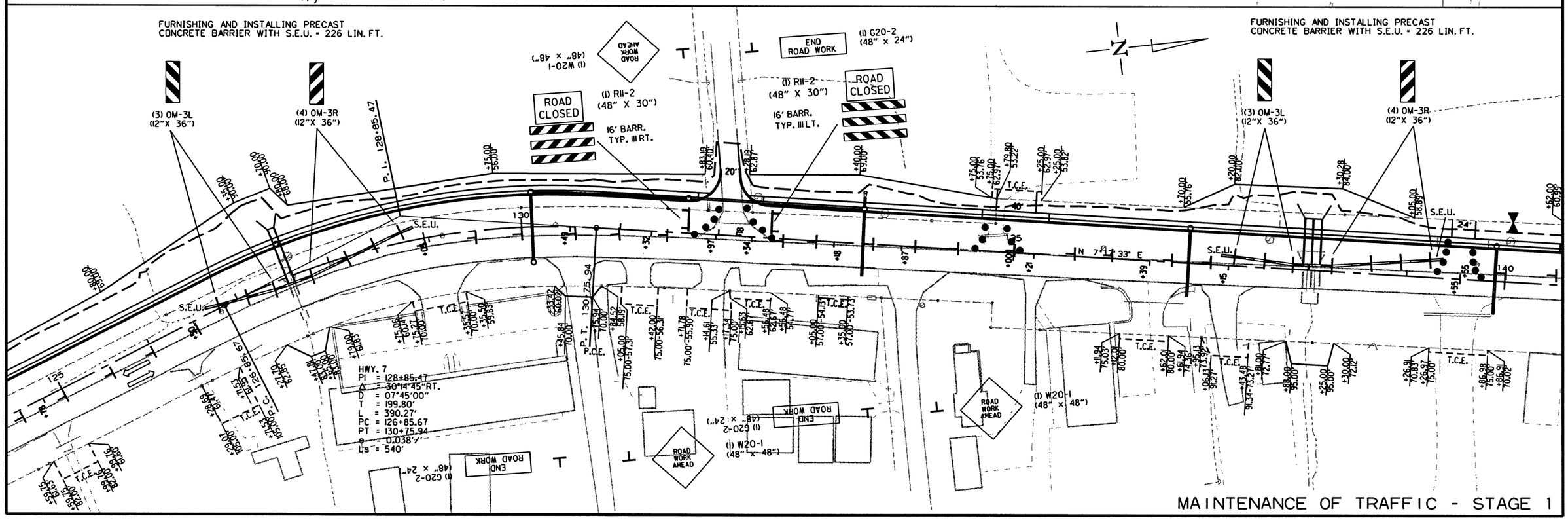
MAINTENANCE OF TRAFFIC - STAGE 1

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	29	153

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TIMOTHY D. SMITH
3-6-17





MAINTENANCE OF TRAFFIC - STAGE 1

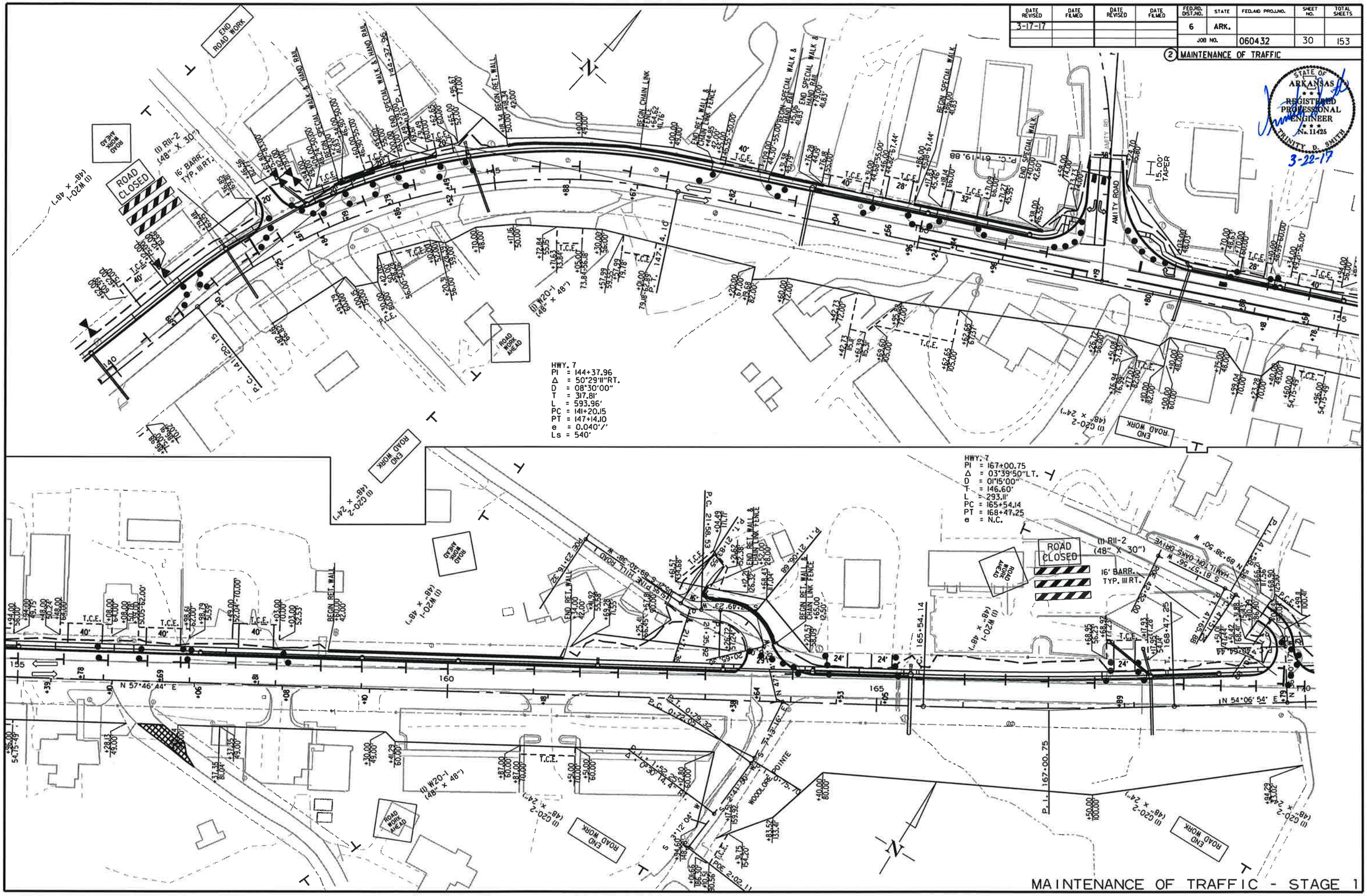
2/23/2017

R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	30	153

2 MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-22-17



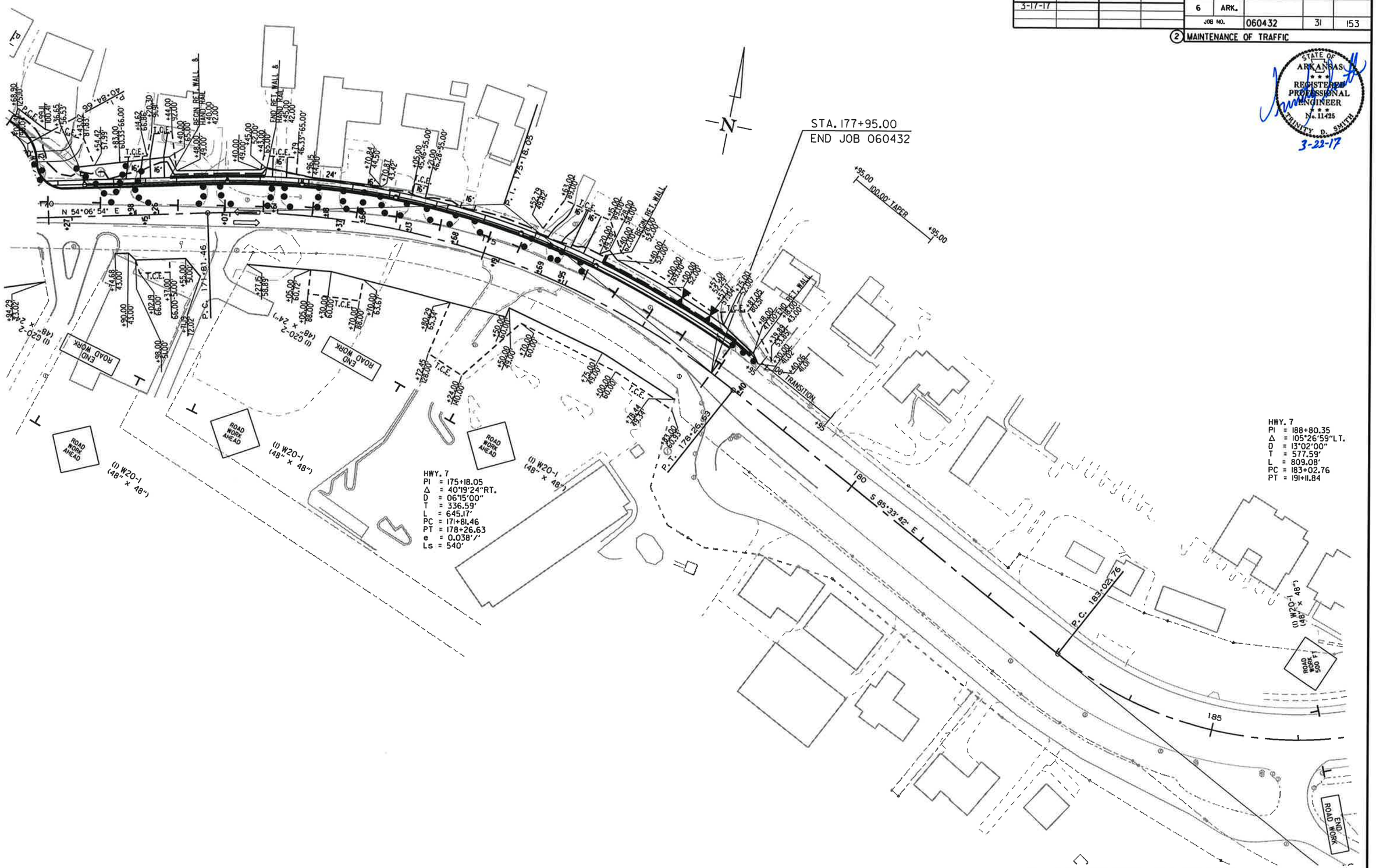
2/23/2017

R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	31	153

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-22-17



MAINTENANCE OF TRAFFIC - STAGE 1

2/23/2017

R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	32	153

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
TRINITY D. SMITH
REGISTERED PROFESSIONAL ENGINEER
No. 11425
3-6-17

SEQUENCE OF CONSTRUCTION

STAGE 1:
MAINTAIN TRAFFIC ON EXISTING CENTERLINE.
PLACE LEVELING COURSE AND CONSTRUCTION PAVEMENT MARKINGS AS DIRECTED BY THE ENGINEER.
NOTCH AND WIDEN LT. OF EXISTING LANES.

STAGE 2:
SHIFT TRAFFIC TO STAGE 2 CENTERLINE.
NOTCH AND WIDEN RT. OF EXISTING LANES.

STAGE 3:
SHIFT TRAFFIC TO CONSTRUCTION CENTERLINE.
COLD MILL TRANSITION AREAS.
PLACE FINAL LAYER OF ACHM SURFACE COURSE.
INSTALL PERMANENT PAVEMENT MARKINGS.

QUANTITIES

STAGE 1:
SIGNS = 927.0 SQ. FT.

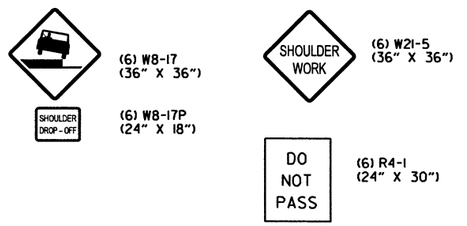
TRAFFIC DRUMS = 178 EACH (10' O.C.) TRAFFIC DRUMS = 39 EACH (50' O.C.)
TRAFFIC DRUMS = 18 EACH (100' O.C.)
VERTICAL PANELS = 149 EACH (50' O.C.)

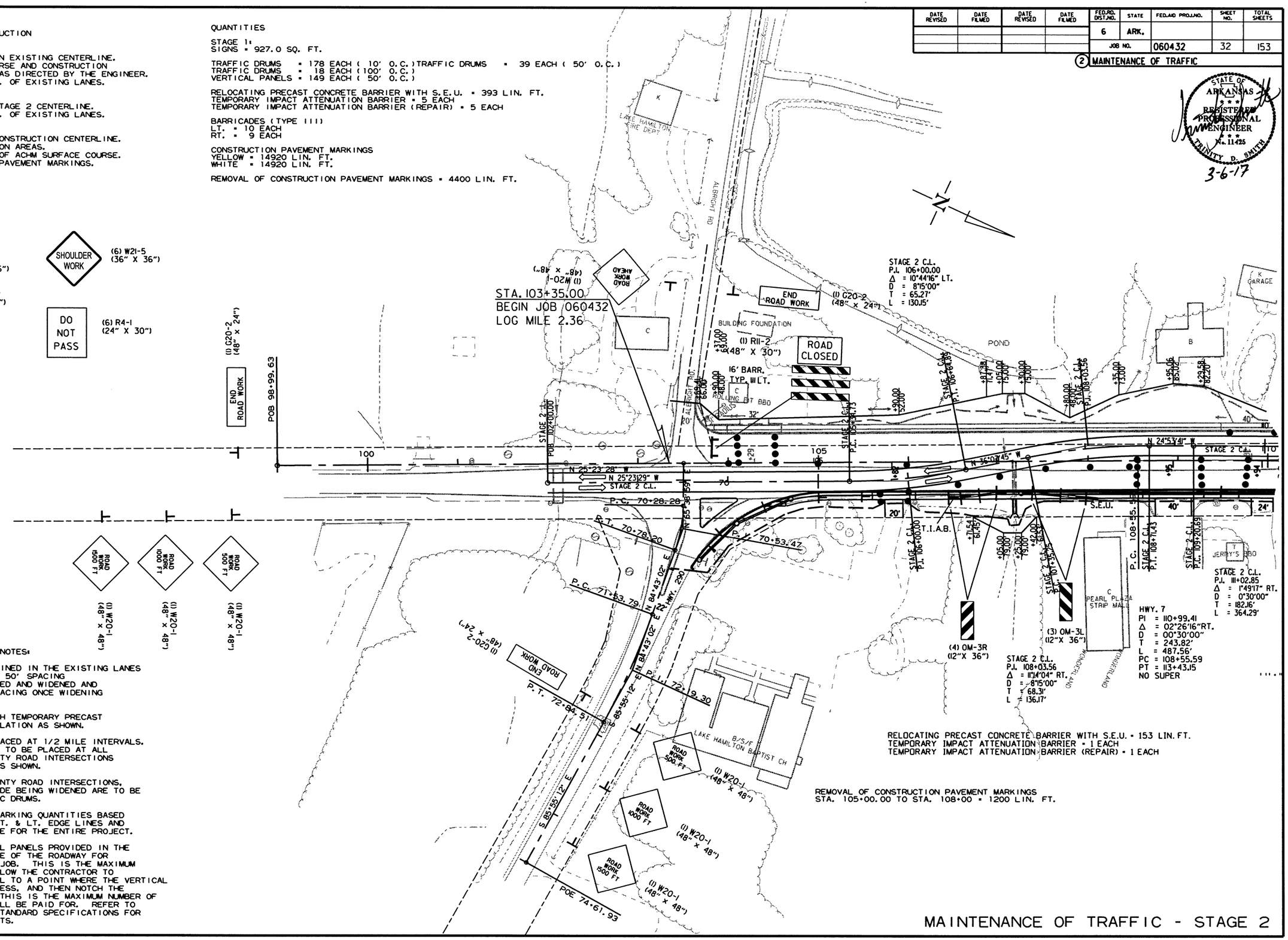
RELOCATING PRECAST CONCRETE BARRIER WITH S.E.U. = 393 LIN. FT.
TEMPORARY IMPACT ATTENUATION BARRIER = 5 EACH
TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR) = 5 EACH

BARRICADES (TYPE III)
LT. = 10 EACH
RT. = 9 EACH

CONSTRUCTION PAVEMENT MARKINGS
YELLOW = 14920 LIN. FT.
WHITE = 14920 LIN. FT.

REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS = 4400 LIN. FT.





RELOCATING PRECAST CONCRETE BARRIER WITH S.E.U. = 153 LIN. FT.
TEMPORARY IMPACT ATTENUATION BARRIER = 1 EACH
TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR) = 1 EACH

REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS
STA. 105+00.00 TO STA. 108+00 = 1200 LIN. FT.

MAINTENANCE OF TRAFFIC NOTES:

TRAFFIC IS TO BE MAINTAINED IN THE EXISTING LANES USING VERTICAL PANELS @ 50' SPACING ON THE SIDE BEING NOTCHED AND WIDENED AND TRAFFIC DRUMS @ 100' SPACING ONCE WIDENING IS BROUGHT TO GRADE.

PLACE OM-3 SIGNS AT EACH TEMPORARY PRECAST CONCRETE BARRIER INSTALLATION AS SHOWN.

R4-1 SIGNS ARE TO BE PLACED AT 1/2 MILE INTERVALS. W20-1 & G20-2 SIGNS ARE TO BE PLACED AT ALL STATE HIGHWAYS AND COUNTY ROAD INTERSECTIONS THROUGH THE WORK ZONE AS SHOWN.

ALL STATE HIGHWAYS, COUNTY ROAD INTERSECTIONS, AND DRIVEWAYS ON THE SIDE BEING WIDENED ARE TO BE DELINEATED USING TRAFFIC DRUMS.

CONSTRUCTION PAVEMENT MARKING QUANTITIES BASED ON ONE APPLICATION OF RT. & LT. EDGE LINES AND DOUBLE YELLOW CENTERLINE FOR THE ENTIRE PROJECT.

THE QUANTITY OF VERTICAL PANELS PROVIDED IN THE CONTRACT IS FOR ONE SIDE OF THE ROADWAY FOR THE FULL LENGTH OF THE JOB. THIS IS THE MAXIMUM QUANTITY REQUIRED TO ALLOW THE CONTRACTOR TO NOTCH ONE MILE, BACKFILL TO A POINT WHERE THE VERTICAL DIFFERENTIAL IS 4" OR LESS, AND THEN NOTCH THE REMAINDER OF THE JOB. THIS IS THE MAXIMUM NUMBER OF VERTICAL PANELS THAT WILL BE PAID FOR. REFER TO SECTION 603.02 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.

2/23/2017

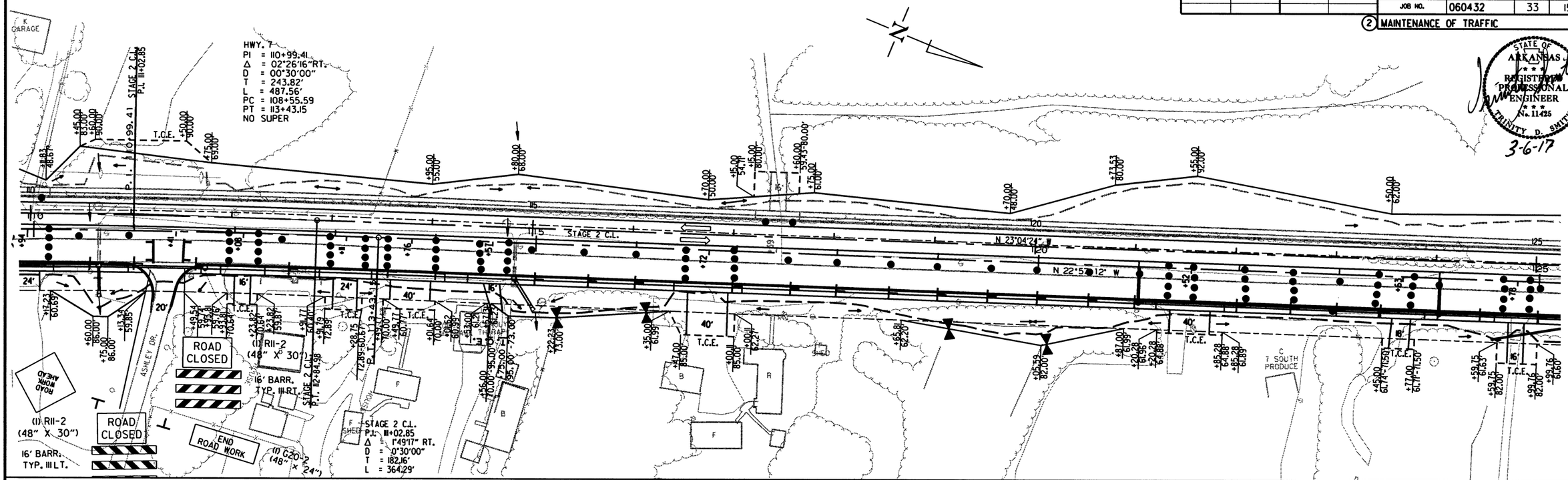
R060432.DGN

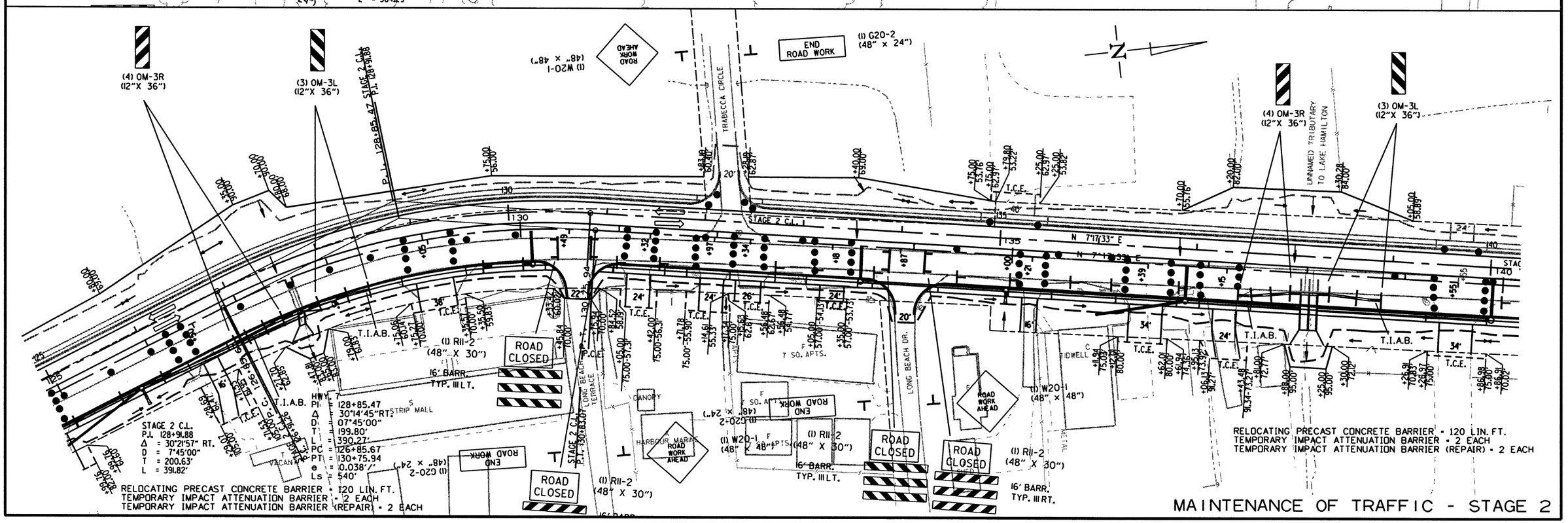
MAINTENANCE OF TRAFFIC - STAGE 2

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	33	153

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-6-17





2/23/2017

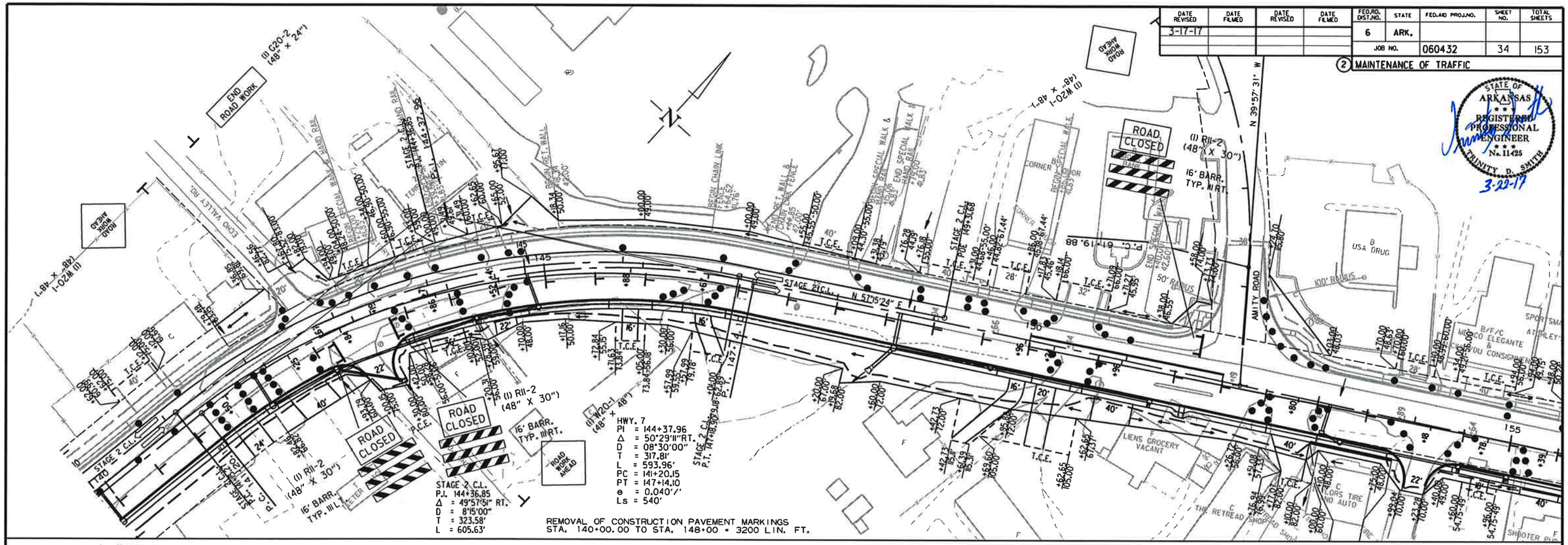
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED
3-17-17			

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		060432	34	153

2 MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-22-17



MAINTENANCE OF TRAFFIC - STAGE 2

2/23/2017

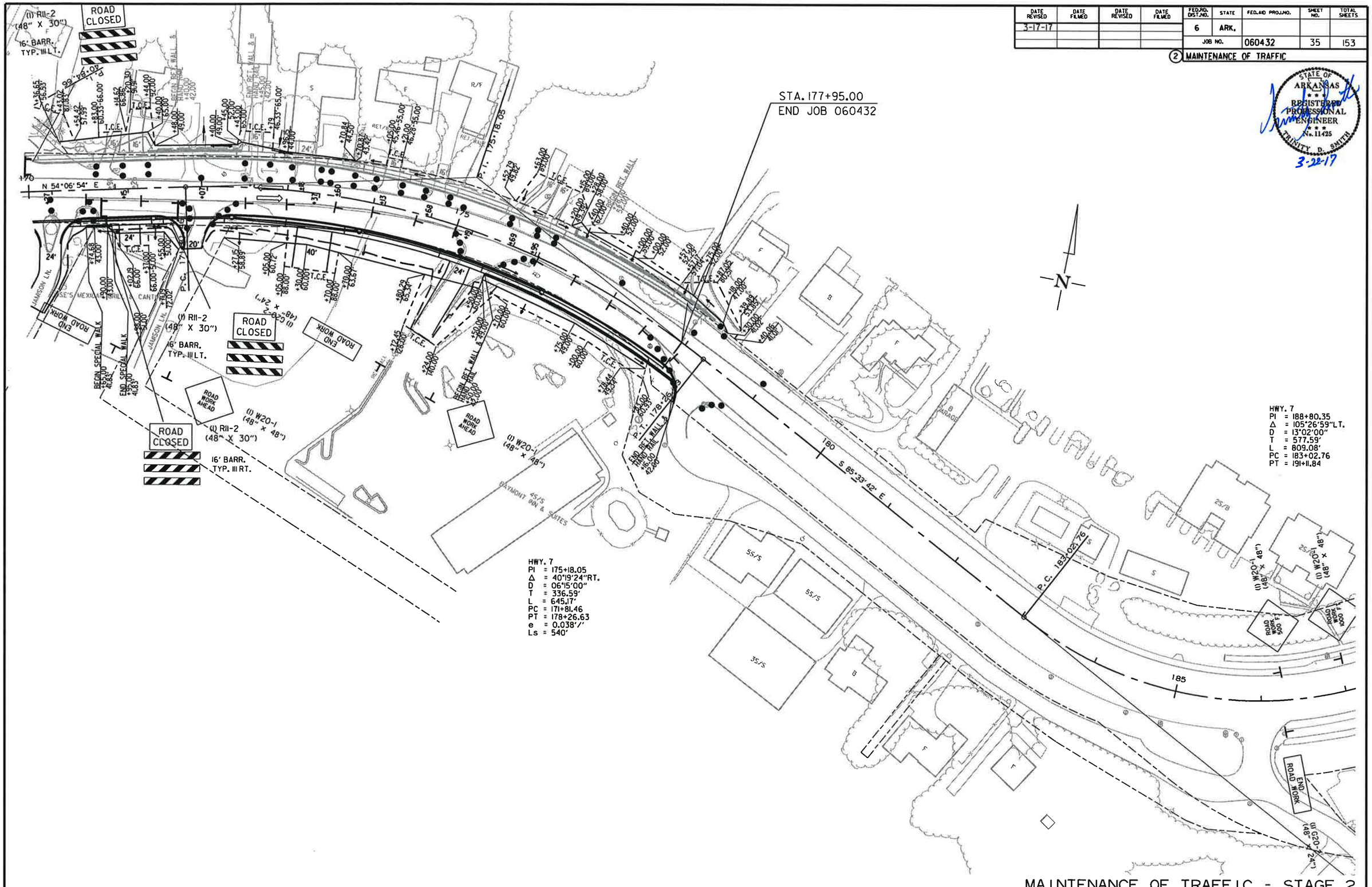
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	35	153

(2) MAINTENANCE OF TRAFFIC

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

3-22-17



MAINTENANCE OF TRAFFIC - STAGE 2

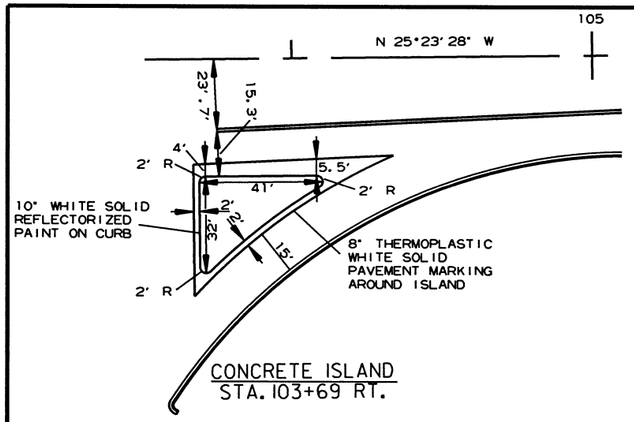
2/23/2017

R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	36	153

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-6-17



CONCRETE ISLAND
STA. 103+69 RT.

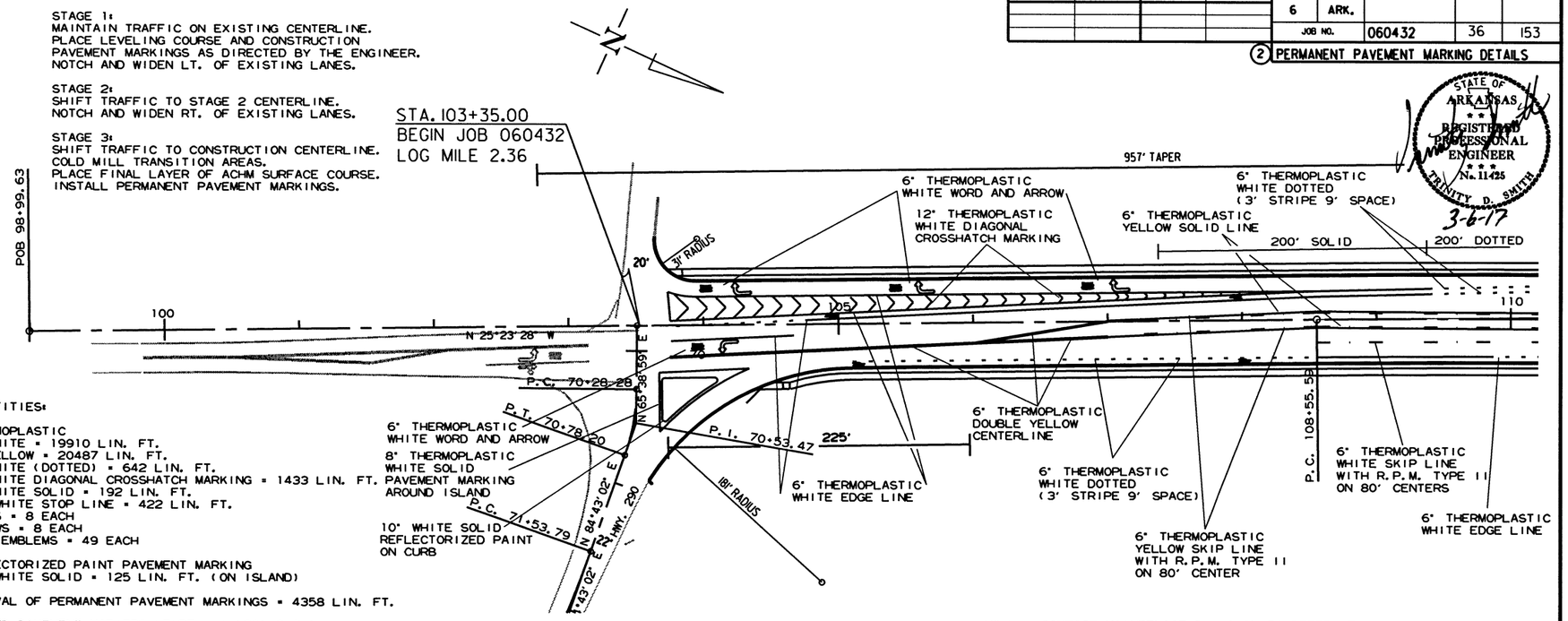
SEQUENCE OF CONSTRUCTION

STAGE 1:
MAINTAIN TRAFFIC ON EXISTING CENTERLINE.
PLACE LEVELING COURSE AND CONSTRUCTION PAVEMENT MARKINGS AS DIRECTED BY THE ENGINEER.
NOTCH AND WIDEN LT. OF EXISTING LANES.

STAGE 2:
SHIFT TRAFFIC TO STAGE 2 CENTERLINE.
NOTCH AND WIDEN RT. OF EXISTING LANES.

STAGE 3:
SHIFT TRAFFIC TO CONSTRUCTION CENTERLINE.
COLD MILL TRANSITION AREAS.
PLACE FINAL LAYER OF ACHM SURFACE COURSE.
INSTALL PERMANENT PAVEMENT MARKINGS.

STA. 103+35.00
BEGIN JOB 060432
LOG MILE 2.36



MAINTENANCE OF TRAFFIC NOTES:

TRAFFIC IS TO BE MAINTAINED IN THE EXISTING LANES USING VERTICAL PANELS @ 50' SPACING ON THE SIDE BEING NOTCHED AND WIDENED AND TRAFFIC DRUMS @ 100' SPACING ONCE WIDENING IS BROUGHT TO GRADE.

PLACE OM-3 SIGNS AT EACH TEMPORARY PRECAST CONCRETE BARRIER INSTALLATION AS SHOWN.

R4-1 SIGNS ARE TO BE PLACED AT 1/2 MILE INTERVALS. W20-1 & G20-2 SIGNS ARE TO BE PLACED AT ALL STATE HIGHWAYS AND COUNTY ROAD INTERSECTIONS THROUGH THE WORK ZONE AS SHOWN.

ALL STATE HIGHWAYS, COUNTY ROAD INTERSECTIONS, AND DRIVEWAYS ON THE SIDE BEING WIDENED ARE TO BE DELINEATED USING TRAFFIC DRUMS.

CONSTRUCTION PAVEMENT MARKING QUANTITIES BASED ON ONE APPLICATION OF RT. & LT. EDGE LINES AND DOUBLE YELLOW CENTERLINE FOR THE ENTIRE PROJECT.

QUANTITIES:

THERMOPLASTIC
6" WHITE = 19910 LIN. FT.
6" YELLOW = 20487 LIN. FT.
6" WHITE (DOTTED) = 642 LIN. FT.
6" WHITE DIAGONAL CROSSHATCH MARKING = 1433 LIN. FT.
8" WHITE SOLID = 192 LIN. FT.
12" WHITE STOP LINE = 422 LIN. FT.
WORDS = 8 EACH
ARROWS = 8 EACH
BIKE EMBLEMS = 49 EACH

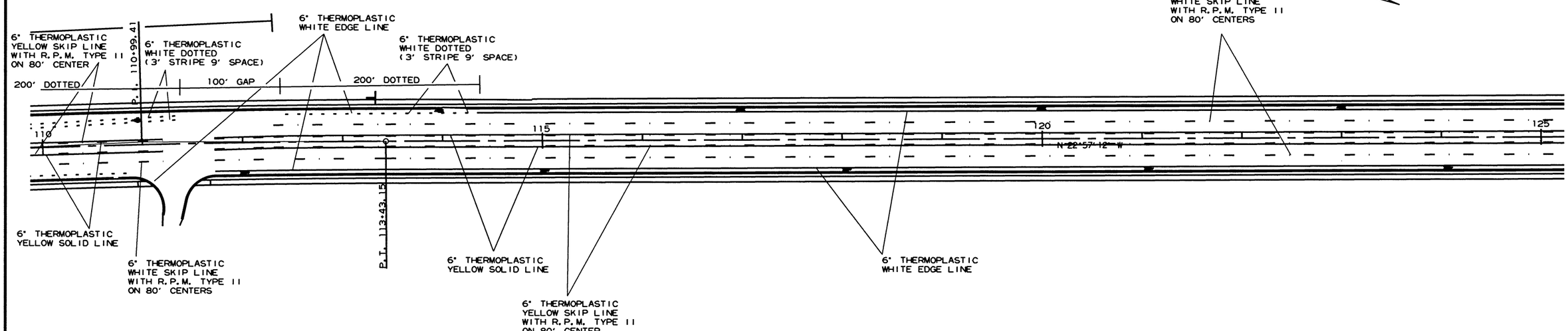
REFLECTORIZED PAINT PAVEMENT MARKING
10" WHITE SOLID = 125 LIN. FT. (ON ISLAND)

REMOVAL OF PERMANENT PAVEMENT MARKINGS = 4358 LIN. FT.

RAISED PAVEMENT MARKERS (TYPE II) (80' O.C.)
WHITE/RED = 186 EACH
YELLOW/YELLOW = 176 EACH

NOTE: CONTACT MAINTENACE DIVISION TO DETERMINE NO PASSING ZONES.

THE QUANTITY OF VERTICAL PANELS PROVIDED IN THE CONTRACT IS FOR ONE SIDE OF THE ROADWAY FOR THE FULL LENGTH OF THE JOB. THIS IS THE MAXIMUM QUANTITY REQUIRED TO ALLOW THE CONTRACTOR TO NOTCH ONE MILE, BACKFILL TO A POINT WHERE THE VERTICAL DIFFERENTIAL IS 4" OR LESS, AND THEN NOTCH THE REMAINDER OF THE JOB. THIS IS THE MAXIMUM NUMBER OF VERTICAL PANELS THAT WILL BE PAID FOR. REFER TO SECTION 603.02 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.



2/13/2017

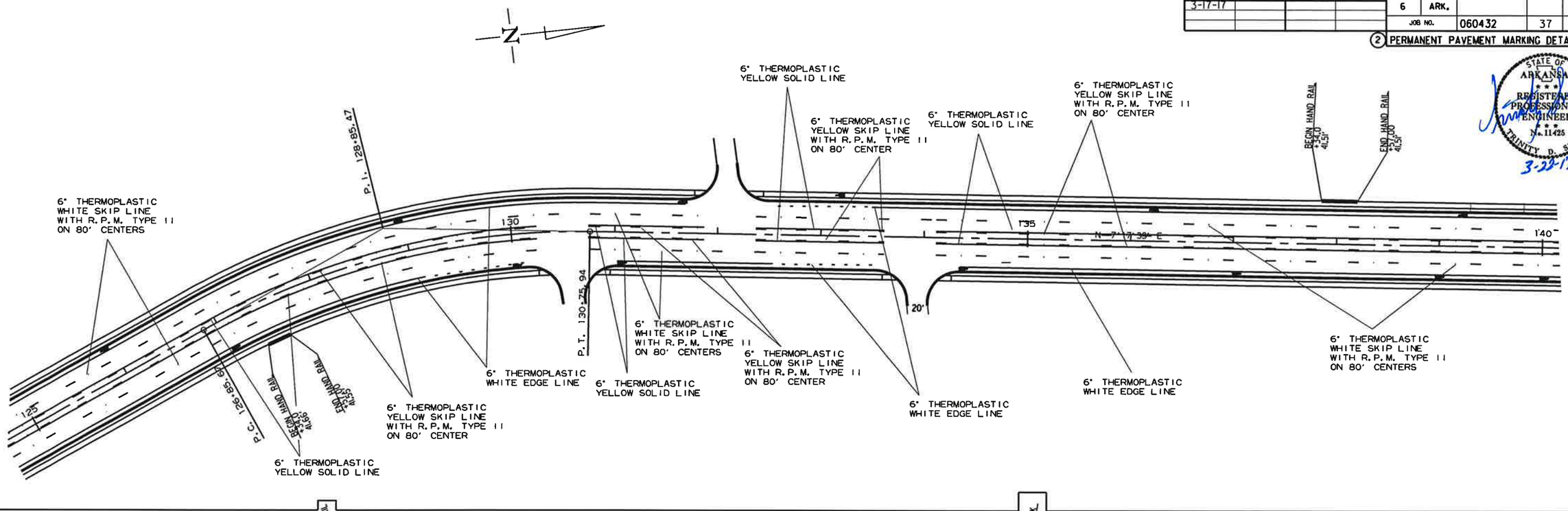
R060432.DGN

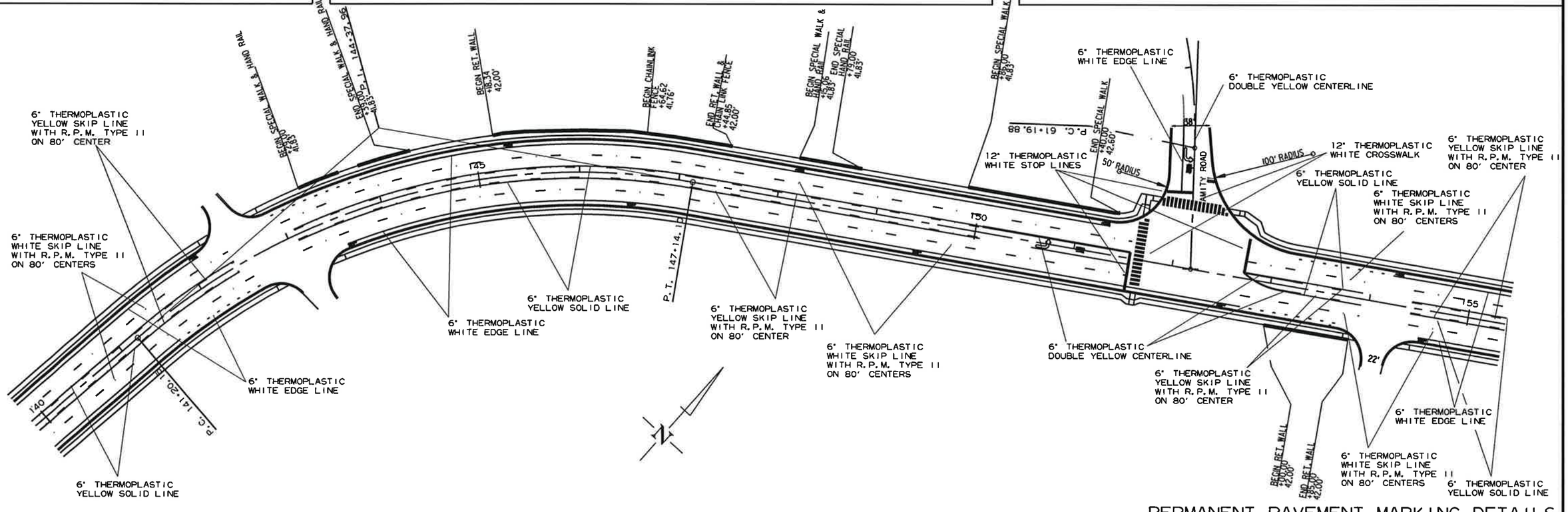
PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	37	153

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-22-17





PERMANENT PAVEMENT MARKING DETAILS

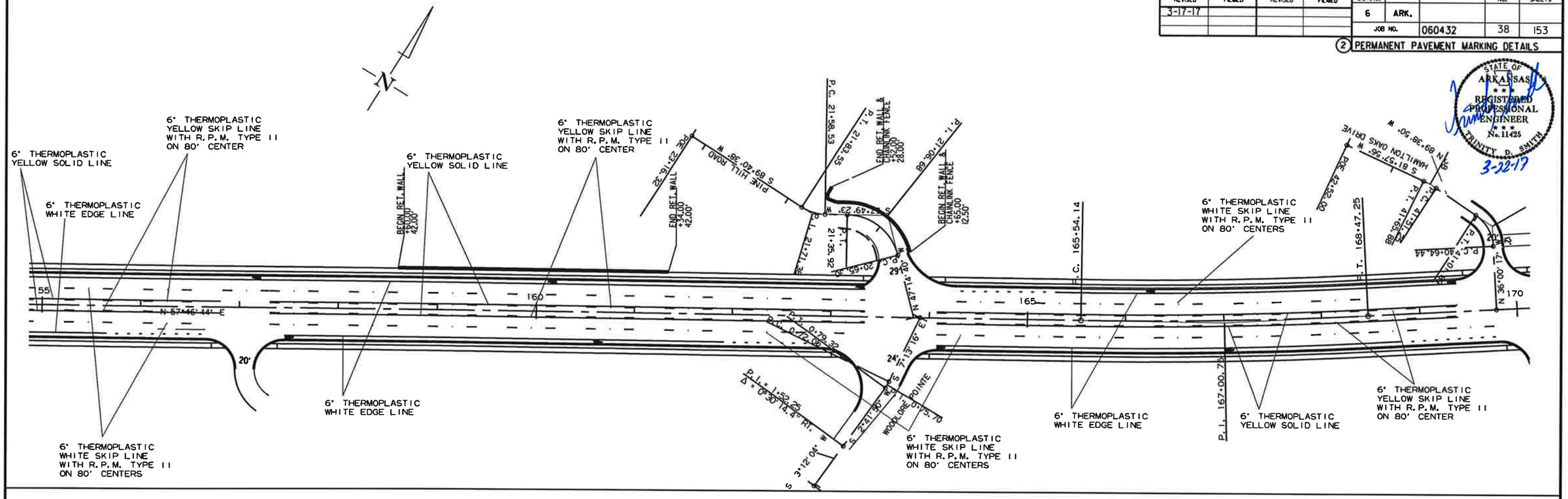
2/13/2017

R060432.DGN

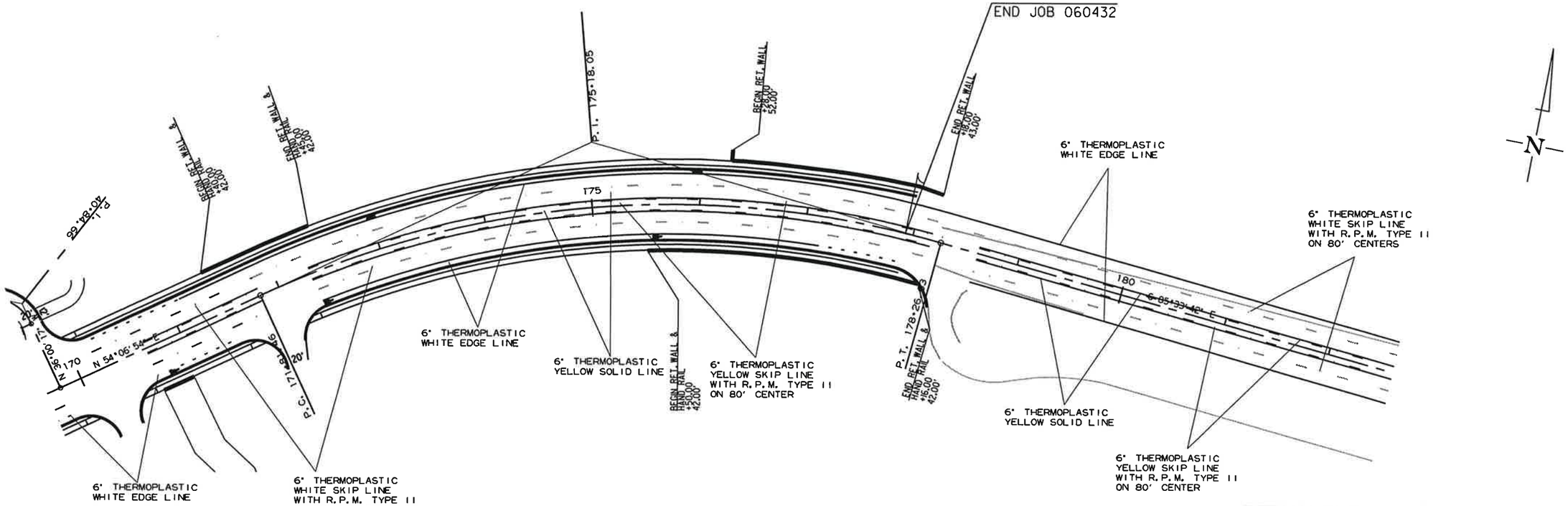
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	38	153

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-22-17



STA. 177+95.00
END JOB 060432



PERMANENT PAVEMENT MARKING DETAILS

2/13/2017

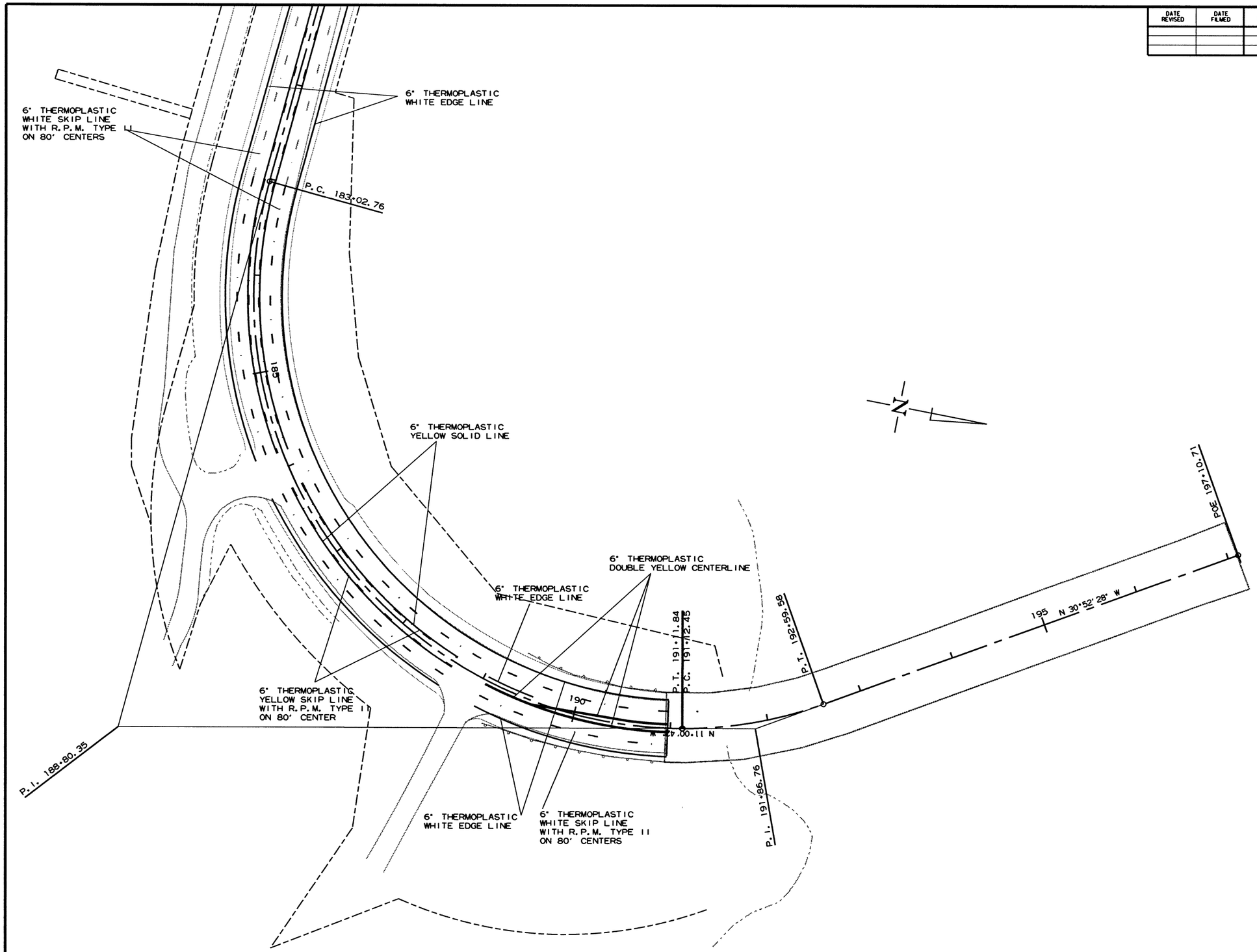
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	39	153

(2) PERMANENT PAVEMENT MARKING DETAILS

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

3-6-17



2/13/2017

R060432.DGN

PERMANENT PAVEMENT MARKING DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	40	153

(2) QUANTITIES

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-6-17

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	END OF JOB	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS		REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS		THERMOPLASTIC PAVEMENT MARKING							REFLECTORIZED PAINT PAVEMENT MARKING
									TYPE II	TYPE II	6"		8"	12"	WORDS	ARROWS	BIKE EMBLEMS	10"
						WORDS	ARROWS		(WHITE/RED)	(YEL/YEL)	WHITE	YELLOW	WHITE	WHITE				WHITE
	LIN. FT. - EACH			LIN. FT.		EACH		LIN. FT.	EACH		LIN. FT.				EACH			LIN. FT.
REMOVAL OF PERMANENT PAVEMENT MARKINGS			4358	4358														
CONSTRUCTION PAVEMENT MARKINGS	30007	29840			59847													
CONSTRUCTION PAVEMENT MARKINGS (WORDS)	3					3												
CONSTRUCTION PAVEMENT MARKINGS (ARROWS)	3						3											
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		4400						4400										
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED)			186						186									
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)	93		176							269								
THERMOPLASTIC PAVEMENT MARKING WHITE (6")			21985								21985							
THERMOPLASTIC PAVEMENT MARKING YELLOW (6")			20487									20487						
THERMOPLASTIC PAVEMENT MARKING WHITE (8")			192										192					
THERMOPLASTIC PAVEMENT MARKING WHITE (12")			422											422				
THERMOPLASTIC PAVEMENT MARKING WORDS			8												8			
THERMOPLASTIC PAVEMENT MARKING ARROWS			8													8		
THERMOPLASTIC PAVEMENT MARKING BIKE EMBLEMS			49														49	
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10")			125															125
TOTALS:				**4358**	**59847**	**3**	**3**	**4400**	**186**	**269**	**21985**	**20487**	**192**	**422**	**8**	**8**	**49**	**125**

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

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	END OF JOB	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		VERTICAL PANELS	TRAFFIC DRUMS	BARRICADES (TYPE III)		FURNISHING & INSTALLING PRECAST CONC. BARRIER	RELOCATING PRECAST CONCRETE BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER	TEMP. IMPACT ATTEN.BARR. (REPAIR)
											RIGHT	LEFT				
			LIN. FT. - EACH				NO.	SQ. FT.	EACH		LIN. FT.				EACH	
W20-1	ROAD WORK 1500 FT.	48"x48"	3	3	3	3	3	48.0								
W20-1	ROAD WORK 1000 FT.	48"x48"	3	3	3	3	3	48.0								
W20-1	ROAD WORK 500 FT.	48"x48"	3	3	3	3	3	48.0								
W20-1	ROAD WORK AHEAD	48"x48"	15	15	15	15	15	240.0								
G20-2	END ROAD WORK	48"x24"	18	18	18	18	18	144.0								
R11-2	ROAD CLOSED	48"x30"	5	18		18	18	180.0								
OM-3L	OBJECT MARKER	12"x36"	9	9		9	9	27.0								
OM-3R	OBJECT MARKER	12"x36"	12	12		12	12	36.0								
R4-1	DO NOT PASS	24"x30"	6	6	6	6	6	30.0								
W21-5	SHOULDER CLOSED	36"X36"	6	6		6	6	54.0								
W8-17	SHOULDER WORK	36"X36"	6	6		6	6	54.0								
W8-17P	SHOULDER DROP-OFF	24"x18"	6	6		6	6	18.0								
	VERTICAL PANELS		149	149		149			149							
	TRAFFIC DRUMS		176	235		235				235						
	TYPE III BARRICADE-RT. (16')		3	9		9					144					
	TYPE III BARRICADE-LT. (16')		2	10		10						160				
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		678			678							678			
	RELOCATING PRECAST CONCRETE BARRIER			393		393								393		
	TEMPORARY IMPACT ATTENUATION BARRIER			5		5									5	
	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)			5		5										5
TOTALS:								**927.0**	**149**	**235**	**144**	**160**	**678**	**393**	**5**	**5**

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

THE QUANTITY OF VERTICAL PANELS PROVIDED IN THE CONTRACT IS FOR ONE SIDE OF THE ROADWAY FOR THE FULL LENGTH OF THE JOB. THIS IS THE MAXIMUM QUANTITY REQUIRED TO ALLOW THE CONTRACTOR TO NOTCH ONE MILE, BACKFILL TO A POINT WHERE THE VERTICAL DIFFERENTIAL IS 4" OR LESS, AND THEN NOTCH ANOTHER ONE-MILE SECTION. THIS IS THE MAXIMUM NUMBER OF VERTICAL PANELS THAT WILL BE PAID FOR. REFER TO SECTION 603.02 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	41	153

(2) QUANTITIES

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
3-8-17

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	FENCE
			LIN. FT.
106+16	108+41	TYPE D - LT. OF MAIN LANES	303
108+94	109+25	PICKETT - LT. OF MAIN LANES	34
110+00	113+50	TYPE D-1 - LT. OF MAIN LANES	402
115+22	116+15	TYPE D - RT. OF MAIN LANES	100
119+12	120+10	TYPE C - RT. OF MAIN LANES	97
122+89	123+93	TYPE C - LT. OF MAIN LANES	105
132+11	132+14	5' BOARD - RT. OF MAIN LANES	22
134+96	137+21	5' BOARD - LT. OF MAIN LANES	294
138+28	138+35	TYPE C - LT. OF MAIN LANES	53
140+05	141+15	6' CHAIN LINK - LT. OF MAIN LANES	148
142+71	142+85	4' CHAIN LINK - LT. OF MAIN LANES	19
144+70	146+07	PIPE RAIL - RT. OF MAIN LANES	150
154+23	155+12	PIPE RAIL AND GATES - RT. OF MAIN LANES	133
156+90		6' CHAIN LINK - LT. OF MAIN LANES	8
177+23	177+53	TYPE C - LT. OF MAIN LANES	49
TOTAL:			1917

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
105+00	109+00	MAIN LANES	4	4
110+00	140+00	MAIN LANES	30	30
144+00	147+00	MAIN LANES	3	3
148+00	152+00	MAIN LANES	4	4
159+00	164+00	MAIN LANES	5	5
165+00	171+00	MAIN LANES	6	6
174+00	178+00	MAIN LANES	4	4
TOTALS:			56	56

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS
			LIN. FT.
* ENTIRE PROJECT TO BE USED IF AND			3500
WHERE DIRECTED BY THE ENGINEER			
TOTALS:			3500

* 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.

MAILBOXES

LOCATION	MAILBOXES	MAILBOX SUPPORTS (SINGLE)	MAILBOX SUPPORTS (DOUBLE)
	EACH		
ENTIRE PROJECT	39	27	6
TOTALS:	39	27	6

CONCRETE ISLAND

STATION	LOCATION	CURB FACE TYPE	CONCRETE ISLAND
			SQ.YD.
103+69	HWY. 7 & HWY. 290 INTERSECTION	B	80
TOTAL:			80

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF	700
AND WHERE DIRECTED BY THE	
ENGINEER	
TOTAL:	700

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

REMOVAL AND DISPOSAL OF CULVERTS AND DROP INLETS

STATION	DESCRIPTION	PIPE CULVERTS	DROP INLETS
		EACH	EACH
105+88	18" X 43' R.C. PIPE CULVERT ON RT.	1	
110+61	24" X 29' C.M. PIPE CULVERT ON RT.	1	
124+81	18" X 28' R.C. PIPE CULVERT ON RT.	1	
126+30	18" X 26' R.C. PIPE CULVERT ON RT.	1	
126+89	18" X 26' R.C. PIPE CULVERT ON RT.	1	
132+05	18" X 41' C.M. PIPE CULVERT ON LT.	1	
134+68	18" X 31' R.C. PIPE CULVERT ON LT.	1	
134+68	18" X 31' C.P. PIPE CULVERT ON LT.	1	
136+35	18" X 61' C.M. PIPE CULVERT ON RT.	1	
139+42	DBL. 18" X 68' R.C. PIPE CULVERT ON RT.	2	
141+37	24" X 25' R.C. PIPE CULVERT ON RT.	1	
142+08	24" X 40' R.C. PIPE CULVERT ON RT.	1	
142+47	18" X 28' R.C. PIPE CULVERT ON LT.	1	
142+82	18" X 40' R.C. PIPE CULVERT ON RT.	1	
143+05	24" X 40' C.M. PIPE CULVERT ON LT.	1	
143+69	24" X 35' C.M. PIPE CULVERT ON LT.	1	
143+79	15" X 134' R.C. PIPE CULVERT ON RT.	1	
144+07	8" X 78' R.C. PIPE CULVERT ON RT.	1	
144+45	24" X 40' C.M. PIPE CULVERT ON LT.	1	
146+47	18" X 24' C.M. PIPE CULVERT ON LT.	1	
148+56	DROP INLET ON LT.		1
148+56	24" X 54' R.C. PIPE CULVERT ON RT.	1	
149+26	18" X 118' C.P. PIPE CULVERT ON LT.	1	
150+29	18" X 60' C.P. PIPE CULVERT ON LT.	1	
158+26	DROP INLET ON RT.		1
158+53	18" X 156' R.C. PIPE CULVERT ON RT.	1	
161+06	18" X 60' C.P. PIPE CULVERT ON RT.	1	
163+43	18" X 39' C.M. PIPE CULVERT ON RT.	1	
167+78	18" X 33' R.C. PIPE CULVERT ON RT.	1	
167+97	8" X 43' C.P. PIPE CULVERT ON LT.	1	
167+98	DROP INLET ON LT.		1
169+87	12" X 99' R.C. PIPE CULVERT ON LT.	1	
170+75	15" X 27' R.C. PIPE CULVERT ON LT.	1	
171+74	18" X 34' C.P. PIPE CULVERT ON LT.	1	
172+11	18" X 48' R.C. PIPE CULVERT ON RT.	1	
172+50	18" X 24' R.C. PIPE CULVERT ON LT.	1	
174+58	18" X 24' R.C. PIPE CULVERT ON LT.	1	
175+46	18" X 24' R.C. PIPE CULVERT ON LT.	1	
TOTALS:		36	3

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

WHEELCHAIR RAMPS

STATION	LOCATION	TYPE 2	TYPE 3
		SQ.YD.	
103+84.67	LT. OF MAIN LANES		4.0
104+63.49	RT. OF MAIN LANES		9.9
110+94.51	RT. OF MAIN LANES		6.3
111+67.12	RT. OF MAIN LANES		6.9
130+24.86	RT. OF MAIN LANES		3.9
130+96.08	RT. OF MAIN LANES		5.5
131+77.26	LT. OF MAIN LANES		4.3
132+43.75	LT. OF MAIN LANES		6.7
133+60.06	RT. OF MAIN LANES		5.8
134+26.61	RT. OF MAIN LANES		4.9
142+21.64	LT. OF MAIN LANES		4.8
142+67.65	RT. OF MAIN LANES		4.3
142+84.07	LT. OF MAIN LANES		6.2
143+46.46	RT. OF MAIN LANES		5.9
151+63.06	LT. OF MAIN LANES	15.5	
152+63.26	LT. OF MAIN LANES		7.6
153+79.18	RT. OF MAIN LANES		4.9
154+47.37	RT. OF MAIN LANES		5.6
156+71.96	RT. OF MAIN LANES		5.8
157+38.78	RT. OF MAIN LANES		5.3
163+01.17	RT. OF MAIN LANES		6.1
163+32.35	LT. OF MAIN LANES		4.4
164+00.44	RT. OF MAIN LANES		5.3
164+15.54	LT. OF MAIN LANES		6.6
169+45.85	LT. OF MAIN LANES		5.5
169+87.71	RT. OF MAIN LANES		5.4
170+11.89	LT. OF MAIN LANES		5.4
170+58.65	RT. OF MAIN LANES		5.4
171+54.52	RT. OF MAIN LANES		5.3
172+27.14	RT. OF MAIN LANES		5.4
TOTALS:		15.5	163.4

CONCRETE COMBINATION CURB AND GUTTER

STATION	STATION	LOCATION	TYPE A (1' 6")
			LIN. FT.
103+64	131+99	LT. OF MAIN LANES	2835
132+17	142+42	LT. OF MAIN LANES	1025
142+58	151+77	LT. OF MAIN LANES	919
152+13	163+49	LT. OF MAIN LANES	1136
163+76	169+70	LT. OF MAIN LANES	594
169+89	177+95	LT. OF MAIN LANES	806
103+59	111+20	RT. OF MAIN LANES	761
111+37	130+50	RT. OF MAIN LANES	1913
130+72	133+85	RT. OF MAIN LANES	313
134+03	142+90	RT. OF MAIN LANES	887
143+21	154+02	RT. OF MAIN LANES	1081
154+23	156+97	RT. OF MAIN LANES	274
157+15	163+32	RT. OF MAIN LANES	617
163+70	170+12	RT. OF MAIN LANES	642
170+34	171+77	RT. OF MAIN LANES	143
172+03	177+95	RT. OF MAIN LANES	592
TOTAL:			14538

BENCH MARKS

STATION	LOCATION	BENCH MARKS
		EACH
107+18	MAIN LANES - RT. HEADWALL	1
127+57	MAIN LANES - RT. HEADWALL	1
138+03	MAIN LANES - RT. HEADWALL	1
TOTAL:		3

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

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
* ENTIRE PROJECT - TO BE USED IF AND WHERE	35	70
DIRECTED BY THE ENGINEER		
TOTALS:	35	70

BASIS OF ESTIMATE:
ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC....25 TON/MILE
TACK COAT FOR MAINTENANCE OF TRAFFIC.....50 GAL./MILE
* QUANTITY ESTIMATED. SEE SECTION 104.03 OF THE STD. SPECS.

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE	35
DIRECTED BY THE ENGINEER	
TOTAL:	35

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

2/13/2017

R060432.DGN

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	42	153

(2) QUANTITIES

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
3-22-17

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	CURB	SPRINKLER SYSTEM	CONCRETE ISLANDS	CONCRETE DRIVEWAYS	WALKS	SIGN FOUNDATIONS	BRICK COLUMNS	GUARDRAIL	BUILDINGS	SIGNS	PLANTERS	ROCK WALLS
			LIN. FT.	EACH	SQ. YD.	SQ. YD.	SQ. YD.	EACH	EACH	LIN. FT.	EACH	EACH	EACH	LIN. FT.
105+30		MAIN LANES ON LT.						4				1		
107+43	108+72	MAIN LANES ON RT.	140											
109+16	109+83	MAIN LANES ON RT.	85											
110+07	110+43	MAIN LANES ON RT.	45											
112+27	112+88	MAIN LANES ON RT.												83
127+10	127+92	MAIN LANES ON RT.								80				
127+18	127+98	MAIN LANES ON RT.								80				
131+60		MAIN LANES ON RT.						2				1		
135+91	136+22	MAIN LANES ON RT.	79											
136+55	136+86	MAIN LANES ON RT.	97											
137+63	138+42	MAIN LANES ON LT.								78				
137+64	138+43	MAIN LANES ON RT.								78				
139+38	139+74	MAIN LANES ON LT.				82				78				
142+00		MAIN LANES ON LT.									1			
148+29	149+50	MAIN LANES ON LT.				370								
150+12	150+24	MAIN LANES ON LT.	55											
150+63	151+87	MAIN LANES ON LT.	404											
151+33	151+93	MAIN LANES ON RT.			18									
151+70		MAIN LANES ON LT.						2				1		
152+19	153+73	MAIN LANES ON LT.	221											
153+85		MAIN LANES ON RT.						3				1		
154+03	154+18	MAIN LANES ON LT.	35											
154+82		MAIN LANES ON RT.						2				1		
155+22		MAIN LANES ON RT.						1						
155+24		MAIN LANES ON RT.						2				1		
155+59	156+11	MAIN LANES ON RT.	92											
155+71	155+79	MAIN LANES ON RT.					22							
155+91	156+42	MAIN LANES ON LT.	108											
156+85		MAIN LANES ON LT.						1				1		
156+90		MAIN LANES ON LT.	8											
156+94	158+10	MAIN LANES ON LT.				381								
157+68	157+96	MAIN LANES ON RT.					18							
158+18	158+72	MAIN LANES ON RT.					34							
158+49	158+58	MAIN LANES ON LT.				17								
159+10		MAIN LANES ON RT.				88								
159+46	159+53	MAIN LANES ON RT.	13											
160+90	160+95	MAIN LANES ON RT.	16											
160+91	161+09	MAIN LANES ON RT.	37											
161+34	161+52	MAIN LANES ON RT.	37											
161+41	161+45	MAIN LANES ON RT.	15											
163+00	163+56	MAIN LANES ON RT.	60											
163+00	163+36	MAIN LANES ON RT.	60											
163+06	163+26	MAIN LANES ON RT.	58											
163+10		MAIN LANES ON RT.						2				1		
163+39	163+56	MAIN LANES ON RT.	45											
165+70		MAIN LANES ON RT.						1				1		
167+65	167+76	MAIN LANES ON LT.	54											
168+03	168+14	MAIN LANES ON LT.	53											
169+19	169+49	MAIN LANES ON LT.											1	
169+40		MAIN LANES ON RT.										1		
169+82	170+05	MAIN LANES ON RT.	115											
169+87	169+95	MAIN LANES ON LT.							1					
170+15	170+34	MAIN LANES ON RT.	98											
170+19	170+78	MAIN LANES ON RT.	142											
170+28		MAIN LANES ON RT.											1	
170+38	170+41	MAIN LANES ON LT.							1					
170+60		MAIN LANES ON LT.						1				1		
170+61		MAIN LANES ON LT.											1	
170+75		MAIN LANES ON LT.											1	
170+75		MAIN LANES ON RT.						1				1		
174+95	176+75	MAIN LANES ON RT.		1										
174+96	175+03	MAIN LANES ON RT.	91											
175+23	175+96	MAIN LANES ON RT.	125											
175+95		MAIN LANES ON RT.						2				1		
177+65	178+30	MAIN LANES ON LT.	110											
177+82	178+40	MAIN LANES ON LT.	67											
TOTALS:			2565	1	18	938	74	24	2	394	1	13	4	83

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

SOIL LOG

STATION	LOCATION	DEPTH FEET	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
101+00	27'RT	0-5'	26	10	A-4(1)	BR/GR
101+00	17'RT	0-4'Z	29	12	A-6(1)	BR/GR
101+00	7'RT	0-5'	27	11	A-6(6)	BR/GR
109+00	22'LT	0-5'	44	23	A-7-6(16)	BR/GR
109+00	7'LT	0-5'	37	18	A-6(10)	BR/GR
118+00	7'RT	0-5'	47	25	A-7-6(21)	BR/GR
118+00	23'RT	0-5'	20	6	A-4(0)	BROWN
125+00	25'LT	0-5'	27	11	A-6(6)	BR/GR
125+00	5'LT	0-5'	32	13	A-6(6)	BR/GR
125+00	25'LT	0-5'	26	10	A-4(5)	BROWN
133+00	26'RT	0-5'	33	16	A-6(9)	BR/GR
133+00	13'RT	0-5'	40	20	A-6(11)	BR/GR
133+00	4'RT	0-5'	39	20	A-6(11)	BR/GR
141+00	15'LT	0-5'	23	9	A-4(4)	GRAY
141+00	5'LT	0-5'	24	9	A-4(4)	BROWN
149+00	0.5'RT	0-5'	30	13	A-6(5)	BR/GR
149+00	27'RT	0-5'	20	5	A-4(0)	BR/GR
158+00	12'LT	0-5'	18	4	A-4(0)	BR/GR
158+00	5'LT	0-5'	20	5	A-4(0)	BR/GR
165+00	24'RT	0-4'Z	19	5	A-4(0)	BR/GR
165+00	5'RT	0-5'	23	9	A-4(3)	BR/GR
172+60	22'LT	0-5'	27	10	A-4(3)	BR/GR
172+60	5'LT	0-5'	19	6	A-4(1)	BROWN

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

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
			CU. YD.		TON
ENTIRE	PROJECT	STAGE 1-MAIN LANES	12590	17631	
ENTIRE	PROJECT	STAGE 2-MAIN LANES	718	25945	
ENTIRE	PROJECT	APPROACHES	1395	3675	
ENTIRE	PROJECT	TEMPORARY APPROACHES	50	20	
103+53		ALBRIGHT RD. - LT. OF MAIN LANES	15		
103+61		ST. HWY. 290 - RT.OF MAIN LANES	5		
111+41		ASHLEY DR. - RT. OF MAIN LANES		150	
130+49		TURNOUT - RT. OF MAIN LANES		60	
132+18		TRABECCA DR. - LT. OF MAIN LANES		55	
133+87		LONGBEACH DR. - RT. OF MAIN LANES		10	
142+67		ECHO VALLEY RD. - LT. OF MAIN LANES		105	
142+84		ECHO VALLEY RD. - RT. OF MAIN LANES		85	
152+19		AMITY RD. - LT. OF MAIN LANES	115		
154+18		PALACE CT. - RT. OF MAIN LANES		25	
157+06		TURNOUT - RT. OF MAIN LANES		10	
163+38		TURNOUT - RT. OF MAIN LANES		555	
163+64		TURNOUT - LT. OF MAIN LANES	295	40	
169+79		TURNOUT - LT. OF MAIN LANES	15		
170+27		TURNOUT - RT. OF MAIN LANES		165	
172+07		JAMISON LANE - RT. OF MAIN LANES		35	
01+18.00	01+50.00	WOODLORE POINT - RT. OF MAIN LANES	907	914	
20+65.00	21+81.50	PINE HILL RD. - LT. OF MAIN LANES	2609		
* ENTIRE	PROJECT	TO BE USED IF AND WHERE			300
		DIRECTED BY THE ENGINEER			
TOTALS:			18714	49480	300

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

2/13/2017

R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	43	153

(2) QUANTITIES

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

3-22-17

CONCRETE WALKS & HAND RAILING

STATION	STATION	LOCATION	LENGTH	CONCRETE WALKS	HAND RAILING
			LIN. FT.	SQ.YD.	LIN. FT.
103+84.67	104+00.00	LT. OF MAIN LANES	15	8	
104+60.00	109+48.20	LT. OF MAIN LANES	488	271	
104+63.49	105+59.56	RT. OF MAIN LANES	96	53	
106+07.56	108+60.53	RT. OF MAIN LANES	253	141	
109+28.79	109+67.85	RT. OF MAIN LANES	39	22	
110+15.83	117+17.23	LT. OF MAIN LANES	701	389	
110+20.03	110+94.51	RT. OF MAIN LANES	74	41	
111+67.13	111+86.47	RT. OF MAIN LANES	19	11	
112+30.63	112+85.37	RT. OF MAIN LANES	55	31	
113+37.56	113+42.56	RT. OF MAIN LANES	5	3	
114+10.56	114+33.17	RT. OF MAIN LANES	23	13	
114+81.17	116+38.56	RT. OF MAIN LANES	157	87	
117+06.56	121+18.56	RT. OF MAIN LANES	412	229	
117+61.23	131+77.26	LT. OF MAIN LANES	1416	787	
121+86.56	123+40.45	RT. OF MAIN LANES	154	86	
123+86.45	124+56.30	RT. OF MAIN LANES	70	39	
125+00.00	126+27.86	RT. OF MAIN LANES	128	71	
126+71.86	128+70.26	RT. OF MAIN LANES	198	110	23
129+40.18	130+24.86	RT. OF MAIN LANES	85	47	
130+96.08	130+96.71	RT. OF MAIN LANES	1	1	
131+48.71	131+71.15	RT. OF MAIN LANES	22	12	
132+43.82	134+66.00	LT. OF MAIN LANES	222	123	
132+61.15	132+93.16	RT. OF MAIN LANES	32	18	
133+45.16	133+60.00	RT. OF MAIN LANES	15	8	
134+26.54	134+98.20	RT. OF MAIN LANES	72	40	
135+34.00	139+29.56	LT. OF MAIN LANES	396	220	
135+42.20	136+07.52	RT. OF MAIN LANES	65	36	
136+69.52	136+92.52	RT. OF MAIN LANES	23	13	
137+44.52	139+23.52	RT. OF MAIN LANES	179	99	
139+81.56	140+83.27	LT. OF MAIN LANES	102	57	
139+85.52	141+21.32	RT. OF MAIN LANES	136	76	35
141+66.81	142+22.95	LT. OF MAIN LANES	56	31	
141+76.73	141+88.75	RT. OF MAIN LANES	12	7	
142+61.21	142+67.65	RT. OF MAIN LANES	6	3	
142+88.39	143+01.76	LT. OF MAIN LANES	13	7	
143+46.57	143+52.43	RT. OF MAIN LANES	6	3	
144+20.24	144+25.53	RT. OF MAIN LANES	5	3	
144+73.50	147+44.85	LT. OF MAIN LANES	271	151	
144+78.81	145+64.86	RT. OF MAIN LANES	86	48	
146+11.75	146+43.82	RT. OF MAIN LANES	32	18	
146+90.71	149+73.96	RT. OF MAIN LANES	283	157	
149+30.37	149+46.33	LT. OF MAIN LANES	16	9	
150+49.96	150+62.04	RT. OF MAIN LANES	12	7	
151+30.04	152+53.79	RT. OF MAIN LANES	124	69	
151+40.06	151+63.06	LT. OF MAIN LANES	23	13	
152+63.26	153+60.22	LT. OF MAIN LANES	97	54	
153+05.79	153+79.18	RT. OF MAIN LANES	73	41	
154+17.09	154+29.77	LT. OF MAIN LANES	13	7	
154+47.37	154+54.62	RT. OF MAIN LANES	7	4	
154+97.77	155+43.53	LT. OF MAIN LANES	46	26	
155+00.62	155+05.62	RT. OF MAIN LANES	5	3	
155+73.62	155+79.56	RT. OF MAIN LANES	6	3	
156+11.53	156+34.33	LT. OF MAIN LANES	23	13	
156+31.56	156+71.96	RT. OF MAIN LANES	40	22	
157+02.33	157+42.02	LT. OF MAIN LANES	40	22	
157+38.78	157+81.65	RT. OF MAIN LANES	43	24	
158+10.35	163+32.35	LT. OF MAIN LANES	522	290	
158+33.13	158+83.64	RT. OF MAIN LANES	51	28	
159+35.64	160+83.56	RT. OF MAIN LANES	148	82	
161+51.56	163+01.17	RT. OF MAIN LANES	150	83	
164+00.44	169+87.71	RT. OF MAIN LANES	587	326	
164+15.54	164+26.58	LT. OF MAIN LANES	11	6	
165+30.55	167+61.08	LT. OF MAIN LANES	231	128	
168+13.08	169+43.16	LT. OF MAIN LANES	130	72	
170+09.20	170+65.00	LT. OF MAIN LANES	56	31	
170+58.65	170+89.25	RT. OF MAIN LANES	31	17	
171+40.00	172+45.00	LT. OF MAIN LANES	105		105
171+41.19	171+54.52	RT. OF MAIN LANES	13	7	
171+44.77	172+39.60	LT. OF MAIN LANES	95	53	
172+27.14	173+01.39	RT. OF MAIN LANES	74	41	
172+83.60	172+95.20	LT. OF MAIN LANES	12	7	
173+45.45	173+87.72	LT. OF MAIN LANES	42	23	
173+72.61	174+90.28	RT. OF MAIN LANES	118	66	
174+31.72	174+44.86	LT. OF MAIN LANES	13	7	
174+88.86	175+50.18	LT. OF MAIN LANES	61	34	
175+44.76	177+95.00	RT. OF MAIN LANES	250	139	
175+50.00	178+16.00	RT. OF MAIN LANES	266		266
176+23.02	177+95.00	LT. OF MAIN LANES	172	96	
TOTALS:				5423	429

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
102+35.00	103+35.00	MAIN LANES	22.00	244.44
177+95.00	178+95.00	MAIN LANES	22.00	244.44
TOTAL:				488.88

NOTE: AVERAGE MILLING DEPTH 1".

CONCRETE WALKS (SPECIAL) & HAND RAILING

STATION	STATION	LOCATION	LENGTH	CONCRETE WALKS (TYPE SPECIAL)	HAND RAILING
			LIN. FT.	SQ.YD.	LIN. FT.
143+29.00	143+69.39	LT. OF MAIN LANES	40	22	40
143+88.13	144+39.77	LT. OF MAIN LANES	52	29	52
148+15.06	148+79.00	LT. OF MAIN LANES	64	36	64
149+86.00	151+40.06	LT. OF MAIN LANES	154	86	
170+65.00	170+95.00	LT. OF MAIN LANES	30	17	
TOTALS:				190	156

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE C)	WIRE FENCE (TYPE D)	WIRE FENCE (TYPE D-1)	* 4' CHAIN LINK FENCE	* 6' CHAIN LINK FENCE
			LIN. FT.				
106+16	108+41	LT. OF MAIN LANES		223			
110+07	113+48	LT. OF MAIN LANES			359		
115+22	116+12	RT. OF MAIN LANES		89			
119+13	120+11	RT. OF MAIN LANES	99				
122+89	123+96	LT. OF MAIN LANES	107				
140+05	141+15	LT. OF MAIN LANES					110
142+71	142+85	LT. OF MAIN LANES				20	
177+21	177+57	LT. OF MAIN LANES	38				
TOTALS:			244	312	359	20	110

* DENOTES ALTERNATE BID ITEM.

PAVEMENT REPAIR OVER CULVERTS (CONCRETE)

STATION	LOCATION	WIDTH	LENGTH	CU.YD.
		FEET		
121+00	MAIN LANES	7.92	22	6.5
124+00	MAIN LANES	7.92	22	6.5
130+11	MAIN LANES	7.92	22	6.5
133+47	MAIN LANES	7.92	22	6.5
136+78	MAIN LANES	7.92	22	6.5
139+90	MAIN LANES	7.92	22	6.5
141+85	MAIN LANES	7.92	22	6.5
144+75	MAIN LANES	7.92	22	6.5
148+66	MAIN LANES	9.08	22	7.4
153+17	MAIN LANES	7.92	22	6.5
165+38	MAIN LANES	9.67	22	7.9
168+20	MAIN LANES	8.50	22	6.9
TOTAL:				80.7

AVG. DEPTH = 12"

EROSION CONTROL MATTING

STATION	STATION	LOCATION	LENGTH	CLASS 3
			LIN. FT.	SQ. YD.
103+52.00	109+62.00	LT. OF MAIN LANES	610.00	542.22
106+00.00	108+75.00	RT. OF MAIN LANES	275.00	244.44
108+82.00	109+15.00	RT. OF MAIN LANES	33.00	29.33
110+02.00	110+65.00	LT. OF MAIN LANES	63.00	56.00
111+51.00	112+00.00	RT. OF MAIN LANES	49.00	43.56
111+71.00	112+08.00	LT. OF MAIN LANES	37.00	32.89
112+16.00	112+78.00	RT. OF MAIN LANES	62.00	55.11
112+99.00	113+56.00	RT. OF MAIN LANES	57.00	50.67
113+00.00	117+31.00	LT. OF MAIN LANES	431.00	383.11
113+96.00	116+52.00	RT. OF MAIN LANES	256.00	227.56
116+92.00	117+00.00	RT. OF MAIN LANES	8.00	7.11
117+47.00	126+24.00	LT. OF MAIN LANES	877.00	779.56
118+00.00	121+32.00	RT. OF MAIN LANES	332.00	295.11
121+72.00	123+54.00	RT. OF MAIN LANES	182.00	161.78
123+72.00	124+70.00	RT. OF MAIN LANES	98.00	87.11
124+86.00	125+00.00	RT. OF MAIN LANES	14.00	12.44
126+00.00	126+42.00	RT. OF MAIN LANES	42.00	37.33
126+58.00	128+86.00	RT. OF MAIN LANES	228.00	202.67
128+00.00	132+08.00	LT. OF MAIN LANES	408.00	362.67
132+28.00	135+00.00	LT. OF MAIN LANES	272.00	241.78
133+97.00	135+13.00	RT. OF MAIN LANES	116.00	103.11
135+29.00	136+22.00	RT. OF MAIN LANES	93.00	82.67
136+56.00	137+03.00	RT. OF MAIN LANES	47.00	41.78
136+73.00	137+00.00	LT. OF MAIN LANES	27.00	24.00
137+27.00	139+43.00	RT. OF MAIN LANES	216.00	192.00
139+00.00	139+38.00	LT. OF MAIN LANES	38.00	33.78
139+67.00	141+38.00	RT. OF MAIN LANES	171.00	152.00
140+89.00	143+09.00	LT. OF MAIN LANES	220.00	195.56
142+45.00	142+73.00	RT. OF MAIN LANES	28.00	24.89
142+95.00	143+68.00	RT. OF MAIN LANES	73.00	64.89
143+29.00	144+39.00	LT. OF MAIN LANES	110.00	97.78
144+04.00	144+41.00	RT. OF MAIN LANES	37.00	32.89
144+59.00	147+62.00	LT. OF MAIN LANES	303.00	269.33
144+63.00	145+00.00	RT. OF MAIN LANES	37.00	32.89
145+96.00	146+59.00	RT. OF MAIN LANES	63.00	56.00
146+75.00	149+88.00	RT. OF MAIN LANES	313.00	278.22
148+02.00	148+84.00	LT. OF MAIN LANES	82.00	72.89
149+24.00	149+52.00	LT. OF MAIN LANES	28.00	24.89
149+80.00	151+04.00	LT. OF MAIN LANES	124.00	110.22
150+04.00	150+14.00	RT. OF MAIN LANES	10.00	8.89
150+34.00	150+76.00	RT. OF MAIN LANES	42.00	37.33
152+00.00	154+07.00	RT. OF MAIN LANES	207.00	184.00
153+00.00	153+75.00	LT. OF MAIN LANES	75.00	66.67
154+87.00	155+58.00	LT. OF MAIN LANES	71.00	63.11
157+16.00	157+96.00	RT. OF MAIN LANES	80.00	71.11
161+33.00	162+00.00	RT. OF MAIN LANES	67.00	59.56
163+50.00	170+15.00	RT. OF MAIN LANES	665.00	591.11
164+65.00	164+93.00	LT. OF MAIN LANES	28.00	24.89
165+17.00	166+00.00	LT. OF MAIN LANES	83.00	73.78
169+89.00	171+18.00	LT. OF MAIN LANES	129.00	114.67
171+34.00	171+43.00	LT. OF MAIN LANES	9.00	8.00
172+17.00	173+17.00	RT. OF MAIN LANES	100.00	88.89
172+69.00	173+06.00	LT. OF MAIN LANES	37.00	32.89
173+30.00	173+52.00	LT. OF MAIN LANES	22.00	19.56
174+68.00	175+07.00	RT. OF MAIN LANES	39.00	34.67
174+76.00	175+61.00	LT. OF MAIN LANES	85.00	75.56
175+31.00	176+22.00	RT. OF MAIN LANES	91.00	80.89
TOTAL:				7377.82

NOTE: AVERAGE WIDTH = 8'-0"

2/13/2017

R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
4-4-17				JOB NO.		060432	44	153

(2) QUANTITIES

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 4-4-17

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	LENGTH	"W"	"B"	CONC. DITCH PAVING (TYPE A)	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			LIN. FT.	FEET	FEET	SQ. YD.	SQ. YD.	SQ. YD.	M. GAL.
110+65.00	111+71.00	LT. OF MAIN LANES	106.00	6.00			70.67	47	0.59
127+00.00	128+00.00	LT. OF MAIN LANES	100.00	6.00			66.67	44	0.55
137+00.00	139+00.00	LT. OF MAIN LANES	200.00	6.00			133.33	89	1.12
110+06.00	110+65.00	RT. OF MAIN LANES	59.00	6.00			39.33	26	0.33
110+65.00	111+31.00	RT. OF MAIN LANES	66.00	11.00	6.00	80.67		29	0.37
159+22.00	160+93.00	RT. OF MAIN LANES	171.00	6.00			114.00	76	0.96
TOTALS:						80.67	424.00	311	3.92

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

DUMPED RIPRAP AND FILTER BLANKET

STATION	LOCATION	DUMPED RIPRAP	FILTER BLANKET
		CU. YD.	SQ. YD.
107+18	OUTLET OF BOX CULVERT	4	8
127+57	OUTLET OF BOX CULVERT	4	8
138+04	OUTLET OF BOX CULVERT	6	11
*	TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	7	13
TOTALS:		21	40

* NOTE: QUANTITY ESTIMATED.
SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS.

NOTE: FILTER BLANKET SHALL BE GEOTEXTILE FABRIC (TYPE 5).

CULVERT CLEAN OUT

STATION	LOCATION	EACH
107+18	MAIN LANES	1
110+65	MAIN LANES	1
114+79	MAIN LANES	1
127+57	MAIN LANES	1
138+04	MAIN LANES	1
TOTAL:		5

RETAINING WALLS

STATION	STATION	LOCATION	CLASS S CONCRETE - ROADWAY	REINF. STEEL - ROADWAY (GRADE 60)	UNCL. EXC. FOR STR. - ROADWAY	ARCHITECTURAL FINISH	TEXTURED COATING FINISH	GRAVITY BLOCK RETAINING WALL	*4' CHAIN LINK FENCE	SHORING	DUMPED RIPRAP	FILTER BLANKET
			CU.YDS.	POUNDS	CU.YDS.	SQ.FT.	SQ.YD.	SQ.FT.	LIN. FT.	LUMP SUM	CU.YD.	SQ.YD.
153+00.00	153+85.00	MAIN LANES RT.	27.70	2465	17	408	45					
158+60.00	161+34.00	MAIN LANES LT.	52.16	4981	51	723	80					
145+18.34	147+44.85	MAIN LANES LT. - SITE NO. 1			600			2509	80	1.00		
171+40.00	172+45.00	MAIN LANES LT.	128.00	10900	294	1075	99					
175+50.00	178+16.00	MAIN LANES RT. - SITE NO. 2	281.00	23700	995	2755	253			1.00	190	375
176+28.00	178+18.00	MAIN LANES LT. - SITE NO. 3	316.00	25200	3057	2230	207			1.00		
20+65.00	21+52.00	PINE HILL ROAD RT.			205			1596	122			
TOTALS:			804.86	67246	5219	7191	684	4105	202	3.00	190	375

* DENOTES ALTERNATE BID ITEM.

CONCRETE BASE

STATION	STATION	LOCATION	LENGTH	PORTLAND CEMENT CONCRETE BASE AVG. WID.	PORTLAND CEMENT CONCRETE BASE 5" U.T.
			FEET	FEET	SQ. YD.
104+50.00	131+00.00	RT. OF MAIN LANES	2650.00	2.50	736.11
111+41.00		RT. OF MAIN LANES	VAR.	VAR.	35.75
130+49.00		RT. OF MAIN LANES	VAR.	VAR.	54.49
163+00.00	167+50.00	LT. OF MAIN LANES	450.00	2.50	125.00
163+64.00		LT. OF MAIN LANES	VAR.	VAR.	65.30
TOTAL:					1016.65

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL: SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	SOLID SODDING	TEMPORARY EROSION CONTROL: TEMPORARY SEEDING	MULCH COVER	WATER	SAND BAG DITCH CHECKS (E-5)	ROCK DITCH CHECKS (E-6)	DROP INLET SILT FENCE (E-7)	SILT FENCE (E-11)	SEDIMENT BASIN (E-14)	OBLITERATION OF SEDIMENT BASIN	*SEDIMENT REMOVAL & DISPOSAL
			ACRE	TON	ACRE	M.GAL.	ACRE	SQ.YD.	ACRE	ACRE	M.GAL.	BAG	CU.YD.	LIN. FT.	LIN. FT.	CU.YD.	CU.YD.	CU. YD.
ENTIRE	PROJECT	CLEARING AND GRUBBING	1.07	2.14	1.07	109.1	1.07		1.07	1.07	21.8	880	120	25	4535			249
ENTIRE	PROJECT	STAGE 1	0.51	1.02	0.51	75.7	0.51	1877	0.51	0.51	10.4			925	760	334	334	396
ENTIRE	PROJECT	STAGE 2	0.56	1.12	0.56	75.9	0.56	1492	0.56	0.56	11.4			1025	815	213	213	281
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.			1.00	2.00	1.00	102.0	1.00		1.00	1.00	20.4	220	30	250	100			33
TOTALS:			3.14	6.28	3.14	362.7	3.14	3369	3.14	3.14	64.0	1100	150	2225	6210	547	547	959

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
SAND BAG DITCH CHECKS.....22 BAGS / LOCATION
ROCK DITCH CHECKS.....3 CU.YD./LOCATION

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

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

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	45	153

(2) QUANTITIES

STRUCTURES

STATION	DESCRIPTION	REIN. CONC. PIPE CULVERT (CLASS III) 18"	24"	30"	36"	SIDE DRAIN 12"	PIPE CULVERT STORM DRAIN ALTERNATES 1 & 2 18"	24"	30"	36"	FLARED END SECTIONS FOR R.C. PIPE CULVERTS 18"	24"	30"	36"	DROP INLETS TYPE C	E	MO	ST	EXT. 4'	8'	JUNCTION BOXES (TYPE E)	YARD DRAINS	SPAN	HEIGHT	LENGTH	CLASS S CONCRETE-ROADWAY	REINF. STEEL-ROADWAY (GRADE 60)	UNCL.EXC. FOR STR.-ROADWAY	SOLID SODDING	WATER	STD. DWG. NOS.
						LIN. FT.							EACH						EACH					LIN. FT.			CU.YD.	POUND	CU.YD.	SQ.YD.	M.GAL.	
103+67	CONSTRUCT DROP INLET ON RT.																1													5	0.06	FPC-9M
103+97	CONSTRUCT DROP INLET ON LT. W/EXT. OPENING IN BACK WITH PIPE OUTLET						118										1		1											5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
104+09	CONSTRUCT DROP INLET ON RT. W/PIPE OUTLET						54										1													5	0.06	FPC-9M, PCC-1, PCM-1
104+69	CONSTRUCT DROP INLET ON RT. W/EXT. & PIPE OUTLET						62										1		1											5	0.06	FPC-9M, PCC-1, PCM-1
107+18	EXTEND R.C. BOX CULVERT																						3	3	72	25.44	2183	16	12	0.15	SPECIAL DETAILS, RCB-1, 2, & 3
107+18	CONSTRUCT DROP INLET ON LT. W/EXT.														1					1										5	0.06	FPC-9E
107+25	CONSTRUCT DROP INLET ON RT. W/EXT. & PIPE OUTLET							4									1			1										5	0.06	FPC-9E, FPC-9M
110+65	EXTEND R.C. PIPE CULVERT - LT.		31																													PCC-1
110+65	CONSTRUCT DROP INLET ON LT. W/EXT & PIPE INLET WITH F.E.S.		15									1					1			1										13	0.16	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1
110+65	CONSTRUCT DROP INLET ON RT. W/EXT. & PIPE INLET WITH F.E.S. AND PIPE OUTLET	23						335			1						1		1											13	0.16	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1
111+71	CONSTRUCT DROP INLET ON RT. W/EXT. & PIPE OUTLET						102										1			1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
114+79	EXTEND R.C. PIPE CULVERT WITH F.E.S.		39																											8	0.10	FES-1, FES-2, PCC-1
114+79	CONSTRUCT DROP INLET ON LT. W/EXT. & PIPE INLET WITH F.E.S.		13									1					1		1											13	0.16	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1
114+79	CONSTRUCT DROP INLET ON RT. W/EXT. & PIPE OUTLET WITH F.E.S.		29									1					1		1											5	0.06	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1
121+00	CONSTRUCT DROP INLET ON LT. W/ EXT. & PIPE OUTLET	67															1			1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
121+00	CONSTRUCT DROP INLET ON RT. W/EXT. & PIPE OUTLET						296										1			1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
124+00	CONSTRUCT DROP INLET ON LT. W/ EXT. & PIPE OUTLET	67															1			1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
124+00	CONSTRUCT DROP INLET ON RT. W/EXT. & PIPE OUTLET						171										1			1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
124+55	CONSTRUCT YARD DRAIN ON RT.& PIPE OUTLET					120																1								5	0.06	FPC-9,PCC-1, PCM-1
125+75	CONSTRUCT DROP INLET ON RT. W/EXT. & PIPE INLET WITH F.E.S. AND PIPE OUTLET	10						174			1						1			1										13	0.16	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1
127+57	EXTEND R.C. BOX CULVERT (15" LFS)																						6	5	77	51.87	6552	29	18	0.23	R-115X-0, W-X15, W-X153-1, RCB-1, 2, & 3
127+57	CONSTRUCT DROP INLET ON LT.														1														5	0.06	FPC-9E
127+57	CONSTRUCT DROP INLET ON RT. W/EXT.														1					1									5	0.06	FPC-9, FPC-9E
130+11	CONSTRUCT DROP INLET ON LT. WITH PIPE OUTLET						156										1												5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
130+11	CONSTRUCT DROP INLET ON RT. W/EXT. & PIPE OUTLET	67															1			1									5	5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
131+68	CONSTRUCT DROP INLET ON LT. W/ EXT. & PIPE OUTLET						175										1			1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
133+47	CONSTRUCT DROP INLET ON LT. WITH PIPE INLET WITH F.E.S. AND PIPE OUTLET	73									1						1												10	0.13	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1
133+47	CONSTRUCT DROP INLET ON RT. W/EXT. OPENING IN BACK WITH PIPE OUTLET						144										1			1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
134+95	CONSTRUCT DROP INLET ON RT.W/EXT. & PIPE INLET WITH F.E.S. AND PIPE OUTLET	4						179			1						1		1										10	0.13	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1
135+89	CONSTRUCT YARD DRAIN ON RT.& PIPE OUTLET					88																1								5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
136+78	CONSTRUCT DROP INLET ON LT. W/EXT. & PIPE OUTLET	67															1			1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
136+78	CONSTRUCT DROP INLET ON RT. W/EXT. & PIPE INLET AND PIPE OUTLET							115									1		1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
138+04	EXTEND DBL. R.C. BOX CULVERT																						8	6	83	129.28	19331	63	24	0.30	R-200X-0, W-X003-1 RCB-1, 2, & 3
139+90	CONSTRUCT DROP INLET ON LT. WITH PIPE OUTLET	67															1												5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
139+90	CONSTRUCT DROP INLET ON RT. W/EXT. & PIPE OUTLET								176								1			1									6	0.08	FPC-9E, FPC-9M, PCC-1, PCM-1
141+85	CONSTRUCT DROP INLET ON LT. WITH PIPE INLET WITH F.E.S. AND PIPE OUTLET	73									1						1												10	0.13	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1
141+85	CONSTRUCT DROP INLET ON RT. W/EXT. OPENING IN BACK WITH PIPE OUTLET								186								1		1										3	0.04	FPC-9E, FPC-9M, PCC-1, PCM-1
142+63	CONSTRUCT DROP INLET ON RT. WITH PIPE INLET WITH F.E.S. AND PIPE OUTLET	3						69			1						1												11	0.14	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1
142+87	CONSTRUCT DROP INLET ON LT. WITH PIPE INLET WITH F.E.S. AND PIPE OUTLET	132									1						1												10	0.13	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1
143+27	CONSTRUCT DROP INLET ON RT. WITH PIPE OUTLET	66														1													4	0.05	FPC-9, PCC-1, PCM-1
143+34	CONSTRUCT YARD DRAIN ON LT.					49																1							5	0.06	FPC-9
143+94	CONSTRUCT YARD DRAIN ON LT.					62																1							5	0.06	FPC-9
144+22	CONSTRUCT DROP INLET ON RT. W/EXT. WITH PIPE INLET WITH F.E.S. AND PIPE OUTLET	5					146				1						1		1										10	0.13	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1
144+75	CONSTRUCT DROP INLET ON LT. W/EXT. WITH PIPE INLET WITH F.E.S. AND PIPE OUTLET	75									1						1			1									10	0.13	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1
144+90	CONSTRUCT DROP INLET ON RT. W/EXT. WITH PIPE OUTLET						60										1		1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
148+66	CONSTRUCT DROP INLET ON LT. W/EXT. WITH PIPE OUTLET			67													1			1									5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
148+67	CONSTRUCT DROP INLET ON RT. W/EXT. WITH PIPE OUTLET WITH F.E.S.			28									1				1			1									13	0.16	FPC-9M, PCC-1, PCM-1
149+67	CONSTRUCT DROP INLET ON RT. W/EXT. WITH PIPE OUTLET						95										1		1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
150+04	CONSTRUCT DROP INLET ON LT. W/EXT. WITH PIPE OUTLET						133										1			1									5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
151+25	CONSTRUCT DROP INLET ON LT. W/EXT. WITH PIPE OUTLET						117										1			1									5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
151+32	CONSTRUCT DROP INLET ON RT. W/EXT. WITH OPENING IN BACK WITH PIPE OUTLET						162										1		1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
153+10	CONSTRUCT DROP INLET ON RT.																	1											5	0.06	FPC-9S
153+17	CONSTRUCT DROP INLET ON LT. W/EXT.	8	67								1						1			1									5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
153+30	CONSTRUCT DROP INLET ON RT. WITH PIPE OUTLET						17										1												5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
154+24	CONSTRUCT DROP INLET ON LT. W/EXT. WITH PIPE OUTLET						103										1		1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
154+53	CONSTRUCT DROP INLET ON RT. WITH OPENING IN BACK WITH PIPE OUTLET						119										1												5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
155+00	CONSTRUCT DROP INLET ON LT. WITH PIPE OUTLET						72										1												5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
155+03	CONSTRUCT DROP INLET ON RT. WITH OPENING IN BACK WITH PIPE OUTLET						46										1												5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
156+64	CONSTRUCT DROP INLET ON RT. WITH OPENING IN BACK WITH PIPE OUTLET						80										1												5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
157+12	CONSTRUCT DROP INLET ON LT. W/EXT. WITH PIPE OUTLET						184										1			1									5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
157+48	CONSTRUCT DROP INLET ON RT. WITH OPENING IN BACK WITH PIPE OUTLET						80										1												5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
158+35	CONSTRUCT DROP INLET ON RT. WITH OPENING IN BACK WITH PIPE OUTLET						172										1												5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
159+00	CONSTRUCT DROP INLET ON LT. W/EXT. WITH PIPE OUTLET						107										1			1									5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
160+11	CONSTRUCT DROP INLET ON LT. W/EXT. WITH PIPE OUTLET							159									1			1									5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
160+12	CONSTRUCT DROP INLET ON RT. W/EXT. WITH PIPE INLET WITH F.E.S. AND PIPE OUTLET	7					159				1						1			1									5	0.06	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1
161+74	CONSTRUCT DROP INLET ON LT. W/EXT. WITH PIPE OUTLET							142									1		1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
161+75	CONSTRUCT DROP INLET ON RT. W/EXT. WITH PIPE OUTLET						111										1		1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
162+90	CONSTRUCT DROP INLET ON RT. W/EXT. WITH PIPE INLET WITH F.E.S. AND PIPE OUTLET	7					245				1						1		1										10	0.13	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1
163+20	CONSTRUCT DROP INLET ON LT. W/EXT. WITH PIPE OUTLET							100									1			1									5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
164+24	CONSTRUCT DROP INLET ON LT. W/EXT. WITH PIPE OUTLET							109									1			1									5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
165+38	CONSTRUCT DROP INLET ON LT. W/EXT. WITH PIPE INLET WITH F.E.S. AND PIPE OUTLET	4			67						1						1		1										17	0.21	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1
165+39	CONSTRUCT DROP INLET ON RT. W/EXT. WITH PIPE OUTLET									72							1		1										4	0.05	FPC-9E, FPC-9M, PCC-1, PCM-1
166+15	CONSTRUCT DROP INLET ON RT. WITH PIPE OUTLET WITH F.E.S.				30									1			1												20	0.25	FPC-9M, PCC-1, PCM-1
167+72	CONSTRUCT DROP INLET ON LT. WITH PIPE OUTLET					60												1											5	0.06	FPC-9S, PCC-1, PCM-1
168+12	CONSTRUCT JUNCTION BOX ON LT. WITH PIPE OUTLET					29															1								5	0.06	FPC-9,
168+20	CONSTRUCT DROP INLET ON RT. W/EXT. WITH PIPE OUTLET							202									1			1									5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
168+21	CONSTRUCT DROP INLET ON LT. W/EXT. WITH PIPE OUTLET		67														1			1									5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
169+00	CONSTRUCT DROP INLET ON LT. WITH PIPE OUTLET						75										1												5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
169+11	CONSTRUCT DROP INLET ON RT. WITH PIPE OUTLET						87										1												5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
170+41	CONSTRUCT JUNCTION BOX ON LT. WITH PIPE OUTLET						9														1								5	0.06	FPC-9,
170+43	CONSTRUCT DROP INLET ON LT. W/EXT. WITH PIPE OUTLET						158										1			1									4	0.05	FPC-9E, FPC-9M, PCC-1, PCM-1
171+43	CONSTRUCT DROP INLET ON RT. WITH PIPE OUTLET						228										1												5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
172+04	CONSTRUCT DROP INLET ON LT. W/EXT. WITH PIPE OUTLET WITH F.E.S.	2									1						1		1										10	0.13	FES-1, FES-2, FPC-9E, FPC-9M, PCC-1, PCM-1
172+36	CONSTRUCT DROP INLET ON RT. W/EXT. WITH PIPE OUTLET						86										1		1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
172+86	CONSTRUCT DROP INLET ON LT. WITH OPENING IN BACK WITH PIPE OUTLET						81										1												5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
173+89	CONSTRUCT DROP INLET ON LT. WITH PIPE OUTLET						103										1												5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
173+90	CONSTRUCT DROP INLET ON RT. W/EXT. WITH PIPE OUTLET						144										1			1									5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
175+32	CONSTRUCT DROP INLET ON LT. W/EXT. AND PIPE OUTLET						145										1		1										5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
176+22	CONSTRUCT DROP INLET ON LT. WITH PIPE OUTLET						90										1												5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
176+22	CONSTRUCT DROP INLET ON RT. W/EXT. WITH PIPE OUTLET						217										1			1									5	0.06	FPC-9E, FPC-9M, PCC-1, PCM-1
TOTALS:		827	261	95	97	408	4909	1588	362	72	14	3	1	1	3	1	73	2	21	32	2	4				206.59	28066	108	596	7.33	

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.

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-6-17

2/13/2017

R060432.DGN

QUANTITIES

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	46	153

(2) QUANTITIES

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

3-6-17

DRIVEWAYS & TURNOUTS

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	
103+53	LT.	ALBRIGHT ROAD	20	103+29	103+77		156.20	17.18	63.78	
103+61	RT.	ST. HWY. 290	22	103+36	103+86		1896.78	208.65	774.52	
104+29	LT.	MAIN LANES HWY. 7	32	103+99	104+59	55.11				DR-1
105+82	RT.	MAIN LANES HWY. 7	20	105+58	106+06	31.11				DR-1
108+95	RT.	MAIN LANES HWY. 7	40	108+61	109+29	37.79				DR-1
109+82	LT.	MAIN LANES HWY. 7	40	109+48	110+16	113.34				DR-1
109+94	RT.	MAIN LANES HWY. 7	24	109+68	110+20	65.34				DR-1
111+41	RT.	ASHLEY DRIVE	20	111+17	111+65		136.20	14.98	55.62	
112+08	RT.	MAIN LANES HWY. 7	16	111+86	112+30	61.33				DR-1
113+11	RT.	MAIN LANES HWY. 7	24	112+85	113+37	72.89				DR-1
113+76	RT.	MAIN LANES HWY. 7	40	113+42	114+10	86.67				DR-1
114+57	RT.	MAIN LANES HWY. 7	16	114+35	114+79	44.45				DR-1
116+72	RT.	MAIN LANES HWY. 7	40	116+38	117+06	175.56				DR-1
117+39	LT.	MAIN LANES HWY. 7	16	117+17	117+61	64.89				DR-1
121+52	RT.	MAIN LANES HWY. 7	40	121+18	121+86	153.34				DR-1
123+63	RT.	MAIN LANES HWY. 7	18	123+40	123+86	49.00				DR-1
124+78	RT.	MAIN LANES HWY. 7	16	124+56	125+00	64.89				DR-1
126+50	RT.	MAIN LANES HWY. 7	16	126+28	126+72	52.45				DR-1
129+05	RT.	MAIN LANES HWY. 7	38	128+72	129+38	88.67				DR-1
130+49	RT.	LONG BEACH TERRACE	22	130+24	130+74		104.92	11.54	42.84	
131+32	RT.	MAIN LANES HWY. 7	24	131+06	131+58	65.34				DR-1
131+97	RT.	MAIN LANES HWY. 7	24	131+71	132+23	78.67				DR-1
132+18	LT.	TRABECCA DRIVE	20	131+94	132+42		94.51	10.40	38.59	
132+34	RT.	MAIN LANES HWY. 7	26	132+07	132+61	41.89				DR-1
133+18	RT.	MAIN LANES HWY. 7	24	132+92	133+44		31.23	3.44	12.75	
133+87	RT.	LONG BEACH DRIVE	20	133+63	134+11		102.87	11.32	42.01	
135+00	LT.	MAIN LANES HWY. 7	40	134+66	135+34	77.65				DR-1
135+21	RT.	MAIN LANES HWY. 7	16	134+99	135+43	43.56				DR-1
136+39	RT.	MAIN LANES HWY. 7	34	136+08	136+70	111.45				DR-1
137+15	RT.	MAIN LANES HWY. 7	24	136+89	137+41	118.67				DR-1
139+55	RT.	MAIN LANES HWY. 7	34	139+24	139+86	100.11				DR-1
139+55	LT.	MAIN LANES HWY. 7	24	139+29	139+81	37.07				DR-1
140+89	LT.	MAIN LANES HWY. 7	40	140+55	141+23	108.90				DR-1
141+50	RT.	MAIN LANES HWY. 7	24	141+24	141+76	48.81				DR-1
142+25	RT.	MAIN LANES HWY. 7	40	141+91	142+59	48.90				DR-1
142+67	LT.	ECHO VALLEY ROAD	20	142+43	142+91		136.20	14.98	55.62	
142+84	RT.	ECHO VALLEY ROAD	22	142+59	143+09		138.70	15.26	56.64	
143+19	LT.	MAIN LANES HWY. 7	20	142+95	143+43	11.11				DR-1
143+79	LT.	MAIN LANES HWY. 7	20	143+55	144+03	20.87				DR-1
143+86	RT.	MAIN LANES HWY. 7	36	143+54	144+18	59.00				DR-1
144+49	LT.	MAIN LANES HWY. 7	20	144+25	144+73	31.89				DR-1
144+52	RT.	MAIN LANES HWY. 7	22	144+27	144+77	19.87				DR-1
145+88	RT.	MAIN LANES HWY. 7	16	145+66	146+10	52.62				DR-1
146+67	RT.	MAIN LANES HWY. 7	16	146+45	146+89	63.08				DR-1
147+82	LT.	MAIN LANES HWY. 7	40	147+48	148+16	64.45				DR-1
149+04	LT.	MAIN LANES HWY. 7	40	148+70	149+38	64.45				DR-1
149+66	LT.	MAIN LANES HWY. 7	28	149+38	149+94	68.23				DR-1
149+96	RT.	MAIN LANES HWY. 7	16	149+74	150+18	126.83				DR-1
150+24	RT.	MAIN LANES HWY. 7	20	150+00	150+48	132.22				DR-1
150+44	LT.	MAIN LANES HWY. 7	32	150+14	150+74	87.11				DR-1
150+96	RT.	MAIN LANES HWY. 7	40	150+62	151+30	46.05				DR-1
152+19	LT.	AMITY ROAD	38	151+86	152+52		175.09	19.26	71.50	
152+80	LT.	MAIN LANES HWY. 7	40	152+46	153+14		182.87	20.12	74.67	
153+89	LT.	MAIN LANES HWY. 7	28	153+61	154+17	35.60				DR-1
154+18	RT.	PALACE CT.	22	153+93	154+43		101.25	11.14	41.34	
154+64	LT.	MAIN LANES HWY. 7	40	154+30	154+98	20.01				DR-1
154+78	RT.	MAIN LANES HWY. 7	18	154+55	155+01	9.00				DR-1
155+39	RT.	MAIN LANES HWY. 7	40	155+05	155+73	20.01				DR-1
155+78	LT.	MAIN LANES HWY. 7	40	155+44	156+12	108.90				DR-1
156+10	RT.	MAIN LANES HWY. 7	24	155+84	156+36	9.10				DR-1
156+69	LT.	MAIN LANES HWY. 7	40	156+35	157+03	108.90				DR-1
157+06	RT.	TURNOUT	20	156+82	157+30		466.67	51.33	190.56	
157+81	LT.	MAIN LANES HWY. 7	40	157+47	158+15	153.34				DR-1
158+08	RT.	MAIN LANES HWY. 7	24	157+82	158+34	23.79				DR-1
159+10	RT.	MAIN LANES HWY. 7	24	158+84	159+36	4.94				DR-1
161+13	RT.	MAIN LANES HWY. 7	40	160+79	161+47	108.90				DR-1
163+38	RT.	TURNOUT	24	163+12	163+64	1053.23				DR-1
163+64	LT.	TURNOUT	29	163+36	163+93		595.77	65.53	243.27	
164+53	LT.	MAIN LANES HWY. 7	24	164+27	164+79	34.62				DR-1
165+05	LT.	MAIN LANES HWY. 7	24	164+79	165+31	35.18				DR-1
167+89	LT.	MAIN LANES HWY. 7	24	167+63	168+15	52.01				DR-1
169+79	LT.	TURNOUT	20	169+55	170+03		387.86	42.66	158.38	
169+89	LT.	TURNOUT	12	169+69	170+09		55.51	6.11	22.67	
170+27	RT.	JAMISON LN.	24	170+01	170+53	208.01				DR-1
170+98	RT.	MAIN LANES HWY. 7	16	170+76	171+20	43.56				DR-1
171+15	RT.	MAIN LANES HWY. 7	24	170+89	171+41	120.75				DR-1
171+26	LT.	MAIN LANES HWY. 7	16	171+04	171+48	100.48				DR-1
172+07	RT.	JAMISON LN.	20	171+83	172+31		125.09	13.76	51.08	
172+61	LT.	MAIN LANES HWY. 7	16	172+39	172+83	34.67				DR-1
173+18	LT.	MAIN LANES HWY. 7	24	172+92	173+44	25.05				DR-1
173+37	RT.	MAIN LANES HWY. 7	40	173+03	173+71	201.25				DR-1
173+60	LT.	MAIN LANES HWY. 7	16	173+38	173+82	14.86				DR-1
174+13	LT.	MAIN LANES HWY. 7	16	173+91	174+35	22.17				DR-1
174+68	LT.	MAIN LANES HWY. 7	16	174+46	174+90	13.46				DR-1
175+19	RT.	MAIN LANES HWY. 7	24	174+93	175+45	609.26				DR-1
175+69	LT.	MAIN LANES HWY. 7	16	175+47	175+91	100.48				DR-1
175+95	LT.	MAIN LANES HWY. 7	16	175+73	176+17	94.81				DR-1
21+72	RT.	DRIVE OFF PINE HILL ROAD	16				115.91	12.75	47.33	
* ENTIRE PROJECT TEMPORARY DRIVES									250.00	
TOTALS:						**6311.97**	**5003.63**	**550.41**	**2293.17**	

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.7% MIN. AGGR.....5.3% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22

THE CONTRACTOR, WITH THE APPROVAL OF THE ENGINEER, WILL BE ALLOWED TO SUBSTITUTE A HIGHER PERFORMANCE GRADE ASPHALT SURFACE COURSE FOR DRIVEWAYS AND MINOR SIDE STREET CONSTRUCTION AT NO ADDITIONAL COST TO THE DEPARTMENT.

* 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.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	47	153

(2) QUANTITIES

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-6-17

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BASE COURSE (1 1/2")				ACHM BINDER COURSE (1")				ACHM SURFACE COURSE (1/2")								
				TON / STATION	TON	AVG. WID.	SQ.YD.	GALLONS / SQ.YD.	GALLON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 64-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 76-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 76-22	TOTAL PG 76-22
			FEET			FEET				FEET			TON	FEET			TON	FEET			TON	FEET			TON	TON
MAIN LANES																										
102+35.00	103+35.00	TRANSITION	100.00			VAR.	583.33	0.17	99.17													VAR.	583.33	VAR.	64.17	64.17
103+35.00	129+00.00	NOTCH AND WIDEN (EXISTING ON RT.)	2565.00			128.50	36622.50	0.05	1831.13	44.50	12682.50	550.00	3487.69	42.00	11970.00	330.00	1975.05	42.00	11970.00	220.00	1316.70	64.00	18240.00	220.00	2006.40	3323.10
103+35.00	129+00.00	NOTCH AND WIDEN (CROWN SHIFT)	2565.00			11.00	3135.00	0.05	156.75													11.00	3135.00	VAR.	344.85	344.85
129+00.00	142+82.00	NOTCH AND WIDEN (TRANS. FROM LT. TO C.L.)	1382.00			126.75	19463.17	0.05	973.16	44.75	6871.61	550.00	1889.69	41.00	6295.78	330.00	1038.80	41.00	6295.78	220.00	692.54	64.00	9827.56	220.00	1081.03	1773.57
142+82.00	143+67.00	NOTCH AND WIDEN (EXISTING ON C.L.)	85.00			125.00	1180.56	0.05	59.03	45.00	425.00	550.00	116.88	40.00	377.78	330.00	62.33	40.00	377.78	220.00	41.56	64.00	604.44	220.00	66.49	108.05
143+67.00	164+00.00	NOTCH AND WIDEN (TRANS. FROM C.L. TO RT.)	2033.00			126.75	28631.42	0.05	1431.57	44.75	10108.53	550.00	2779.85	41.00	9261.44	330.00	1528.14	41.00	9261.44	220.00	1018.76	64.00	14456.89	220.00	1590.26	2609.02
164+00.00	166+00.00	NOTCH AND WIDEN (EXISTING ON RT.)	200.00			128.50	2855.56	0.05	142.78	44.50	988.89	550.00	271.94	42.00	933.33	330.00	154.00	42.00	933.33	220.00	102.67	64.00	1422.22	220.00	156.44	259.11
164+00.00	166+00.00	NOTCH AND WIDEN (CROWN SHIFT)	200.00			11.00	244.44	0.05	12.22													11.00	244.44	VAR.	26.89	26.89
166+00.00	170+98.00	NOTCH AND WIDEN (TRANS. FROM RT. TO C.L.)	498.00			126.75	7013.50	0.05	350.68	44.75	2476.17	550.00	680.95	41.00	2268.67	330.00	374.33	41.00	2268.67	220.00	249.55	64.00	3541.33	220.00	389.55	639.10
170+98.00	173+60.00	NOTCH AND WIDEN (EXISTING ON C.L.)	262.00			125.00	3638.89	0.05	181.94	45.00	1310.00	550.00	360.25	40.00	1164.44	330.00	192.13	40.00	1164.44	220.00	128.09	64.00	1863.11	220.00	204.94	333.03
173+60.00	177+95.00	NOTCH AND WIDEN ON C.L.	435.00			85.00	4108.33	0.05	205.42	45.00	2175.00	550.00	598.13	40.00	1933.33	330.00	319.00	40.00	1933.33	220.00	212.67	64.00	3093.33	220.00	340.27	552.94
177+95.00	178+95.00	TRANSITION	100.00			VAR.	601.44	0.17	102.24	20.00	222.22	550.00	61.11	20.00	222.22	330.00	36.67					44.00	488.89	220.00	53.78	53.78
20+65.00	21+81.50	PINE HILL ROAD LT. OF MAIN LANES	116.50	33.00	38.45	40.00	517.78	0.05	25.89	20.00	258.89	550.00	71.19	20.00	258.89	330.00	42.72					44.00	569.56	220.00	62.65	62.65
1+18.00	1+50.00	WOODLORE POINT RT. OF MAIN LANES	32.00	33.00	10.56	40.00	142.22	0.05	7.11																	
ADDITIONAL FOR GRADE RAISE																										
114+00.00	118+00.00	MAIN LANES	400.00			22.00	977.78	0.05	48.89					22.00	977.78	VAR.	43.76									
142+82.00	145+00.00	MAIN LANES	218.00			22.00	532.89	0.05	26.64					22.00	532.89	VAR.	24.78									
173+60.00	177+50.00	MAIN LANES	390.00			22.00	953.33	0.05	47.67					22.00	953.33	VAR.	32.10									
ADDITIONAL FOR LEVELING																										
103+35.00	177+95.00	MAIN LANES	7460.00			22.00	18235.56	0.17	3100.05													22.00		VAR.	2005.91	2005.91
TOTALS:					49.01		129437.70		8802.34		37518.81		10317.68		37149.88		5823.81		34204.77		3762.54		58070.10		8393.63	12156.17

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.7% MIN. AGGR.....5.3% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.7% MIN. AGGR.....4.3% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....96.0% MIN. AGGR.....4.0% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 115 FOR PG 64-22
MAXIMUM NUMBER OF GYRATIONS = 205 FOR PG 76-22
TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	48	153

(2) SUMMARY OF QUANTITIES

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

3-22-17

SUMMARY OF QUANTITIES (BOX 1 OF 2)

ITEM NUMBER	ITEM		QUANTITY	UNIT
201	CLEARING		56	STATION
201	GRUBBING		56	STATION
202	REMOVAL AND DISPOSAL OF CURB		2565	LIN. FT.
202	REMOVAL AND DISPOSAL OF BRICK COLUMNS		2	EACH
202	REMOVAL AND DISPOSAL OF FENCE		1917	LIN. FT.
202	REMOVAL AND DISPOSAL OF ROCK WALLS		83	LIN. FT.
202	REMOVAL AND DISPOSAL OF CONCRETE ISLANDS		18	SQ. YD.
202	REMOVAL AND DISPOSAL OF CONCRETE DRIVEWAYS		938	SQ. YD.
202	REMOVAL AND DISPOSAL OF WALKS		74	SQ. YD.
202	REMOVAL AND DISPOSAL OF SIGN FOUNDATIONS		24	EACH
202	REMOVAL AND DISPOSAL OF DROP INLETS		3	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		36	EACH
202	REMOVAL AND DISPOSAL OF GUARDRAIL		394	LIN. FT.
202	REMOVAL AND DISPOSAL OF BUILDINGS		1	EACH
202	REMOVAL AND DISPOSAL OF SIGNS		13	EACH
202	REMOVAL AND DISPOSAL OF PLANTERS		4	EACH
202	REMOVAL AND DISPOSAL OF SPRINKLER SYSTEM		1	EACH
210	UNCLASSIFIED EXCAVATION		18714	CU. YD.
210	COMPACTED EMBANKMENT		49480	CU. YD.
SP & 210	SOIL STABILIZATION		300	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)		2342	TON
309	PORTLAND CEMENT CONCRETE BASE (5" UNIFORM THICKNESS)		1017	SQ. YD.
SS & 401	TACK COAT		8872	GAL.
SP & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")		9905	TON
SP & 405	ASPHALT BINDER (PG 64-22) IN ACHM BASE COURSE (1 1/2")		413	TON
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		5574	TON
SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")		250	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		12034	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		29	TON
SP, SS, & 407	ASPHALT BINDER (PG 76-22) IN ACHM SURFACE COURSE (1/2")		644	TON
412	COLD MILLING ASPHALT PAVEMENT		489	SQ. YD.
SP & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		35	TON
SP & 415	ACHM PATCHING OF EXISTING ROADWAY		35	TON
505	PORTLAND CEMENT CONCRETE DRIVEWAY		6311.97	SQ. YD.
601	MOBILIZATION		1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE		1	EACH
SP & 603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
SS & 604	SIGNS		927	SQ. FT.
SS & 604	BARRICADES		304	LIN. FT.
SS & 604	TRAFFIC DRUMS		235	EACH
604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		678	LIN. FT.
604	RELOCATING PRECAST CONCRETE BARRIER		393	LIN. FT.
604	CONSTRUCTION PAVEMENT MARKINGS		59847	LIN. FT.
604	CONSTRUCTION PAVEMENT MARKINGS (WORDS)		3	EACH
604	CONSTRUCTION PAVEMENT MARKINGS (ARROWS)		3	EACH
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		4400	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS		4358	LIN. FT.
SS & 604	VERTICAL PANELS		149	EACH
605	CONCRETE DITCH PAVING (TYPE A)		81	SQ. YD.
605	CONCRETE DITCH PAVING (TYPE B)		424	SQ. YD.
SP	CULVERT CLEAN OUT		5	EACH
606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		827	LIN. FT.
* 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	4909	LIN. FT.
* 606	18" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	4909	LIN. FT.
606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		261	LIN. FT.
* 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	1588	LIN. FT.
* 606	24" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	1588	LIN. FT.
606	30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		95	LIN. FT.
* 606	30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	362	LIN. FT.
* 606	30" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	362	LIN. FT.
606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		97	LIN. FT.
* 606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	(ALTERNATE NO. 1)	72	LIN. FT.
* 606	36" SMOOTH LINED POLYMER PRECOATED METALLIC COATED CORRUGATED STEEL PIPE	(ALTERNATE NO. 2)	72	LIN. FT.
SS & 606	12" SIDE DRAIN		408	LIN. FT.
606	18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		14	EACH
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		3	EACH
606	30" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		1	EACH
606	36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		1	EACH
606	SELECTED PIPE BEDDING		700	CU. YD.
609	DROP INLETS (TYPE C)		3	EACH
609	DROP INLETS (TYPE E)		1	EACH
609	DROP INLETS (TYPE MO)		73	EACH
609	DROP INLETS (TYPE ST)		2	EACH
609	JUNCTION BOXES (TYPE E)		2	EACH
609	DROP INLET EXTENSIONS (4')		21	EACH
609	DROP INLET EXTENSIONS (8')		32	EACH
609	YARD DRAINS		4	EACH
611	4" PIPE UNDERDRAINS		3500	LIN. FT.
615	PAVEMENT REPAIR OVER CULVERTS (CONCRETE)		80.7	CU. YD.
619	WIRE FENCE (TYPE C)		244	LIN. FT.
619	WIRE FENCE (TYPE D)		312	LIN. FT.
619	WIRE FENCE (TYPE D-1)		359	LIN. FT.
* 619	4' STEEL CHAIN LINK FENCE	(ALTERNATE NO. 1)	222	LIN. FT.
* 619	4' ALUMINUM CHAIN LINK FENCE	(ALTERNATE NO. 2)	222	LIN. FT.
* 619	6' STEEL CHAIN LINK FENCE	(ALTERNATE NO. 1)	110	LIN. FT.
* 619	6' ALUMINUM CHAIN LINK FENCE	(ALTERNATE NO. 2)	110	LIN. FT.

* DENOTES ALTERNATE BID ITEMS.

R060432.DGN 2/13/2017

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
4-4-17				JOB NO.		060432	49	153

(2) SUMMARY OF QUANTITIES AND REVISIONS

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

4-4-17

SUMMARY OF QUANTITIES (BOX 2 OF 2)

ITEM NUMBER	ITEM	QUANTITY	UNIT
620	LIME	6	TON
620	SEEDING	3.14	ACRE
SS & 620	MULCH COVER	6.28	ACRE
620	WATER	438.0	M.GAL.
621	TEMPORARY SEEDING	3.14	ACRE
621	SILT FENCE	6210	LIN. FT.
621	SAND BAG DITCH CHECKS	1100	BAG
621	DROP INLET SILT FENCE	2225	LIN. FT.
621	SEDIMENT BASIN	547	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN	547	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL	959	CU. YD.
621	ROCK DITCH CHECKS	150	CU. YD.
623	SECOND SEEDING APPLICATION	3.14	ACRE
624	SOLID SODDING	4276	SQ. YD.
626	EROSION CONTROL MATTING (CLASS 3)	7378	SQ. YD.
632	CONCRETE ISLAND	80	SQ. YD.
633	CONCRETE WALKS	5423	SQ. YD.
SP & 633	CONCRETE WALKS (TYPE SPECIAL)	190	SQ. YD.
633	HAND RAILING	585	LIN. FT.
634	CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1' 6")	14538	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
637	MAILBOXES	39	EACH
637	MAILBOX SUPPORTS (SINGLE)	27	EACH
637	MAILBOX SUPPORTS (DOUBLE)	6	EACH
641	WHEELCHAIR RAMPS (TYPE 2)	16	SQ. YD.
641	WHEELCHAIR RAMPS (TYPE 3)	163	SQ. YD.
SP & 701	ACTUATED CONTROLLER TS2-TYPE 2 (8 PHASES)	1	EACH
SP & 701	SYSTEM LOCAL CONTROLLER TS2-TYPE 2 (8 PHASES)	1	EACH
SP	ANTENNA SUPPORT (SHOE BASE, 50' HT.)	1	EACH
SP	LOCAL RADIO WITH ANTENNA	1	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	14	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	1	EACH
SP & 707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED	8	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	2441	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	136	LIN. FT.
708	TRAFFIC SIGNAL CABLE (12C/14 A.W.G.)	134	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	259	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., E.G.C.)	470	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., E.G.C.)	100	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.)	40	LIN. FT.
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES	359	LIN. FT.
709	GALVANIZED STEEL CONDUIT (1")	20	LIN. FT.
709	GALVANIZED STEEL CONDUIT (1.25")	40	LIN. FT.
709	GALVANIZED STEEL CONDUIT (2")	20	LIN. FT.
710	NON-METALLIC CONDUIT (1.25")	40	LIN. FT.
710	NON-METALLIC CONDUIT (2")	20	LIN. FT.
710	NON-METALLIC CONDUIT (3")	370	LIN. FT.
711	CONCRETE PULL BOX (TYPE 1 HD)	2	EACH
711	CONCRETE PULL BOX (TYPE 2 HD)	5	EACH
713	SPAN WIRE ASSEMBLY	1	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (44')	1	EACH
714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (50'-46')	1	EACH
SP	LED LUMINAIRE ASSEMBLY	2	EACH
715	TRAFFIC SIGNAL PEDESTAL POLE WITH FOUNDATION	4	EACH
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	1.00	LUMP SUM
716	TREATED WOOD POLE (CLASS 2, 45')	4	EACH
718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10")	125	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (6")	21985	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (8")	192	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (12")	422	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (6")	20487	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING (WORDS)	8	EACH
719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)	8	EACH
719	THERMOPLASTIC PAVEMENT MARKING (BIKE EMBLEMS)	49	EACH
721	RAISED PAVEMENT MARKERS (TYPE II)	455	EACH
SP	18" STREET NAME SIGN	2	EACH
731	TEMPORARY IMPACT ATTENUATION BARRIER	5	EACH
731	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)	5	EACH
SP & 733	VIDEO DETECTOR (CLR)	9	EACH
733	VIDEO CABLE	1417	LIN. FT.
733	VIDEO MONITOR (CLR)	2	EACH
SP & 733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	6	EACH
SP & 733	VEHICLE DETECTOR RACK (16 CHANNEL)	2	EACH
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	5327	CU. YD.
802	CLASS S CONCRETE-ROADWAY	1011.45	CU. YD.
SP	ARCHITECTURAL FINISH	7191	SQ. FT.
SP	GRAVITY BLOCK RETAINING WALL	4105	SQ. FT.
SP	TEXTURED COATING FINISH	684	SQ. YD.
804	REINFORCING STEEL-ROADWAY (GRADE 60)	95312	POUND
816	FILTER BLANKET	415	SQ. YD.
816	DUMPED RIPRAP	211	CU. YD.
SP	SHORING (SITE NO. 1)	1.00	LUMP SUM
SP	SHORING (SITE NO. 2)	1.00	LUMP SUM
SP	SHORING (SITE NO. 3)	1.00	LUMP SUM

REVISIONS

DATE	REVISION	SHEET NUMBER
3/17/2017	ADDED SPECIAL PROVISION "MAINTENANCE OF TRAFFIC"; REVISED SPECIAL PROVISION "UTILITY ADJUSTMENTS"; REVISED HAND RAIL QUANTITIES; REVISED SPECIAL DETAILS; ADDED 4' CHAIN LINK FENCE QUANTITIES, REVISED COMPACTED EMBANKMENT QUANTITIES; REVISED CROSS SECTIONS.	3, 11-12, 16, 22-23, 25-26, 30-31, 34-35, 37-38, 42-44, 48-49, 62, 64-66, 109-111, 137-139, 146-149
4/4/2017	REVISED QUANTITY AND PAY UNIT "TEXTURED COATING FINISH"; REVISED "ARCHITECTURAL FINISH" QUANTITIES AT STA. 175+50 AND STA. 176+28, THE QUANTITIES WERE TRANSPOSED.	16, 44,49

R060432.DGN 2/13/2017

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	50	153

(2) SURVEY CONTROL DETAILS

SURVEY CONTROL COORDINATES

Project Name: s060432
Date: 6/27/2012
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL.
PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	1949111.6266	982506.6961	446.625	CTL	5/8" Rebar with 2" Aluminum Cap
2	1949617.9118	982209.2790	441.883	CTL	5/8" Rebar with 2" Aluminum Cap
3	1950377.7438	981911.8571	454.618	CTL	5/8" Rebar with 2" Aluminum Cap
4	1951023.1818	981601.4902	451.857	CTL	5/8" Rebar with 2" Aluminum Cap
5	1951607.0859	981353.7564	429.348	CTL	5/8" Rebar with 2" Aluminum Cap
6	1952926.1882	981370.0895	417.236	CTL	5/8" Rebar with 2" Aluminum Cap
7	1953507.3287	981485.6006	426.366	CTL	5/8" Rebar with 2" Aluminum Cap
8	1953865.7473	982073.5735	450.427	CTL	5/8" Rebar with 2" Aluminum Cap
9	1954310.7224	982676.6169	454.094	CTL	5/8" Rebar with 2" Aluminum Cap
10	1954679.6732	983336.7674	441.602	CTL	4'E. OF EP HWY. 7 27'W. NW OF N.
11	1955107.5486	983927.4141	442.629	CTL	5/8" Rebar with 2" Aluminum Cap
12	1955094.2148	984559.8318	449.487	CTL	5/8" Rebar with 2" Aluminum Cap
13	1955122.8885	985093.8963	451.331	CTL	5/8" Rebar with 2" Aluminum Cap
14	1955509.8359	985355.9601	432.820	CTL	5/8" Rebar with 2" Aluminum Cap
15	1955103.5235	985435.4808	459.297	CTL	2.8'N. OF EP OF LOOKOUT CIRCLE
16	1955085.5963	985737.6902	464.956	CTL	3.5'S. OF EP OF LOOKOUT CIRCLE
17	1954097.6496	981863.5059	454.327	CTL	5/8" Rebar with 2" Aluminum Cap
18	1954222.0743	981065.7427	458.887	CTL	13.9'N. OF EP AMITY ROAD 42'W.N
19	1949639.2503	982880.1158	431.178	CTL	19'N. OF EP HWY.290 125'E. OF P
20	1949495.8039	983603.3551	420.404	CTL	23'N. OF EP HWY.290 13.7'S. OF
100	1954154.8873	981612.1312	456.597	GPS	AHTD GPS *260029
101	1952168.9399	981237.4622	421.355	GPS	AHTD GPS *260029A
102	1941969.4837	975718.6862	527.450	GPS	AHTD GPS *260030
103	1940987.7003	974221.5615	539.719	GPS	AHTD GPS *300007
200	1954095.9244	981879.3368	455.064	IP	5/8" Rebar with 2" Aluminum Cap UNLEGIBLE
201	1954016.1554	981805.5022	449.466	IP	5/8" Rebar with 2" Aluminum Cap LS1414
202	1953732.3069	981760.0118	440.293	IP	3/8"REBAR
900	1951806.3350	981305.7330	427.393	TBM	CHISELED SQUARE IN HEADWALL
901	1950619.4972	981766.8296	454.114	TBM	CHISELED SQUARE
902	1950256.3658	981974.7588	445.644	TBM	CHISELED SQUARE IN TOP OF HEADWALL
903	1949925.7673	982079.4364	442.303	TBM	CHISELED SQUARE IN TOP OF HEADWALL
904	1949464.4606	982294.7654	440.093	TBM	CORRUGATED METAL PIPE
905	1948898.7179	982611.0637	448.109	TBM	CHISELED SQUARE IN TOP OF CONCRETE BOX CULVERT
906	1949371.1138	983667.1493	417.087	TBM	CHISELED SQUARE IN TOP CENTER OF HEADWALL DOUBLE BOX CULVERT
907	1953740.2345	981795.8984	440.356	TBM	CHISELED SQUARE WEST SIDE OF HWY. 7
908	1954192.1675	982598.9321	450.906	TBM	CHISELED SQUARE IN SOUTHEAST CORNER CONCRETE OF BOX CULVERT
909	1954476.3743	983057.9189	442.383	TBM	CHISELED SQUARE IN TOP OF CONCRETE CURB
910	1955119.9388	984134.3384	443.499	TBM	CHISELED SQUARE IN TOP OF CONCRETE CURB
911	1955198.9993	985057.0475	446.152	TBM	CHISELED SQUARE IN HEADWALL NORTHWEST SIDE HWY. 7
912	1955523.2586	985345.4280	433.713	TBM	CHISELED SQUARE IN SOUTHEAST BRIDGE CORNER INSIDE CONCRETE FLARE
913	1947207.3569	983413.2007	454.057	TBM	CHISELED SQUARE IN SOUTHEAST CORNER OF CONCRETE STORM SEWER MANHOLE
914	1945622.7691	981833.5813	460.499	TBM	5/8"REBAR EAST SIDE OF HWY. 7
915	1944073.8731	979650.7804	469.108	TBM	CHISELED SQUARE IN HEADWALL CONCRETE BOX CULVERT
916	1943379.8667	977522.2875	500.623	TBM	CHISELED SQUARE IN HEADWALL CONCRETE BOX CULVERT
917	1942188.7467	976269.2969	512.789	TBM	CHISELED SQUARE IN NE BRIDGE CORNER
918	1941958.6383	975675.4140	529.175	TBM	CHISELED SQUARE IN CONC SLAB
919	1941360.8331	974757.6726	524.491	TBM	CHISELED SQUARE IN HEADWALL
920	1941074.3805	974326.0810	531.170	TBM	5/8"REBAR WEST SIDE OF HWY. 7
921	1940101.0789	973467.5302	507.330	TBM	CHISELED SQUARE IN CONCRETE HEADWALL
922	1939344.7368	970979.8522	541.806	TBM	5/8"REBAR
998	1952826.2090	981327.0093	419.050	BM	NGS S139 USGS BRASS DISK IN TOP
999	1938944.0865	970640.1415	542.318	BM	V139 RESET 1969

Note - Rebar and Cap - Standard -" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT
A PROJECT CAF OF 0.999924438 HAS BEEN USED TO COMPUTE THE GROUND COORDINATES LISTED ABOVE.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME. s060432GI.CTL
HORIZONTAL DATUM: NAD 83 (1997)
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 -0302-SOUTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 260039 - 260039A, 260030, 300007
CONVERGENCE ANGLE: 00-36-47 LEFT AT LT: 34-25-27.82 LG: 093-05-43.50
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

C.L. CONST.

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	98+99.63	1949185.8881	982427.9185
8001	PC	108+55.59	1950049.5029	982018.0070
8003	PT	113+43.15	1950494.2826	981818.3737
8004	PC	126+85.67	1951730.5048	981294.8158
8006	PT	130+75.94	1952112.6610	981242.2600
8007	PC	141+20.15	1953148.4197	981374.8055
8009	PT	147+14.10	1953633.1165	981684.0157
8010	PC	165+54.14	1954614.2041	983240.6820
8012	PT	168+47.25	1954778.3070	983483.4890
8013	PC	171+81.46	1954974.2043	983754.2593
8015	PT	178+26.63	1955145.4560	984362.5524
8016	PC	183+02.76	1955108.6113	984837.2524
8018	PT	191+11.84	1955630.8712	985302.7869
8019	PC	191+12.45	1955631.4699	985302.6704
8021	PT	192+59.58	1955768.1959	985250.3420
8022	POE	197+10.71	1956155.3989	985018.8392

HWY. 290

POINT NO.	TYPE	STATION	NORTHING	EASTING
8200	POB	69+81.15	1949593.4032	982234.4930
8201	PC	70+28.28	1949612.8362	982277.4321
8203	PT	70+78.20	1949625.5428	982325.4687
8204	PC	71+53.79	1949632.5024	982400.7384
8206	PT	72+84.51	1949633.8729	982531.3115
8207	POE	74+61.93	1949621.2500	982708.2812

AMITY RD.

POINT NO.	TYPE	STATION	NORTHING	EASTING
8100	POB	60+00.00	1953902.2107	982110.9805
8101	PC	61+19.88	1953994.1004	982033.9887
8103	PT	65+36.91	1954172.5963	981670.3919

PINE HILL RD.

POINT NO.	TYPE	STATION	NORTHING	EASTING
8400	POB	20+00.00	1954523.4861	983096.7422
8401	PC	20+65.30	1954567.8147	983048.7973
8403	PT	21+35.92	1954573.8708	982983.3812
8404	PC	21+58.53	1954561.8274	982964.2395
8406	PT	21+83.55	1954554.9164	982940.5290
8407	POE	23+16.32	1954554.1682	982807.7674

WOODLORE PT.

POINT NO.	TYPE	STATION	NORTHING	EASTING
8500	POB	0+00.00	1954526.9561	983102.2479
8501	PC	0+72.05	1954455.4768	983111.3046
8503	PT	0+79.32	1954448.2211	983111.5912
8504	PI	1+52.25	1954375.3722	983108.1593
8505	POE	2+02.11	1954325.5954	983105.3754

HAMILTON OAKS DR.

POINT NO.	TYPE	STATION	NORTHING	EASTING
8600	POB	40+00.00	1954855.5378	983590.2378
8601	PC	40+64.44	1954907.6656	983552.3583
8603	PT	41+01.89	1954924.1508	983520.2457
8604	PC	41+51.25	1954924.4546	983470.8886
8606	PT	41+65.88	1954923.4749	983456.2961
8607	POE	42+52.00	1954911.4390	983371.0287

STAGE 2 CL

POINT NO.	TYPE	STATION	NORTHING	EASTING
8700	POB	102+00.00	1949465.91	982318.25
8701	PC	105+34.73	1949768.31	982174.72
8703	PT	106+64.89	1949879.99	982108.25
8704	PC	107+35.25	1949936.82	982066.76
8706	PT	108+71.43	1950053.95	981997.73
8707	PC	109+20.69	1950098.64	981977.00
8709	PT	112+84.98	1950431.46	981828.93
8710	PC	126+91.26	1951725.24	981277.79
8712	PT	130+83.07	1952108.82	981224.63
8713	PC	141+13.27	1953130.69	981355.40
8715	PT	147+18.90	1953626.67	981668.64
8716	POE	149+31.68	1953741.76	981847.61

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3-6-17

2/23/2017

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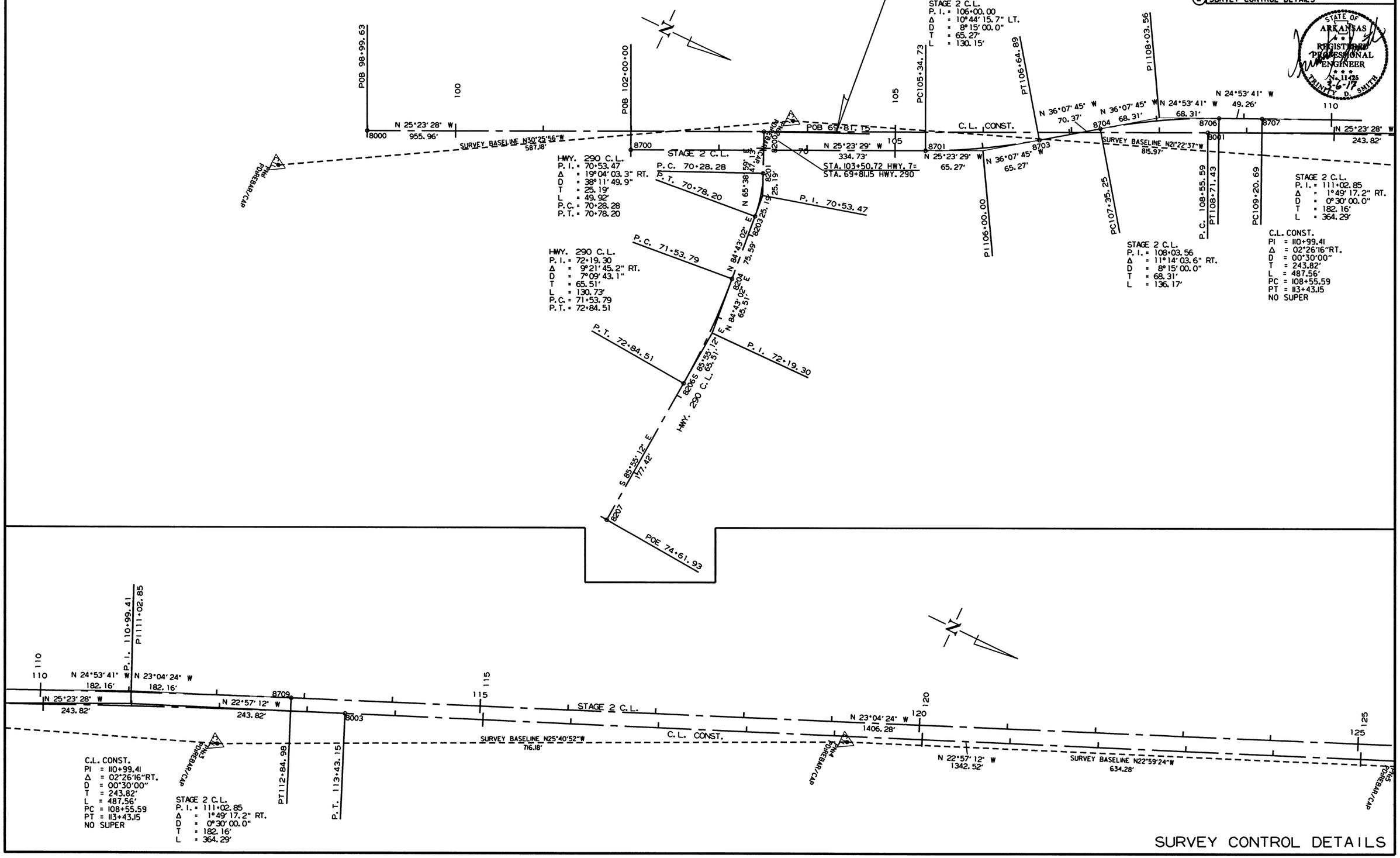
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		060432	51	153

2 SURVEY CONTROL DETAILS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 3-6-17 TRINITY D. SMITH



2/23/2017

R060432.DGN

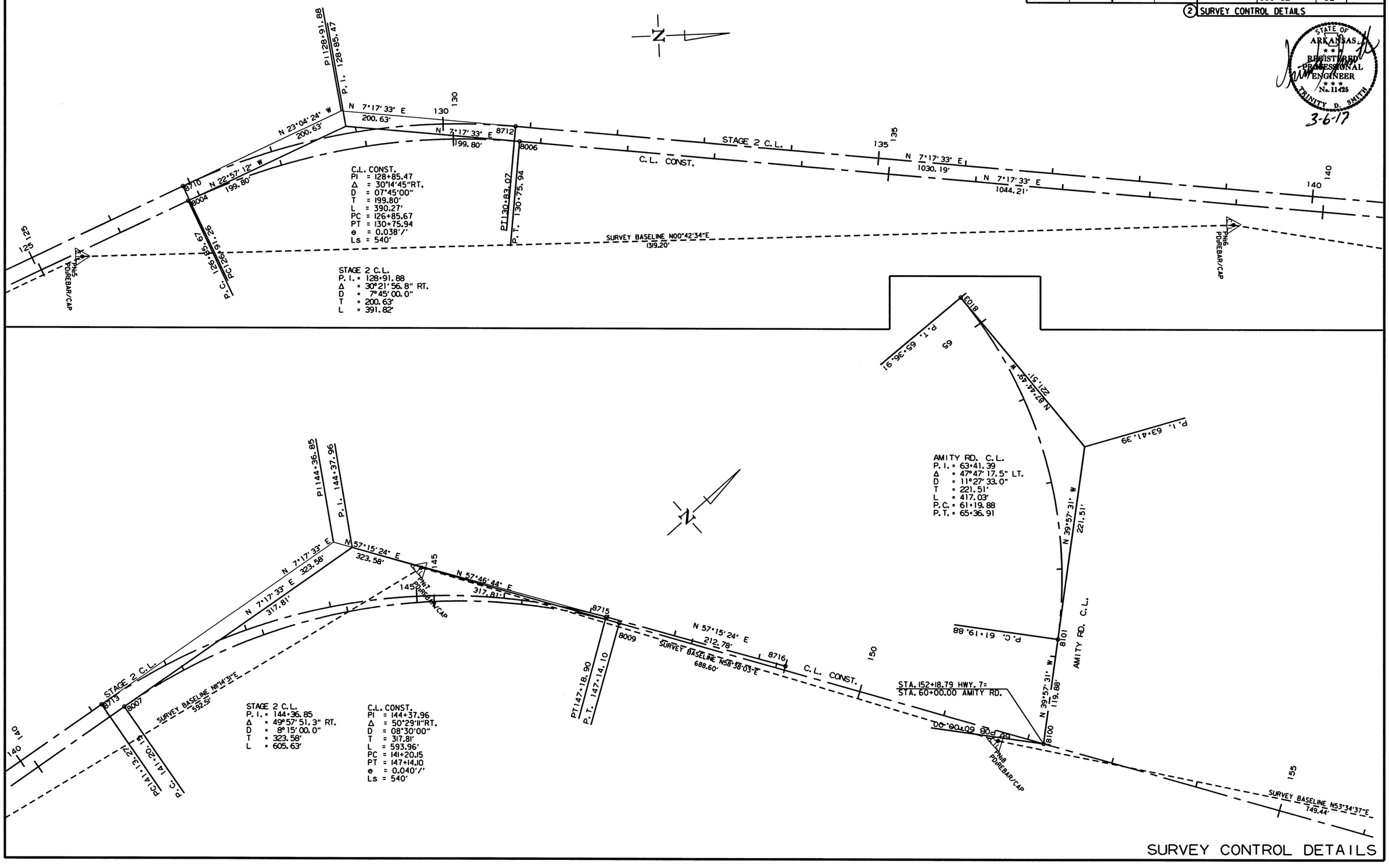
SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	52	153

(2) SURVEY CONTROL DETAILS

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

3-6-17



SURVEY CONTROL DETAILS

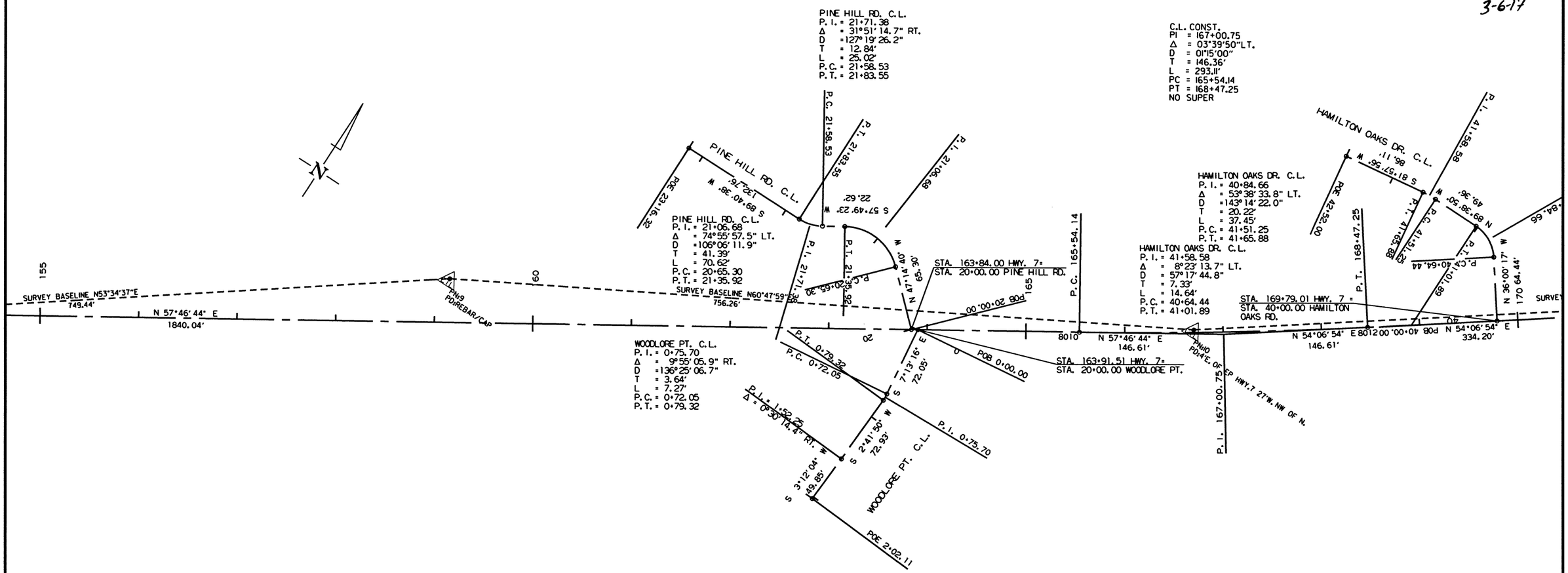
2/23/2017

R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	53	153

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
3-6-17



2/23/2017

R060432.DGN

SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	54	153

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
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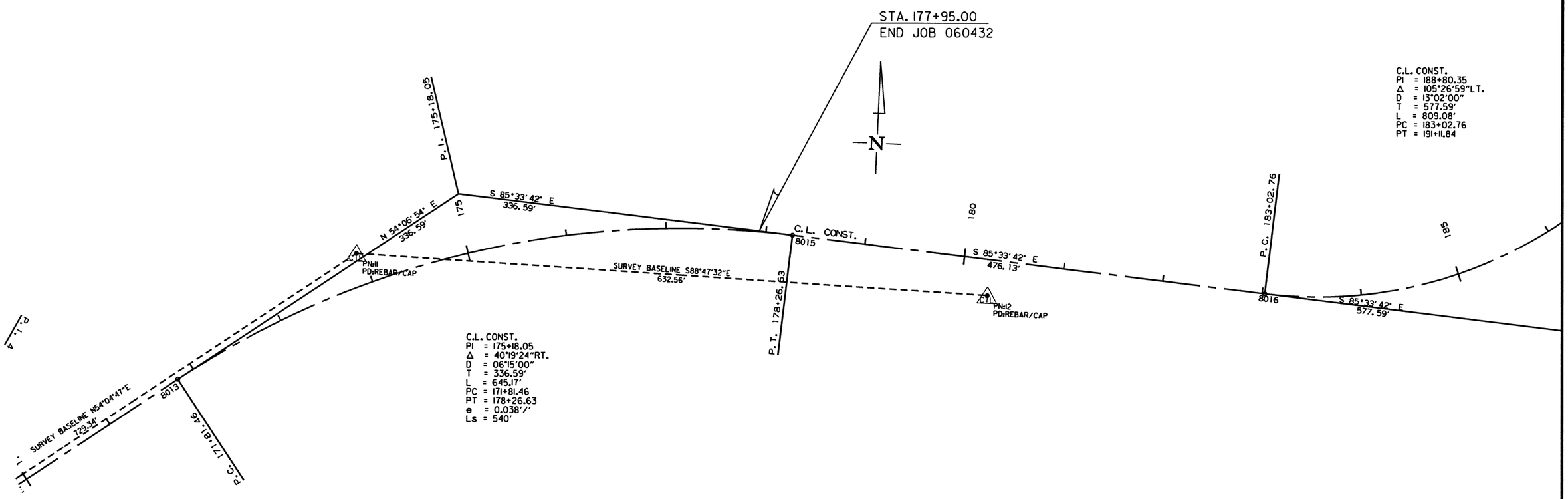
3-6-17



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SURVEY CONTROL DETAILS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	55	153

(2) SURVEY CONTROL DETAILS

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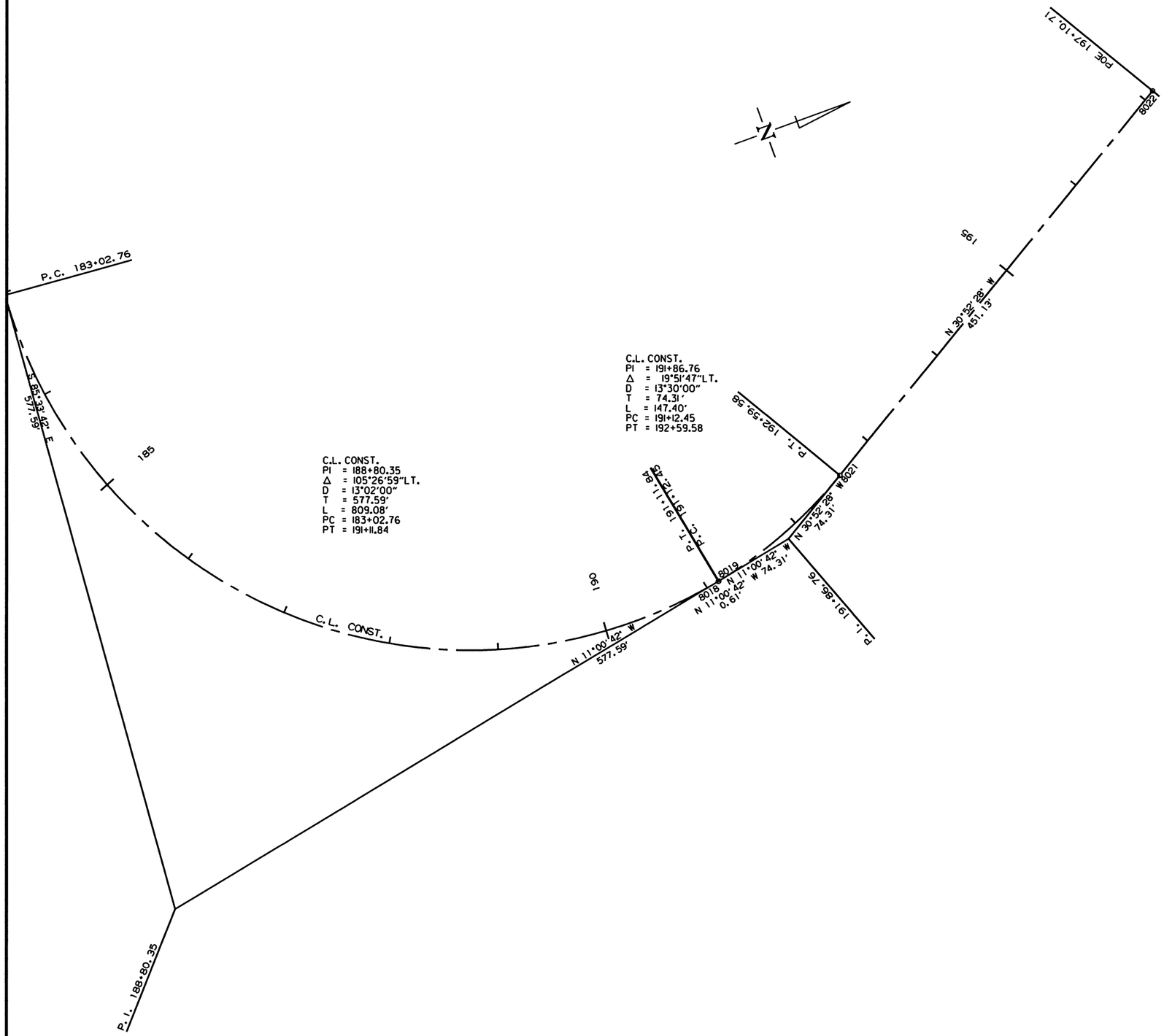
3-6-17



SURVEY CONTROL DETAILS

R060432.DGN 2/23/2017

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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				JOB NO.		060432	56	153

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
3-6-17

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	LIN. FT.
106+16	108+41	LT.	303
108+94	109+25	LT.	34

FENCE

STATION	STATION	SIDE	TYPE D
106+16	108+41	LT.	223

STA. 103+36 - IN PLACE
18" X 29' R.C. PIPE CULVERT
LT. SIDE DRAIN
RETAIN

STA. 103+53 - CONSTRUCT
TURNOUT ON LT. = 15 CU. YDS. EXC.

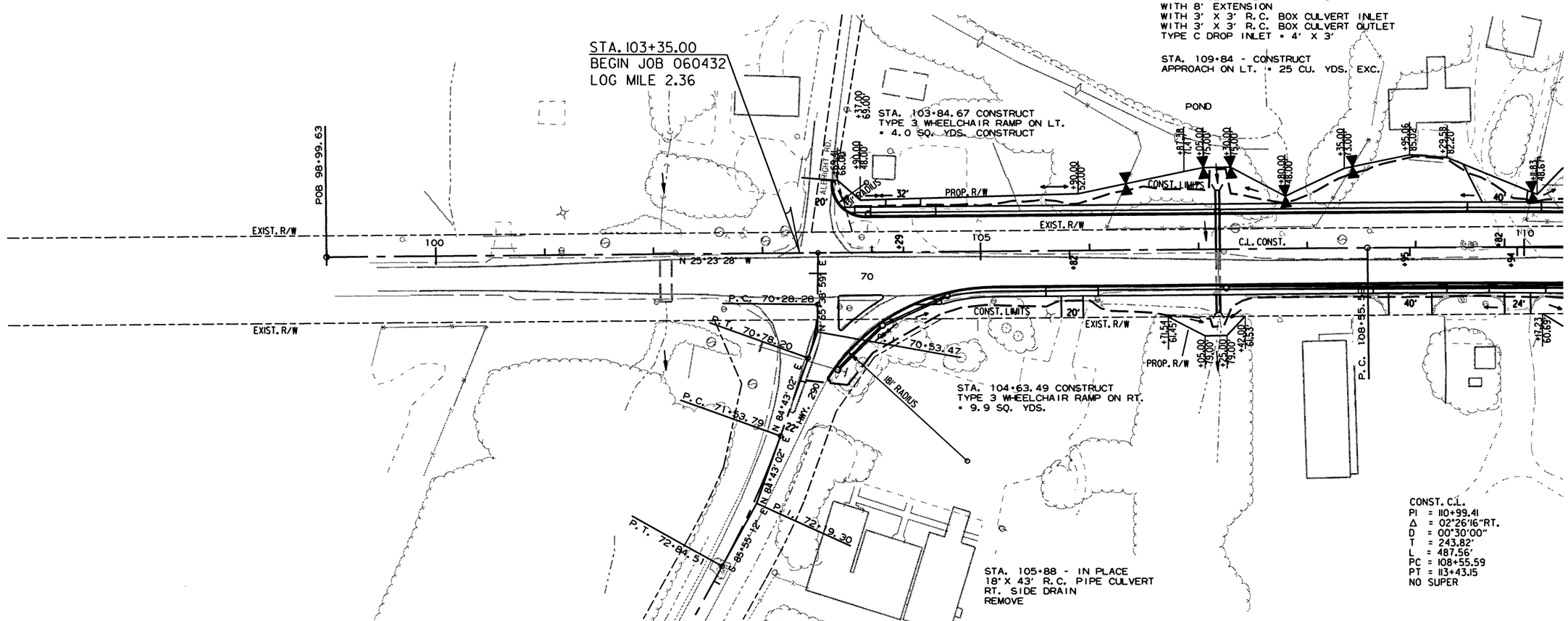
STA. 103+97 CONSTRUCT
DROP INLET ON LT. (H= 5'-6")
WITH 4' EXTENSION
WITH OPENING IN BACK
WITH 18" X 118'
PIPE OUTLET
TO D.I. STA. 102+75 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 118 LIN. FT.
18" SLPPMCCS PIPE (TYPE 2 BEDDING) = 118 LIN. FT.

STA. 104+29 - CONSTRUCT
APPROACH ON LT. = 5 CU. YDS. EMB.

STA. 107+18 IN PLACE
3' X 3' X 40' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
RETAIN & EXTEND 55' LT. AND 16' RT.
TO A COMPLETED LENGTH OF 111'
Q50 = 41.6 CFS D.A. = 30 ACRES

STA. 107+18 CONSTRUCT
DROP INLET ON LT. (H= 7'-6")
WITH 8' EXTENSION
WITH 3' X 3' R.C. BOX CULVERT INLET
WITH 3' X 3' R.C. BOX CULVERT OUTLET
TYPE C DROP INLET = 4' X 3'

STA. 109+84 - CONSTRUCT
APPROACH ON LT. = 25 CU. YDS. EXC.



STA. 103+61 - CONSTRUCT
STATE HWY. 290 ON RT. = 5 CU. YDS. EXC.

STA. 103+37 - IN PLACE
24" X 82' R.C. PIPE CULVERT
RT. SIDE DRAIN
RETAIN

STA. 103+67 CONSTRUCT
DROP INLET ON RT. (H= 4'-1")
WITH 1' OPENING IN BACK
ON TOP OF EXIST. R.C. PIPE CULVERT
TYPE MO DROP INLET = 4' DIA.

STA. 104+09 CONSTRUCT
DROP INLET ON RT. (H= 4'-3")
WITH 18" X 54'
PIPE OUTLET
TO D.I. STA. 103+67 RT.
TYPE MO DROP INLET = 4' DIA.
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 54 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 54 LIN. FT.

STA. 104+69 CONSTRUCT
DROP INLET ON RT. (H= 4'-6")
WITH 4' EXTENSION
WITH 18" X 62'
PIPE OUTLET
TO D.I. STA. 104+09 RT.
TYPE MO DROP INLET = 4' DIA.
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 62 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 62 LIN. FT.

STA. 105+82 - CONSTRUCT
APPROACH ON RT. = 20 CU. YDS. EMB.

STA. 107+25 CONSTRUCT
DROP INLET ON RT. (H= 8'-1")
WITH 8' EXTENSION
WITH 24" X 4'
PIPE OUTLET
TO R.C. BOX CULVERT STA. 107+18
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
24" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 4 LIN. FT.
24" SLPPMCCS (TYPE 2 BEDDING) = 4 LIN. FT.

STA. 108+95 - CONSTRUCT
APPROACH ON RT. = 10 CU. YDS. EMB.

STA. 109+94 - CONSTRUCT
APPROACH ON RT. = 35 CU. YDS. EMB.

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				6	ARK.			
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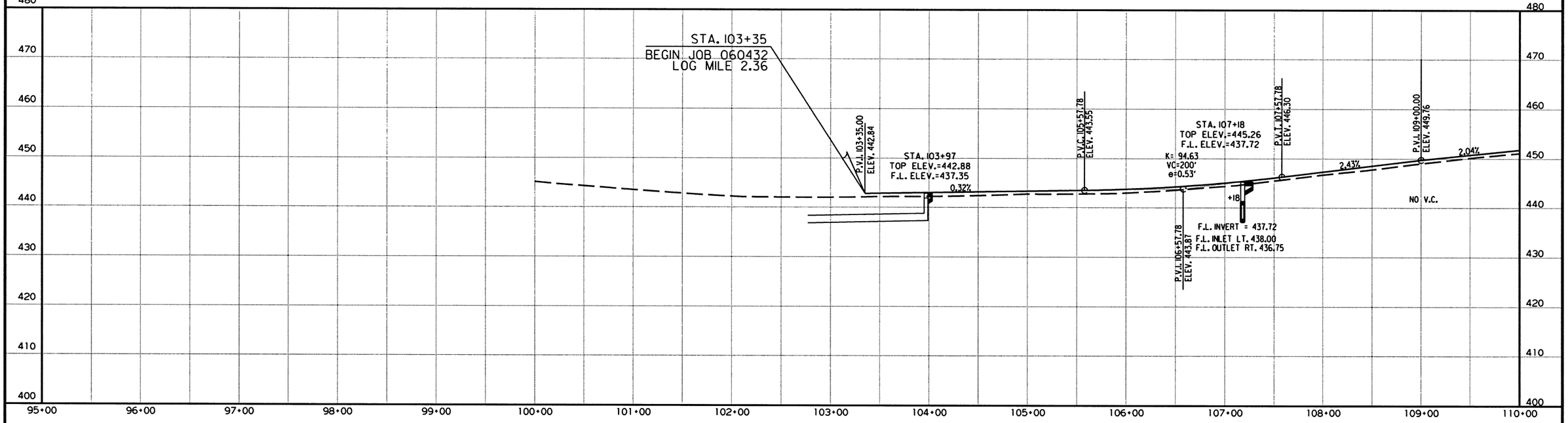
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH

3-6-17

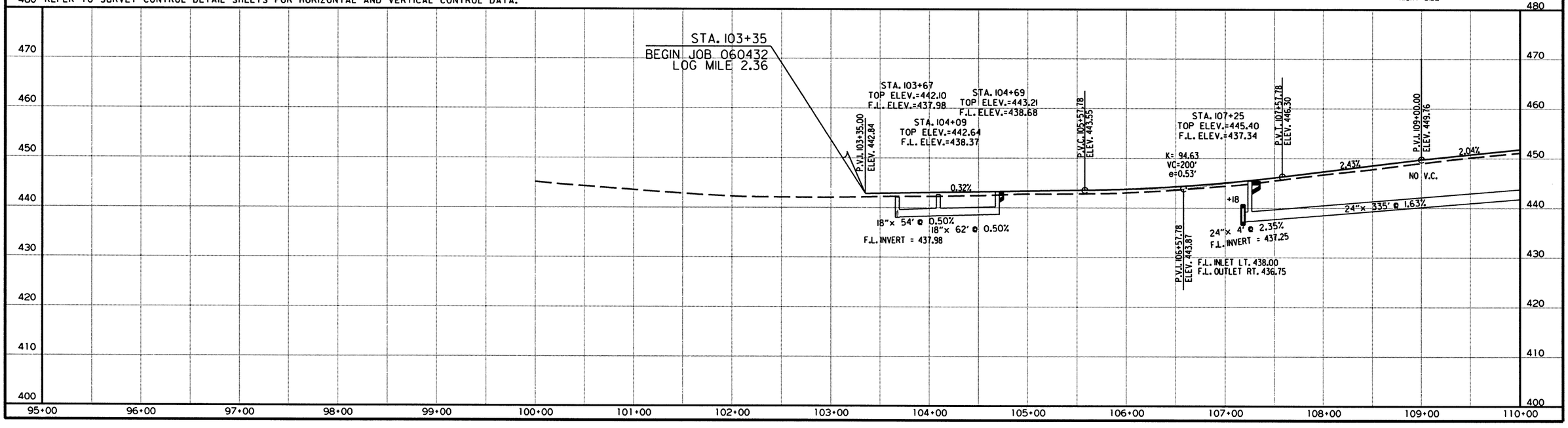
(2) PLAN AND PROFILE SHEETS

LEFT SIDE



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

RIGHT SIDE



R060432.DGN 2/13/2017

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	58	153

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-6-17

STA. 110+65 CONSTRUCT
DROP INLET ON LT. (H= 9'-1")
WITH 8' EXTENSION
WITH 24" X 15'
R.C. PIPE INLET WITH FES
TO DROP INLET ON STA. 110+65 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'

STA. 110+65 IN PLACE
24" X 56' R.C. PIPE CULVERT
WITH HDWLS. LT. & RT.
REMOVE HDWLS. LT. & RT. AND EXTEND 31' LT.
AND REMOVE 14' RT.
(CLASS III) (TYPE 3 BEDDING)
24" R.C. PIPE= 31' LIN. FT.

STA. 114+79 CONSTRUCT
DROP INLET ON LT. (H= 6'-5")
WITH 4' EXTENSION
WITH 24" X 13'
R.C. PIPE INLET WITH FES
TO D.I. STA. 114+79 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'

STA. 114+79 IN PLACE
24" X 42' R.C. PIPE CULVERT
WITH HDWLS. LT. & RT.
REMOVE HDWLS. LT. & RT. AND EXTEND 39' LT.
AND REMOVE 10.5' RT.
(CLASS III) (TYPE 3 BEDDING)
24" R.C. PIPE= 39' LIN. FT.

STA. 117+39 - CONSTRUCT
APPROACH ON LT. = 60 CU. YDS. EXC.

STA. 121+00 CONSTRUCT
DROP INLET ON LT. (H= 4'-3")
WITH 8' EXTENSION
WITH 18" X 67'
R.C. PIPE OUTLET
TO D.I. STA. 121+00 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'

STA. 124+00 CONSTRUCT
DROP INLET ON LT. (H= 4'-5")
WITH 8' EXTENSION
WITH 18" X 67'
R.C. PIPE OUTLET
TO D.I. STA. 124+00 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'

CONCRETE DITCH PAVING

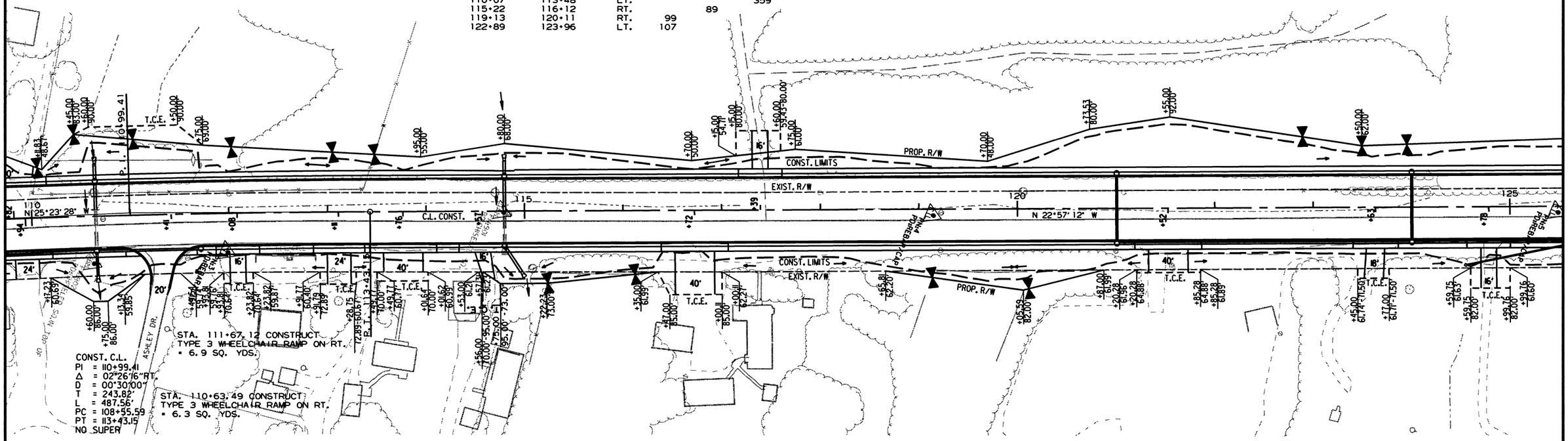
STATION	STATION	SIDE	TYPE	W	B	SQ. YD.
110+06	110+65	RT.	B	6		39.33
110+65	111+31	RT.	A	11	6	80.67
110+65	111+71	LT.	B	6		70.67

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	LIN. FT.
110+00	113+50	LT.	402
115+22	116+15	RT.	100
119+12	120+10	RT.	97
122+89	123+93	LT.	105

FENCE

STATION	STATION	SIDE	TYPE C	TYPE D	TYPE D-1
110+07	113+48	LT.			359
115+22	116+12	RT.		89	
119+13	120+11	RT.	99		
122+89	123+96	LT.	107		



STA. 110+61 - IN PLACE
24" X 29' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 110+65 CONSTRUCT
DROP INLET ON RT. (H= 10'-2")
WITH 4' EXTENSION
WITH 18" X 23'
R.C. PIPE INLET WITH FES
WITH 24" X 335'
PIPE OUTLET
TO R.C. BOX CULVERT STA. 107+25
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 23 LIN. FT.
24" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 335 LIN. FT.
24" SLPPMCCS (TYPE 2 BEDDING) = 335 LIN. FT.

STA. 111+41 - CONSTRUCT
TURNOUT ON RT. = 150 CU. YDS. EMB.

STA. 111+71 CONSTRUCT
DROP INLET ON RT. (H= 4'-6")
WITH 8' EXTENSION
WITH 18" X 102'
PIPE OUTLET
TO D.I. STA. 110+65 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 102 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 102 LIN. FT.

STA. 112+08 - CONSTRUCT
APPROACH ON RT. = 65 CU. YDS. EXC.

STA. 113+11 - CONSTRUCT
APPROACH ON RT. = 50 CU. YDS. EXC.
= 5 CU. YDS. EMB.

STA. 113+76 - CONSTRUCT
APPROACH ON RT. = 65 CU. YDS. EMB.

STA. 114+57 - CONSTRUCT
APPROACH ON RT. = 55 CU. YDS. EMB.

STA. 114+79 CONSTRUCT
DROP INLET ON RT. (H= 8'-6")
WITH 4' EXTENSION
24" X 29'
R.C. PIPE OUTLET WITH FES
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'

STA. 116+72 - CONSTRUCT
APPROACH ON RT. = 215 CU. YDS. EMB.

STA. 121+00 CONSTRUCT
DROP INLET ON RT. (H= 4'-8")
WITH 8' EXTENSION
WITH 18" X 296'
PIPE OUTLET
TO D.I. STA. 124+00.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 296 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 296 LIN. FT.

STA. 121+52 - CONSTRUCT
APPROACH ON RT. = 100 CU. YDS. EMB.

STA. 123+63 - CONSTRUCT
APPROACH ON RT. = 50 CU. YDS. EMB.

STA. 124+00 CONSTRUCT
DROP INLET ON RT. (H= 4'-5")
WITH 8' EXTENSION
WITH 18" X 171'
PIPE OUTLET
TO D.I. STA. 125+75
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 171 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 171 LIN. FT.

STA. 124+55 CONSTRUCT
YARD DRAIN ON RT.
12" X 120' SIDE DRAIN
TO D.I. STA. 125+75

STA. 124+78 - CONSTRUCT
APPROACH ON RT. = 105 CU. YDS. EMB.

STA. 124+81 - IN PLACE
18" X 28' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

2/13/2017

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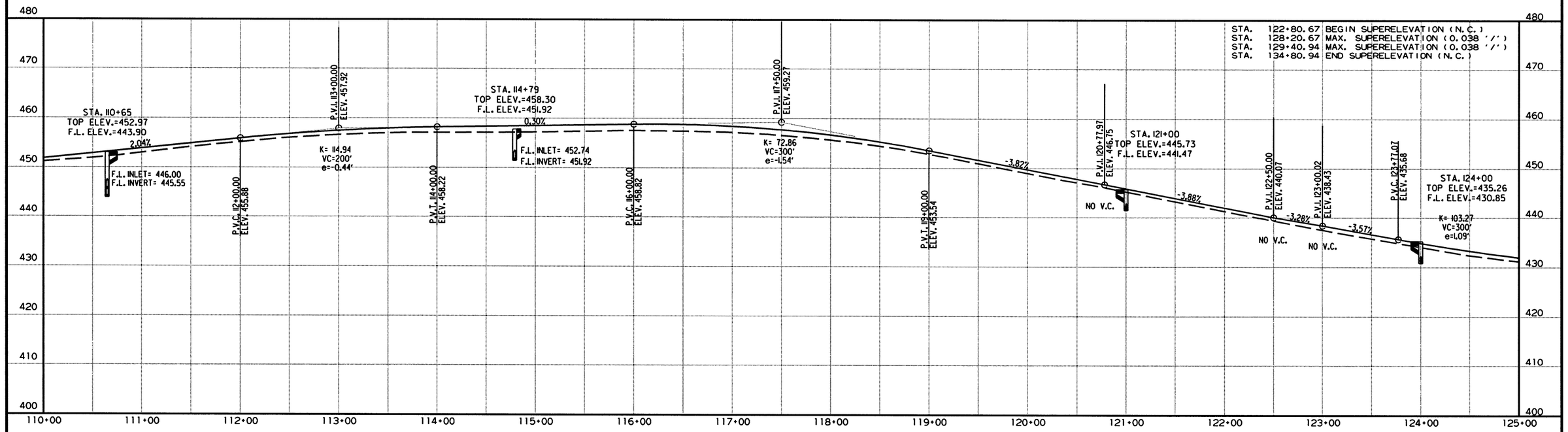
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	59	153

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

3-6-17

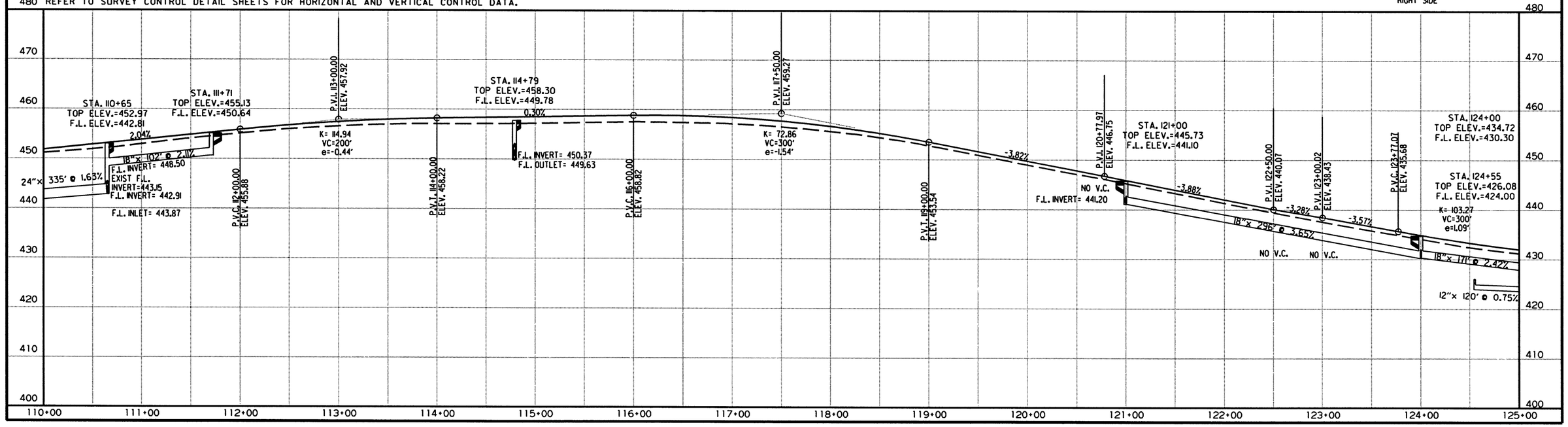
(2) PLAN AND PROFILE SHEETS

LEFT SIDE



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

RIGHT SIDE



R060432.DGN 2/13/2017

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	60	153

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-9-17

STA. 127+57 CONSTRUCT
DROP INLET ON LT. (H=3'-5")
ON TOP OF R.C. BOX CULVERT
TYPE C DROP INLET = 4' X 2'-6"

STA. 127+57 IN PLACE
6' X 5' X 30' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT. (15° LEFT FORWARD SKEW)
RETAIN & EXTEND 60' LT. AND 15' RT.
TO A COMPLETED LENGTH OF 101'
Q50 = 50.8 CFS D.A. = 28.5 ACRES

STA. 130+11 CONSTRUCT
DROP INLET ON LT. (H= 6'-10")
WITH 18" X 156'
PIPE OUTLET
TO D.I. STA. 131+68 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'

STA. 131+68 CONSTRUCT
DROP INLET ON LT. (H= 4'-11")
WITH 8' EXTENSION
WITH 18" X 175'
PIPE OUTLET
TO D.I. STA. 133+47 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'

STA. 132+05 - IN PLACE
18"X41' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 132+18 - CONSTRUCT
TURNOUT ON LT. = 55 CU. YDS. EMB.

STA. 133+47 CONSTRUCT
DROP INLET ON LT. (H= 4'-4")
WITH 18" X 6'
R.C. PIPE INLET WITH FES
WITH 18" X 67'
R.C. PIPE OUTLET
TO D.I. STA. 133+47 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'

STA. 135+00 - CONSTRUCT
APPROACH ON LT. = 65 CU. YDS. EMB.

STA. 134+68 - IN PLACE
18"X31' R.C. PIPE CULVERT
18"X31' C.P. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 136+78 CONSTRUCT
DROP INLET ON LT. (H= 4'-3")
WITH 8' EXTENSION
WITH 18" X 67'
R.C. PIPE OUTLET
TO D.I. STA. 136+78 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'

STA. 139+90 CONSTRUCT
DROP INLET ON LT. H= 4'-1"
18" X 67' R.C. PIPE OUTLET
TO D.I. STA. 139+90 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'

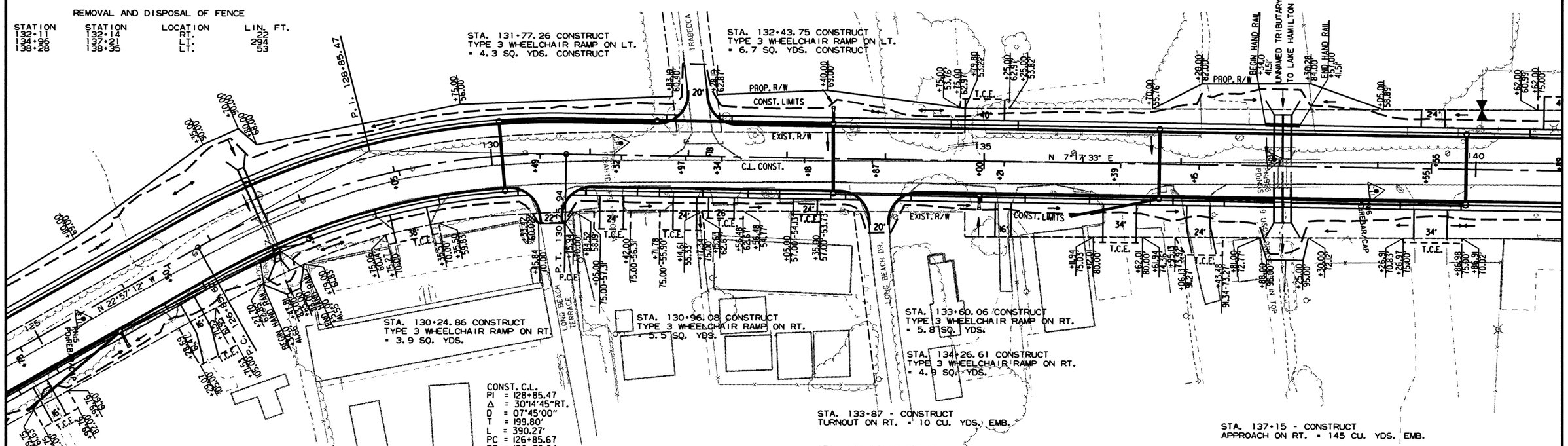
STA. 139+55 - CONSTRUCT
APPROACH ON LT. = 25 CU. YDS. EMB.

CONCRETE DITCH PAVING

STATION	STATION	SIDE	TYPE	W	B	SQ. YD.
127+00	128+00	LT.	B	6		66.67
137+00	139+00	LT.	B	6		133.33

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	LIN. FT.
132+11	132+14	RT.	22
134+96	137+21	LT.	294
138+28	138+35	LT.	53



STA. 133+87 - CONSTRUCT
TURNOUT ON RT. = 10 CU. YDS. EMB.

STA. 137+15 - CONSTRUCT
APPROACH ON RT. = 145 CU. YDS. EMB.

STA. 130+49 - CONSTRUCT
TURNOUT ON RT. = 60 CU. YDS. EMB.

STA. 131+32 - CONSTRUCT
APPROACH ON RT. = 50 CU. YDS. EMB.

STA. 131+97 - CONSTRUCT
APPROACH ON RT. = 60 CU. YDS. EMB.

STA. 132+34 - CONSTRUCT
APPROACH ON RT. = 20 CU. YDS. EMB.

STA. 134+95 CONSTRUCT
DROP INLET ON RT. (H= 4'-3")
WITH 4' EXTENSION
WITH 18" X 4'
R.C. PIPE INLET WITH FES
WITH 24" X 179' PIPE OUTLET
TO D.I. STA. 136+78 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 4 LIN. FT.
24" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 179 LIN. FT.
24" SLPPMCCS (TYPE 2 BEDDING) = 179 LIN. FT.

STA. 138+04 IN PLACE
DBL. 8' X 6' X 30' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
RETAIN & EXTEND 45' LT. AND 35' RT.
TO A COMPLETED LENGTH OF 105'
Q50 = 465 CFS D.A. = 183 ACRES

STA. 135+21 - CONSTRUCT
APPROACH ON RT. = 30 CU. YDS. EMB.

STA. 139+90 CONSTRUCT
DROP INLET ON RT. (H= 5'-7")
WITH 8' EXTENSION
WITH 30" X 176' PIPE OUTLET
TO R.C. BOX CULVERT STA. 138+04
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 5' X 4'
30" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 176 LIN. FT.
30" SLPPMCCS (TYPE 2 BEDDING) = 176 LIN. FT.

STA. 125+75 CONSTRUCT
DROP INLET ON RT. (H= 6'-9")
WITH 8' EXTENSION
12" X 120' PIPE INLET
18" X 10' R.C. PIPE INLET WITH FES
24" X 174' R.C. PIPE OUTLET
TO R.C. BOX CULVERT STA. 127+55.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
24" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 174 LIN. FT.
24" SLPPMCCS (TYPE 2 BEDDING) = 174 LIN. FT.

STA. 126+89 - IN PLACE
18"X 26' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 127+57 CONSTRUCT
DROP INLET ON RT. (H=2'-11")
WITH 8' EXTENSION
ON TOP OF R.C. BOX CULVERT
TYPE C DROP INLET = 4' X 2'-6"

STA. 129+05 - CONSTRUCT
APPROACH ON RT. = 60 CU. YDS. EMB.

STA. 133+18 - CONSTRUCT
APPROACH ON RT. = 25 CU. YDS. EMB.

STA. 135+89 CONSTRUCT
YARD DRAIN ON RT.
12" X 88' SIDE DRAIN
TO D.I. STA. 136+84 RT.

STA. 136+39 - CONSTRUCT
APPROACH ON RT. = 100 CU. YDS. EMB.

STA. 139+42 - IN PLACE
DBL. 18"X 68' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 126+30 - IN PLACE
18"X 26' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 130+11 CONSTRUCT
DROP INLET ON RT. (H= 4'-3")
WITH 8' EXTENSION
WITH 18" X 67'
R.C. PIPE OUTLET
TO D.I. STA. 130+11 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 172 LIN. FT.

STA. 133+47 CONSTRUCT
DROP INLET ON RT. (H= 4'-5")
WITH 8' EXTENSION
WITH OPENING IN BACK
WITH 18" X 144'
PIPE OUTLET
TO D.I. STA. 134+95 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 144 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 144 LIN. FT.

STA. 136+35 - IN PLACE
18"X 61' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 136+78 CONSTRUCT
DROP INLET ON RT. (H= 6'-3")
WITH 4' EXTENSION
WITH 12" X 88' SIDE DRAIN
WITH 24" X 115' PIPE OUTLET
TO R.C. BOX CULVERT STA. 138+04
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
24" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 115 LIN. FT.
24" SLPPMCCS (TYPE 2 BEDDING) = 115 LIN. FT.

STA. 139+55 - CONSTRUCT
APPROACH ON RT. = 70 CU. YDS. EMB.

STA. 126+50 - CONSTRUCT
TURNOUT ON RT. = 80 CU. YDS. EMB.

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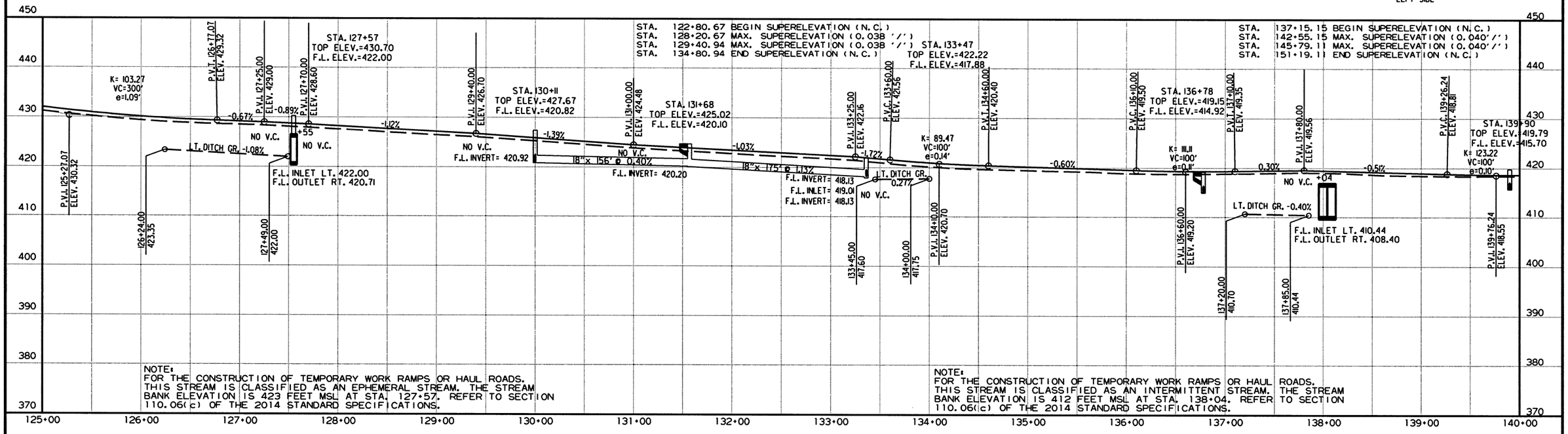
				6	ARK.			
				JOB NO.		060432	61	153

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

3-6-17

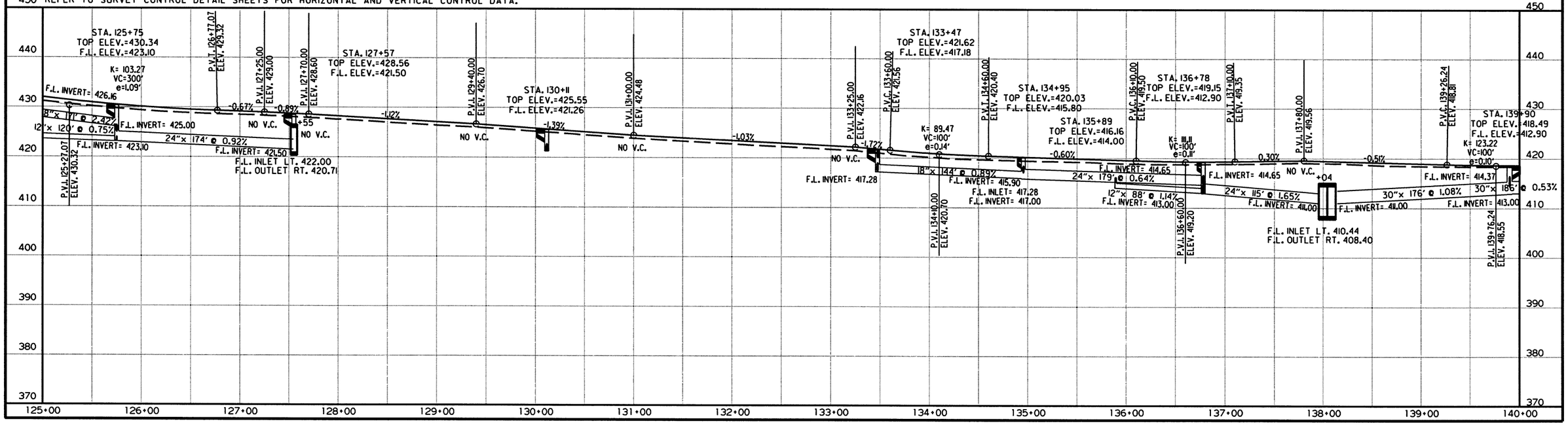
(2) PLAN AND PROFILE SHEETS

LEFT SIDE



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

RIGHT SIDE



2/13/2017

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	62	153

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-22-17

STA. 140+89 - CONSTRUCT
APPROACH ON LT. = 150 CU. YDS. EMB.

STA. 141+85 CONSTRUCT
DROP INLET ON LT. (H= 4'-9")
WITH 18" X 6'
R.C. PIPE INLET WITH FES
WITH 18" X 67' R.C. PIPE OUTLET
TO D.I. STA. 141+85 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 67 LIN. FT.

STA. 142+35 - IN PLACE
12" X 31' R.C. PIPE CULVERT
LT. SIDE DRAIN
RETAIN

STA. 142+42 - IN PLACE
12" X 11' R.C. PIPE CULVERT
LT. SIDE DRAIN
RETAIN

STA. 142+67 - CONSTRUCT
TURNOUT ON LT. = 105 CU. YDS. EMB.

STA. 142+21.64 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT.
= 4.8 SQ. YDS. CONSTRUCT

STA. 142+84.07 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT.
= 6.2 SQ. YDS. CONSTRUCT

STA. 142+47 - IN PLACE
18" X 28' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 142+87 CONSTRUCT
DROP INLET ON LT. (H= 4'-9")
WITH 18" X 29'
R.C. PIPE INLET WITH FES
WITH 18" X 103'
PIPE OUTLET
TO D.I. STA. 141+85 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 103 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 103 LIN. FT.

STA. 143+05 - IN PLACE
24" X 40' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 143+19 - CONSTRUCT
APPROACH ON LT. = 10 CU. YDS. EMB.

STA. 143+34 CONSTRUCT
YARD DRAIN ON LT.
12" X 49' SIDE DRAIN
TO D.I. STA. 142+87

STA. 143+79 - CONSTRUCT
APPROACH ON LT. = 20 CU. YDS. EMB.

STA. 143+69 - IN PLACE
24" X 35' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 144+49 - CONSTRUCT
APPROACH ON LT. = 25 CU. YDS. EMB.

STA. 144+75 CONSTRUCT
DROP INLET ON LT. (H= 4'-2")
WITH 8' EXTENSION
WITH 18" X 6'
R.C. PIPE INLET WITH FES
WITH 18" X 69'
R.C. PIPE OUTLET
TO D.I. STA. 144+90 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 75 LIN. FT.

STA. 147+82 - CONSTRUCT
APPROACH ON LT. = 20 CU. YDS. EXC.

STA. 148+56 - IN PLACE
DROP INLET ON LT.
REMOVE

STA. 148+66 CONSTRUCT
DROP INLET ON LT. (H= 7'-10")
WITH 8' EXTENSION
CONNECT EXISTING 24" PIPE CULVERT
WITH 30" X 67' R.C. PIPE OUTLET
TO D.I. STA. 148+67 RT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' X 3'
30" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 67 LIN. FT.

STA. 149+04 - CONSTRUCT
APPROACH ON LT. = 20 CU. YDS. EXC.

STA. 149+26 - IN PLACE
18" X 118' C.P. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	LIN. FT.
140+05	141+15	LT.	148
142+71	142+85	LT.	19
144+70	146+07	RT.	150
154+23	155+12	RT.	139

STA. 149+66 - CONSTRUCT
APPROACH ON LT.
= 20 CU. YDS. EXC.

STA. 150+04 CONSTRUCT
DROP INLET ON LT. (H= 4'-6")
WITH 8' EXTENSION
WITH 18" X 133' PIPE OUTLET
TO D.I. STA. 148+66 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III)
(TYPE 3 BEDDING) = 133 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 133 LIN. FT.

STA. 150+29 - IN PLACE
18" X 60' C.P. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 150+44 - CONSTRUCT
APPROACH ON LT. = 80 CU. YDS.

STA. 151+25 CONSTRUCT
DROP INLET ON LT. (H= 3'-11")
WITH 8' EXTENSION
WITH 18" X 117' PIPE OUTLET
TO D.I. STA. 150+04 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 117 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 117 LIN. FT.

STA. 152+19 - CONSTRUCT
TURNOUT ON LT. = 115 CU. YDS. EXC.

STA. 153+17 CONSTRUCT
DROP INLET ON LT. (H= 4'-4")
WITH 8' EXTENSION
WITH 18" x 8' R.C. PIPE INLET
CONNECT EXISTING 18" R.C. PIPE CULVERT
WITH 24" X 67' R.C. PIPE OUTLET
TO D.I. STA. 153+17 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'

STA. 153+89 - CONSTRUCT
APPROACH ON LT. = 10 CU. YDS. EXC.

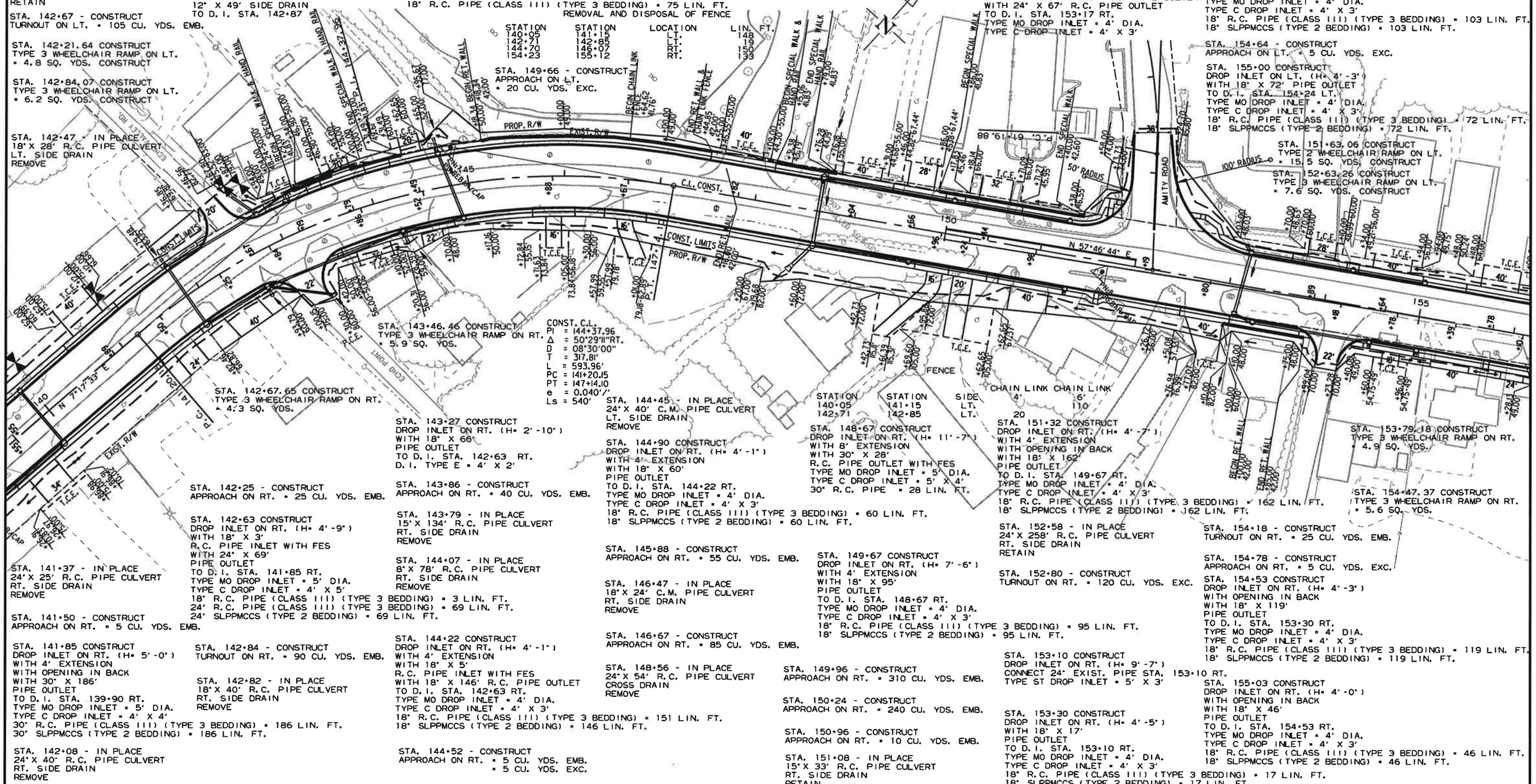
STA. 154+24 CONSTRUCT
DROP INLET ON LT. (H= 4'-3")
WITH 4' EXTENSION
WITH 18" X 103' PIPE OUTLET
TO D.I. STA. 153+17 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 103 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 103 LIN. FT.

STA. 154+64 - CONSTRUCT
APPROACH ON LT. = 5 CU. YDS. EXC.

STA. 155+00 CONSTRUCT
DROP INLET ON LT. (H= 4'-3")
WITH 18" X 72' PIPE OUTLET
TO D.I. STA. 154+24 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 72 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 72 LIN. FT.

STA. 151+63.06 CONSTRUCT
TYPE 2 WHEELCHAIR RAMP ON LT.
= 15.5 SQ. YDS. CONSTRUCT

STA. 152+63.26 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT.
= 7.6 SQ. YDS. CONSTRUCT



STA. 143+46.46 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT.
= 5.9 SQ. YDS.

CONST. C.L.
PI = 144+37.96
Δ = 50°29'11"RT.
D = 08°30'00"
T = 317.81'
L = 593.96'
PC = 141+20.15
PT = 147+14.10
e = 0.040'/'
Ls = 540'

STA. 142+67.65 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT.
= 4.3 SQ. YDS.

STA. 143+27 CONSTRUCT
DROP INLET ON RT. (H= 2'-10")
WITH 18" X 66'
PIPE OUTLET
TO D.I. STA. 142+63 RT.
D.I. TYPE E = 4' X 2'

STA. 142+25 - CONSTRUCT
APPROACH ON RT. = 25 CU. YDS. EMB.

STA. 142+63 CONSTRUCT
DROP INLET ON RT. (H= 4'-9")
WITH 18" X 3'
R.C. PIPE INLET WITH FES
WITH 24" X 69'
PIPE OUTLET
TO D.I. STA. 141+85 RT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' X 5'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 3 LIN. FT.
24" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 69 LIN. FT.
24" SLPPMCCS (TYPE 2 BEDDING) = 69 LIN. FT.

STA. 141+37 - IN PLACE
24" X 25' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 141+50 - CONSTRUCT
APPROACH ON RT. = 5 CU. YDS. EMB.

STA. 141+85 CONSTRUCT
DROP INLET ON RT. (H= 5'-0")
WITH 4' EXTENSION
WITH OPENING IN BACK
WITH 30" X 186'
PIPE OUTLET
TO D.I. STA. 139+90 RT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' X 4'
30" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 186 LIN. FT.
30" SLPPMCCS (TYPE 2 BEDDING) = 186 LIN. FT.

STA. 142+08 - IN PLACE
24" X 40' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 142+84 - CONSTRUCT
TURNOUT ON RT. = 90 CU. YDS. EMB.

STA. 142+82 - IN PLACE
18" X 40' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 143+86 - CONSTRUCT
APPROACH ON RT. = 40 CU. YDS. EMB.

STA. 143+79 - IN PLACE
15" X 134' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 144+07 - IN PLACE
8" X 78' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 144+22 CONSTRUCT
DROP INLET ON RT. (H= 4'-1")
WITH 4' EXTENSION
WITH 18" X 5'
R.C. PIPE INLET WITH FES
WITH 18" X 146' R.C. PIPE OUTLET
TO D.I. STA. 142+63 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 151 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 146 LIN. FT.

STA. 144+52 - CONSTRUCT
APPROACH ON RT. = 5 CU. YDS. EMB.
= 5 CU. YDS. EXC.

STA. 144+45 - IN PLACE
24" X 40' C.M. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 144+90 CONSTRUCT
DROP INLET ON RT. (H= 4'-1")
WITH 4' EXTENSION
WITH 18" X 60'
PIPE OUTLET
TO D.I. STA. 144+22 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 60 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 60 LIN. FT.

STA. 145+88 - CONSTRUCT
APPROACH ON RT. = 55 CU. YDS. EMB.

STA. 146+47 - IN PLACE
18" X 24' C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 146+67 - CONSTRUCT
APPROACH ON RT. = 85 CU. YDS. EMB.

STA. 148+56 - IN PLACE
24" X 54' R.C. PIPE CULVERT
CROSS DRAIN
REMOVE

STATION	STATION	SIDE
140+05	141+15	LT.
142+71	142+85	LT.

STA. 148+67 CONSTRUCT
DROP INLET ON RT. (H= 11'-7")
WITH 8' EXTENSION
WITH 30" X 28'
R.C. PIPE OUTLET WITH FES
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 5' X 4'
30" R.C. PIPE = 28 LIN. FT.

STA. 149+67 CONSTRUCT
DROP INLET ON RT. (H= 7'-6")
WITH 4' EXTENSION
WITH 18" X 95'
PIPE OUTLET
TO D.I. STA. 148+67 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 95 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 95 LIN. FT.

STA. 149+96 - CONSTRUCT
APPROACH ON RT. = 310 CU. YDS. EMB.

STA. 150+24 - CONSTRUCT
APPROACH ON RT. = 240 CU. YDS. EMB.

STA. 150+96 - CONSTRUCT
APPROACH ON RT. = 10 CU. YDS. EMB.

STA. 151+08 - IN PLACE
15" X 33' R.C. PIPE CULVERT
RT. SIDE DRAIN
RETAIN

STA. 151+32 CONSTRUCT
DROP INLET ON RT. (H= 4'-7")
WITH 4' EXTENSION
WITH OPENING IN BACK
WITH 18" X 162'
PIPE OUTLET
TO D.I. STA. 149+67 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 162 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 162 LIN. FT.

STA. 152+58 - IN PLACE
24" X 258' R.C. PIPE CULVERT
RT. SIDE DRAIN
RETAIN

STA. 152+80 - CONSTRUCT
TURNOUT ON RT. = 120 CU. YDS. EXC.

STA. 153+10 CONSTRUCT
DROP INLET ON RT. (H= 9'-7")
CONNECT 24" EXIST. PIPE STA. 153+10 RT.
TYPE ST DROP INLET = 5' X 3'

STA. 153+30 CONSTRUCT
DROP INLET ON RT. (H= 4'-5")
WITH 18" X 17'
PIPE OUTLET
TO D.I. STA. 153+10 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 17 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 17 LIN. FT.

STA. 153+79.18 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT.
= 4.9 SQ. YDS.

STA. 154+47.37 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT.
= 5.6 SQ. YDS.

STA. 154+18 - CONSTRUCT
TURNOUT ON RT. = 25 CU. YDS. EMB.

STA. 154+78 - CONSTRUCT
APPROACH ON RT. = 5 CU. YDS. EXC.

STA. 154+53 CONSTRUCT
DROP INLET ON RT. (H= 4'-3")
WITH OPENING IN BACK
WITH 18" X 119'
PIPE OUTLET
TO D.I. STA. 153+30 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 119 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 119 LIN. FT.

STA. 155+03 CONSTRUCT
DROP INLET ON RT. (H= 4'-0")
WITH OPENING IN BACK
WITH 18" X 46'
PIPE OUTLET
TO D.I. STA. 154+53 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 46 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 46 LIN. FT.

2/13/2017

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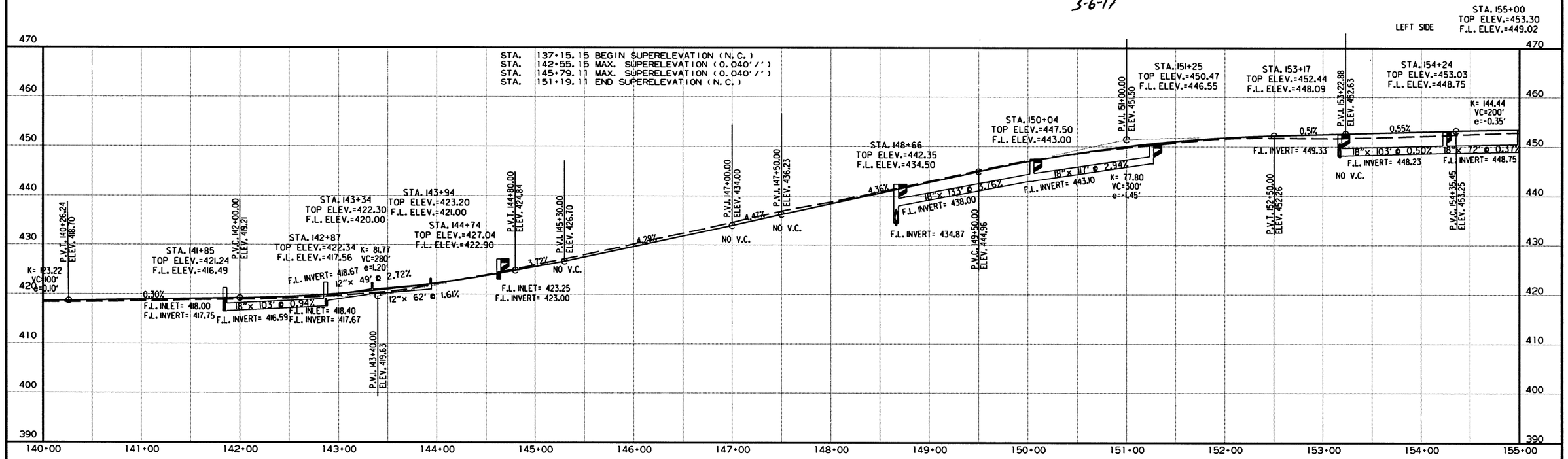
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	63	153

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

3-6-17

(2) PLAN AND PROFILE SHEETS



R060432.DGN 2/13/2017

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.	060432		64	153

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-22-17

STA. 155+78 - CONSTRUCT
APPROACH ON LT. = 70 CU. YDS. EXC.

STA. 156+69 - CONSTRUCT
APPROACH ON LT. = 50 CU. YDS. EXC.

STA. 157+12 CONSTRUCT
DROP INLET ON LT. (H= 4'-2")
WITH 8' EXTENSION
WITH 18" X 184'
PIPE OUTLET
TO D. I. STA. 159+00 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 184 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 184 LIN. FT.

STA. 157+81 - CONSTRUCT
APPROACH ON LT. = 100 CU. YDS. EXC.

STA. 159+00 CONSTRUCT
DROP INLET ON LT. (H= 4'-6")
WITH 8' EXTENSION
WITH 18" X 107'
PIPE OUTLET
TO D. I. STA. 161+74 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 107 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 107 LIN. FT.

STA. 160+11 CONSTRUCT
DROP INLET ON LT. (H= 4'-11")
WITH 8' EXTENSION
WITH 24" X 159'
PIPE OUTLET
TO D. I. STA. 161+74 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
24" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 159 LIN. FT.
24" SLPPMCCS (TYPE 2 BEDDING) = 159 LIN. FT.

STA. 161+74 CONSTRUCT
DROP INLET ON LT. (H= 4'-7")
WITH 4' EXTENSION
WITH OPENING IN BACK
WITH 24" X 142'
PIPE OUTLET
TO D. I. STA. 163+20 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
24" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 142 LIN. FT.
24" SLPPMCCS (TYPE 2 BEDDING) = 142 LIN. FT.

STA. 163+20 CONSTRUCT
DROP INLET ON LT. (H= 4'-9")
WITH 8' EXTENSION
WITH OPENING IN BACK
WITH 24" X 100'
PIPE OUTLET
TO D. I. STA. 164+24 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
24" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 100 LIN. FT.
24" SLPPMCCS (TYPE 2 BEDDING) = 100 LIN. FT.

STA. 163+64 - CONSTRUCT
TURNOUT ON LT. = 40 CU. YDS. EMB.
= 295 CU. YDS. EXC.

STA. 164+53 - CONSTRUCT
APPROACH ON LT. = 5 CU. YDS. EMB.
= 190 CU. YDS. EXC.

STA. 164+24 CONSTRUCT
DROP INLET ON LT. (H= 4'-9")
WITH 8' EXTENSION
WITH OPENING IN BACK
WITH 24" X 109'
PIPE OUTLET
TO D. I. STA. 165+38 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 4'
24" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 109 LIN. FT.
24" SLPPMCCS (TYPE 2 BEDDING) = 109 LIN. FT.

STA. 165+05 - CONSTRUCT
APPROACH ON LT. = 5 CU. YDS. EMB.
= 5 CU. YDS. EXC.

STA. 165+38 CONSTRUCT
DROP INLET ON LT. (H= 6'-4")
WITH 4' EXTENSION
WITH 18" X 4'
R.C. PIPE INLET WITH FES
WITH 36" X 67' R.C. PIPE OUTLET
TO D. I. STA. 165+39 RT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' X 3'
36" R.C. PIPE (CLASS III) (TYPE 3 BEDDING)
= 67 LIN. FT.
36" SLPPMCCS (TYPE 2 BEDDING) = 67 LIN. FT.
18" R.C. PIPE = 4 LIN. FT.

STA. 167+58 - IN PLACE
12" X 33' R.C. PIPE CULVERT
LT. SIDE DRAIN

STA. 167+78 - IN PLACE
18" X 33' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 167+97 - IN PLACE
8" X 43' C.P. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 167+72 CONSTRUCT
DROP INLET ON LT. (H= 4'-0")
18" X 60' PIPE OUTLET
TO D. I. STA. 168+21 LT.
D. I. TYPE ST = 3' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 60 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 60 LIN. FT.

STA. 167+89 - CONSTRUCT
APPROACH ON LT. = 30 CU. YDS. EMB.

STA. 167+98 - IN PLACE
DROP INLET ON LT.
REMOVE

STA. 168+12 CONSTRUCT
JUNCTION BOX ON LT. (H= 3'-1")
18" X 29' PIPE OUTLET
TO D. I. STA. 168+21 LT.
J.B. TYPE E = 2' X 2'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING)
= 29 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 29 LIN. FT.

STA. 168+21 CONSTRUCT
DROP INLET ON LT. (H= 5'-10")
WITH 8' EXTENSION
WITH 24" X 67' R.C. PIPE OUTLET
TO D. I. STA. 168+21 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'

STA. 169+00 CONSTRUCT
DROP INLET ON LT. (H= 4'-9")
WITH 18" X 75'
PIPE OUTLET
TO D. I. STA. 168+21 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 75 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 75 LIN. FT.

STA. 169+79 - CONSTRUCT
TURNOUT ON LT. = 125 CU. YDS. EXC.

STA. 169+87 - IN PLACE
12" X 99' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 169+89 - CONSTRUCT
APPROACH ON LT. = 30 CU. YDS. EMB.

STA. 21+72 - CONSTRUCT
APPROACH ON RT. (PINE HILL RD.)
= 75 CU. YDS. EXC.

CONCRETE DITCH PAVING

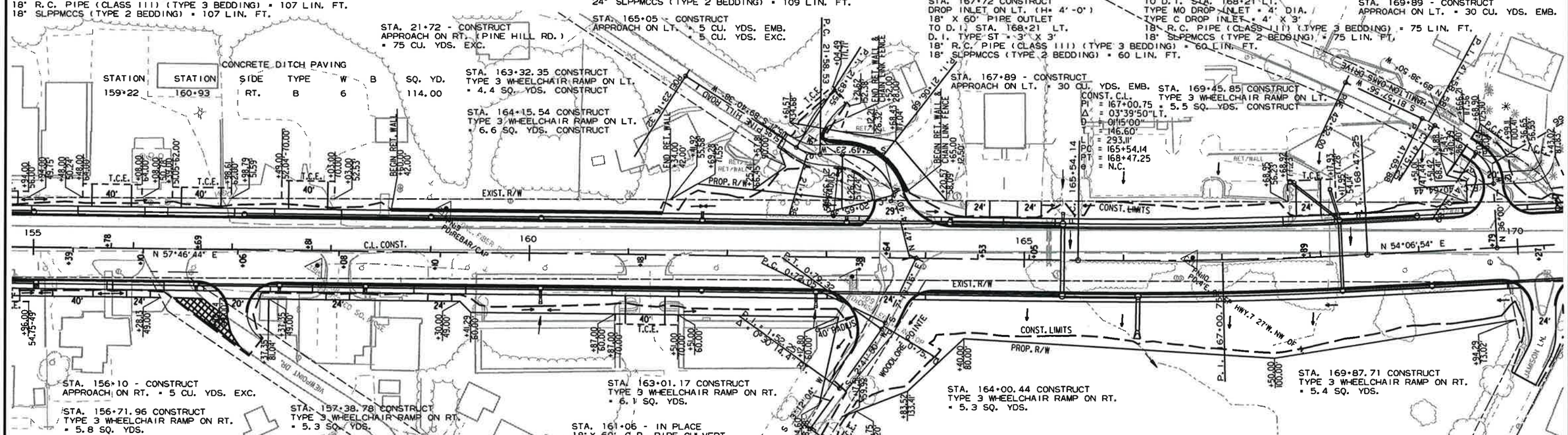
STATION	STATION	SIDE	TYPE	W	B	SQ. YD.
159+22	160+93	RT.	B	6		114.00

STA. 163+32.35 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT.
= 4.4 SQ. YDS. CONSTRUCT

STA. 164+15.54 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT.
= 6.6 SQ. YDS. CONSTRUCT

STA. 169+45.85 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT.
= 5.5 SQ. YDS. CONSTRUCT

CONST. C.L.
PI = 167+00.75
Δ = 03°39'50" LT.
D = 01°15'00"
L = 146.60'
L = 293.11'
PC = 165+54.14
PT = 168+47.25
e = N.C.



STA. 156+10 - CONSTRUCT
APPROACH ON RT. = 5 CU. YDS. EXC.

STA. 156+71.96 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT.
= 5.8 SQ. YDS.

STA. 157+38.78 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT.
= 5.3 SQ. YDS.

STA. 163+01.17 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT.
= 6.1 SQ. YDS.

STA. 164+00.44 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT.
= 5.3 SQ. YDS.

STA. 169+87.71 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON RT.
= 5.4 SQ. YDS.

STA. 155+39 - CONSTRUCT
APPROACH ON RT. = 5 CU. YDS. EMB.

STA. 156+64 CONSTRUCT
DROP INLET ON RT. (H= 4'-1")
WITH OPENING IN BACK
WITH 18" X 80'
PIPE OUTLET
TO D. I. STA. 157+48 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 80 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 80 LIN. FT.

STA. 157+06 - CONSTRUCT
TURNOUT ON RT. = 10 CU. YDS. EMB.
= 5 CU. YDS. EXC.

STA. 157+48 CONSTRUCT
DROP INLET ON RT. (H= 4'-8")
WITH OPENING IN BACK
WITH 18" X 83'
R.C. PIPE OUTLET
TO D. I. STA. 158+35 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 83 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 83 LIN. FT.

STA. 158+08 - CONSTRUCT
APPROACH ON RT. = 5 CU. YDS. EMB.

STA. 158+26 - IN PLACE
DROP INLET ON RT.
REMOVE

STA. 158+35 CONSTRUCT
DROP INLET ON RT. (H= 4'-8")
WITH OPENING IN BACK
WITH 18" X 172'
PIPE OUTLET
TO D. I. STA. 160+12 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 172 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 172 LIN. FT.

STA. 158+53 - IN PLACE
18" X 156' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 159+10 - CONSTRUCT
TURNOUT ON RT. = 5 CU. YDS. EXC.

STA. 160+12 CONSTRUCT
DROP INLET ON RT. (H= 4'-2")
WITH 8' EXTENSION
WITH 18" X 7'
R.C. PIPE INLET WITH FES
WITH 18" X 159'
PIPE OUTLET
TO D. I. STA. 161+75 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 166 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 159 LIN. FT.

STA. 161+06 - IN PLACE
18" X 60' C.P. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 161+13 - CONSTRUCT
TURNOUT ON RT. = 70 CU. YDS. EMB.

STA. 161+75 CONSTRUCT
DROP INLET ON RT. (H= 4'-5")
WITH 4' EXTENSION
WITH 18" X 111'
PIPE OUTLET
TO D. I. STA. 162+90 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 111 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 111 LIN. FT.

STA. 162+90 CONSTRUCT
DROP INLET ON RT. (H= 4'-4")
WITH 4' EXTENSION
WITH 18" X 7'
R.C. PIPE INLET WITH FES
WITH 18" X 245'
PIPE OUTLET
TO D. I. STA. 165+39 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 245 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 245 LIN. FT.

STA. 163+38 - CONSTRUCT
TURNOUT ON LT. = 555 CU. YDS. EMB.

STA. 163+43 - IN PLACE
18" X 39' C.M. PIPE CULVERT
CROSS DRAIN
REMOVE

STA. 165+13 IN PLACE
3' X 2' X 41' R.C. BOX CULVERT
WITH 3:1 WINGS LT. & RT.
PLUG & ABANDON

STA. 165+39 CONSTRUCT
DROP INLET ON RT. (H= 8'-4")
WITH 4' EXTENSION
WITH 36" X 72'
PIPE OUTLET
TO D. I. STA. 166+15 RT.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 4' X 4'
36" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 72 LIN. FT.
36" SLPPMCCS (TYPE 2 BEDDING) = 72 LIN. FT.

STA. 166+15 CONSTRUCT
DROP INLET ON RT. (H= 13'-4")
WITH 36" X 301' R.C. PIPE OUTLET WITH F.E.S.
TYPE MO DROP INLET = 5' DIA.
TYPE C DROP INLET = 5' X 5'
36" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 30 LIN. FT.

STA. 167+98 - IN PLACE
24" X 40' R.C. PIPE CULVERT
RT. SIDE DRAIN
RETAIN

STA. 168+20 CONSTRUCT
DROP INLET ON RT. (H= 8'-5")
WITH 8' EXTENSION
WITH 24" X 202'
PIPE OUTLET
TO D. I. STA. 166+15 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
24" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 202 LIN. FT.
24" SLPPMCCS (TYPE 2 BEDDING) = 202 LIN. FT.

STA. 169+11 CONSTRUCT
DROP INLET ON RT. (H= 6'-11")
WITH 18" X 87'
PIPE OUTLET
TO D. I. STA. 168+20 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 87 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 87 LIN. FT.

2/13/2017

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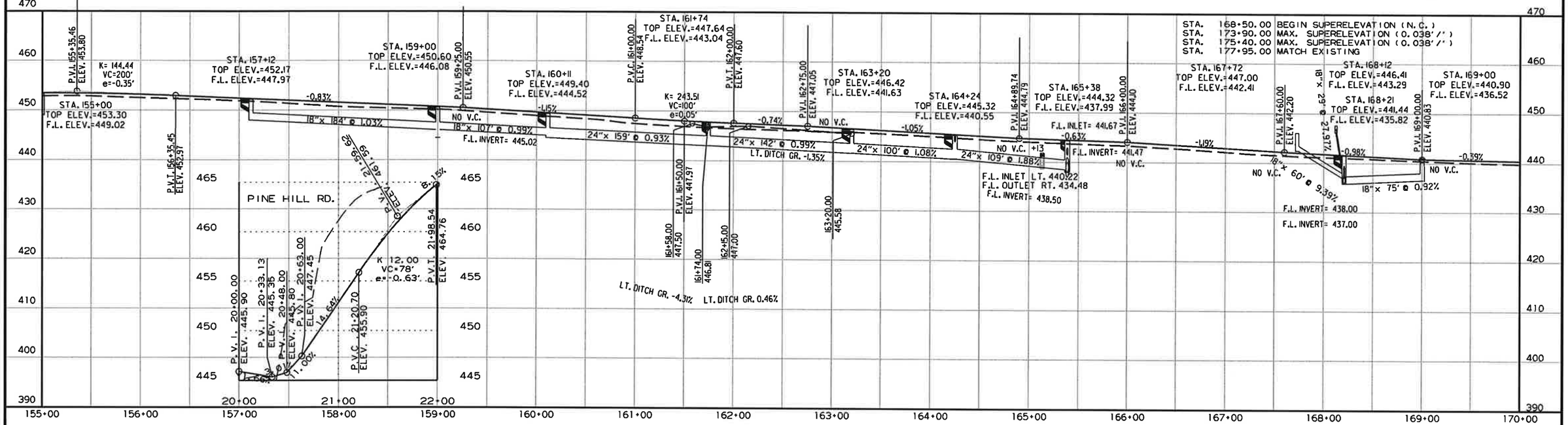
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	65	153

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-22-17

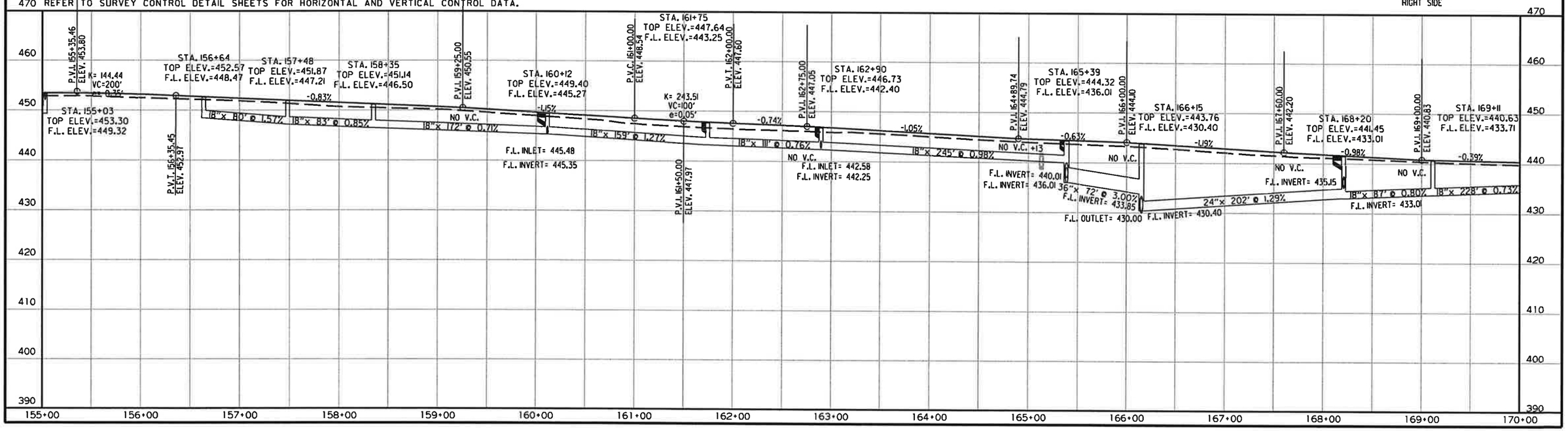
(2) PLAN AND PROFILE SHEETS

LEFT SIDE



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

RIGHT SIDE



R060432.DGN 2/13/2017

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-22-17

STA. 170+41 CONSTRUCT
JUNCTION BOX ON LT. (H= 4'-0")
18" X 9' PIPE OUTLET
TO D. I. STA. 170+43 LT.
J.B. TYPE E = 3' X 2'

STA. 170+43 CONSTRUCT
DROP INLET ON LT. (H= 4'-8")
WITH 8' EXTENSION
WITH 18" X 158'
PIPE OUTLET
TO D. I. STA. 172+04 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 158 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 158 LIN. FT.

STA. 170+75 - IN PLACE
15" X 27' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 170+98 - CONSTRUCT
APPROACH ON LT. = 25 CU. YDS. EMB.

STA. 171+74 - IN PLACE
18" X 34' C.P. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 171+26 - CONSTRUCT
APPROACH ON LT. = 5 CU. YDS. EMB.
= 20 CU. YDS. EXC.

STA. 170+11.89 CONSTRUCT
TYPE 3 WHEELCHAIR RAMP ON LT.
= 5.4 SQ. YDS. CONSTRUCT

STA. 172+04 CONSTRUCT
DROP INLET ON LT. (H= 7'-5")
WITH 4' EXTENSION
WITH 18" X 2'
R.C. PIPE OUTLET WITH FES
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'

STA. 172+61 - CONSTRUCT
APPROACH ON LT. = 20 CU. YDS. EMB.

STA. 172+50 - IN PLACE
18" X 24' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 172+86 CONSTRUCT
DROP INLET ON LT. (H= 4'-7")
WITH OPENING IN BACK
WITH 18" X 81'
PIPE OUTLET
TO D. I. STA. 172+04 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 81 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 81 LIN. FT.

STA. 173+18 - CONSTRUCT
APPROACH ON LT. = 5 CU. YDS. EXC.

STA. 173+60 - CONSTRUCT
APPROACH ON LT. = 5 CU. YDS. EMB.

STA. 173+89 CONSTRUCT
DROP INLET ON LT. (H= 3'-11")
WITH 18" X 103'
PIPE OUTLET
TO D. I. STA. 172+86 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 103 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 103 LIN. FT.

STA. 174+13 - CONSTRUCT
APPROACH ON LT. = 5 CU. YDS. EXC.

STA. 174+68 - CONSTRUCT
APPROACH ON LT. = 5 CU. YDS. EMB.
= 5 CU. YDS. EXC.

STA. 174+58 - IN PLACE
18" X 24' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

STA. 175+46 - IN PLACE
18" X 24' R.C. PIPE CULVERT
LT. SIDE DRAIN
REMOVE

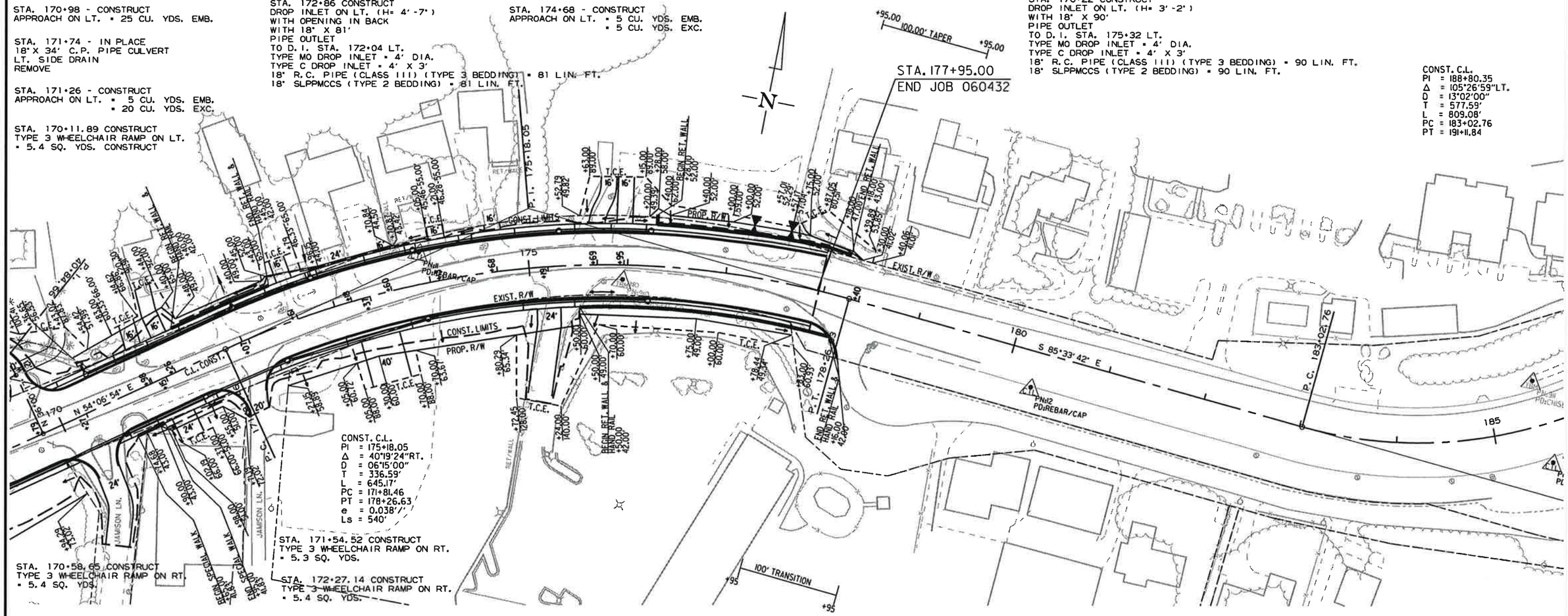
STA. 175+69 - CONSTRUCT
APPROACH ON LT. = 5 CU. YDS. EMB.
= 20 CU. YDS. EXC.

STA. 175+32 CONSTRUCT
DROP INLET ON LT. (H= 3'-10")
WITH 4' EXTENSION
WITH 18" X 145'
PIPE OUTLET
TO D. I. STA. 173+89 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 145 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 145 LIN. FT.

STA. 175+95 - CONSTRUCT
APPROACH ON LT. = 75 CU. YDS. EXC.

STA. 176+22 CONSTRUCT
DROP INLET ON LT. (H= 3'-2")
WITH 18" X 90'
PIPE OUTLET
TO D. I. STA. 175+32 LT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 90 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 90 LIN. FT.

CONST. C.L.
PI = 188+80.35
Δ = 105°26'59"LT.
D = 13°02'00"
T = 577.59'
L = 809.08'
PC = 183+02.76
PT = 191+11.84



STA. 170+27 - CONSTRUCT
TURNOUT ON RT. = 165 CU. YDS. EMB.

STA. 171+15 - CONSTRUCT
APPROACH ON RT. = 160 CU. YDS. EMB.

STA. 171+43 CONSTRUCT
DROP INLET ON RT. (H= 4'-5")
WITH 18" X 228'
PIPE OUTLET
TO D. I. STA. 169+11 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 228 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 228 LIN. FT.

STA. 172+07 - CONSTRUCT
TURNOUT ON RT. = 35 CU. YDS. EMB.

STA. 172+11 - IN PLACE
18" X 48' R.C. PIPE CULVERT
RT. SIDE DRAIN
REMOVE

STA. 172+36 CONSTRUCT
DROP INLET ON RT. (H= 4'-1")
WITH 4' EXTENSION
WITH 18" X 86'
PIPE OUTLET
TO D. I. STA. 171+43 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 86 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 86 LIN. FT.

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	LIN. FT.
177+23	177+53	LT.	49

FENCE

STATION	STATION	SIDE	TYPE C
177+21	177+57	LT.	38

STA. 173+37 - CONSTRUCT
APPROACH ON RT. = 235 CU. YDS. EMB.

STA. 173+90 CONSTRUCT
DROP INLET ON RT. (H= 3'-10")
WITH 8' EXTENSION
WITH 18" X 144'
PIPE OUTLET
TO D. I. STA. 172+36 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 144 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 144 LIN. FT.

STA. 175+19 - CONSTRUCT
APPROACH ON RT. = 260 CU. YDS. EMB.
= 45 CU. YDS. EXC.

STA. 176+22 CONSTRUCT
DROP INLET ON RT. (H= 3'-3")
WITH 8' EXTENSION
18" X 217'
PIPE OUTLET
TO D. I. STA. 173+90 RT.
TYPE MO DROP INLET = 4' DIA.
TYPE C DROP INLET = 4' X 3'
18" R.C. PIPE (CLASS III) (TYPE 3 BEDDING) = 217 LIN. FT.
18" SLPPMCCS (TYPE 2 BEDDING) = 217 LIN. FT.

2/13/2017

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				6	ARK.			
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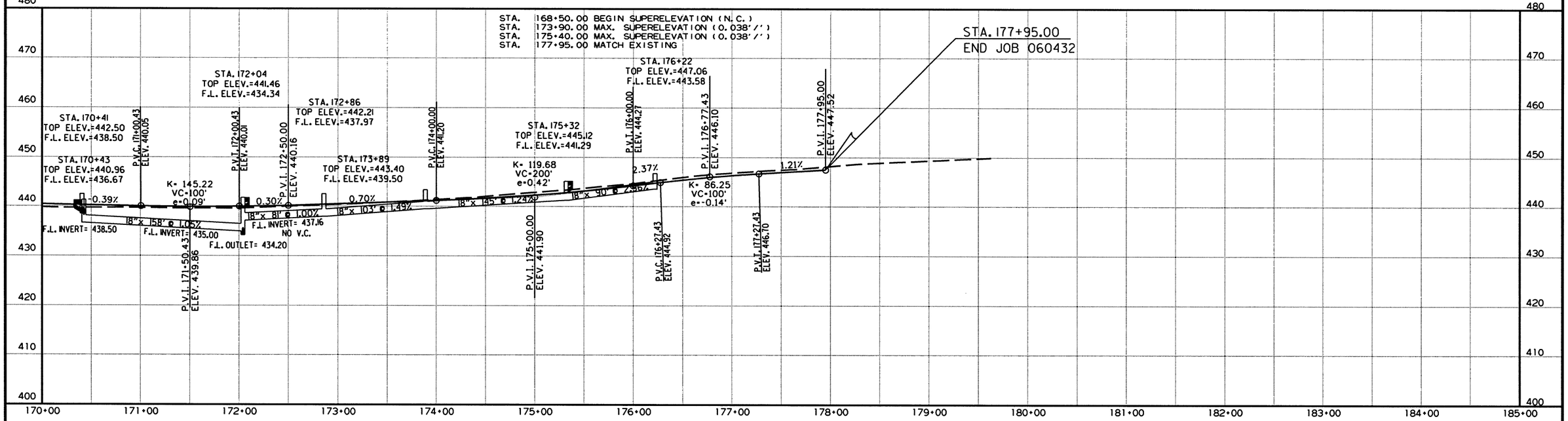
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH

3-6-17

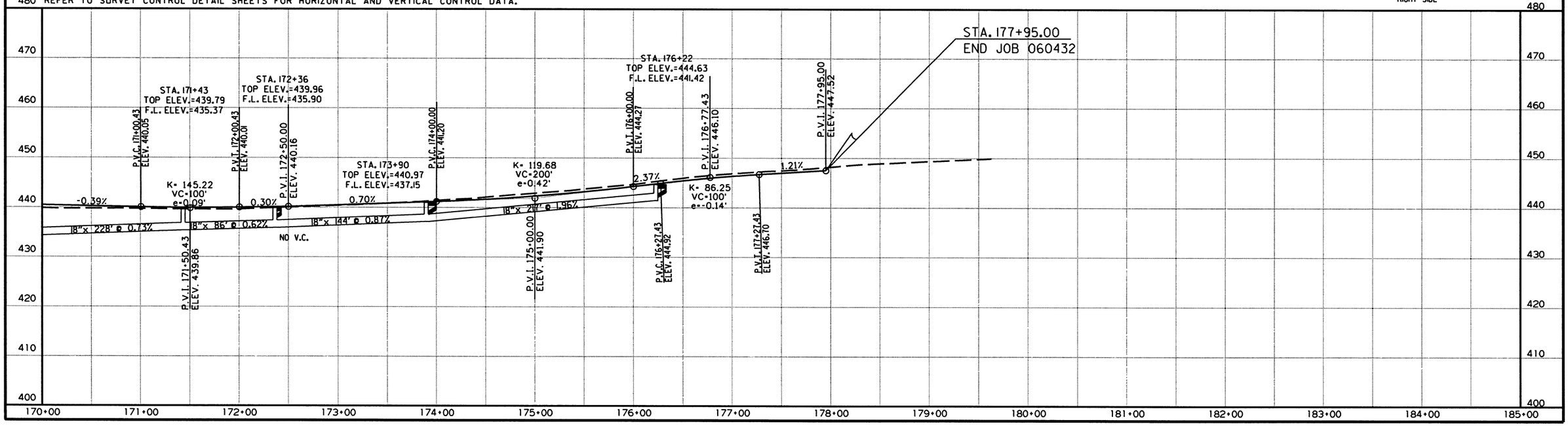
(2) PLAN AND PROFILE SHEETS

LEFT SIDE



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

RIGHT SIDE



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(2) SUMMARY OF TRAFFIC SIGNAL QUANTITIES

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

3-6-17

SUMMARY OF TRAFFIC SIGNAL QUANTITIES

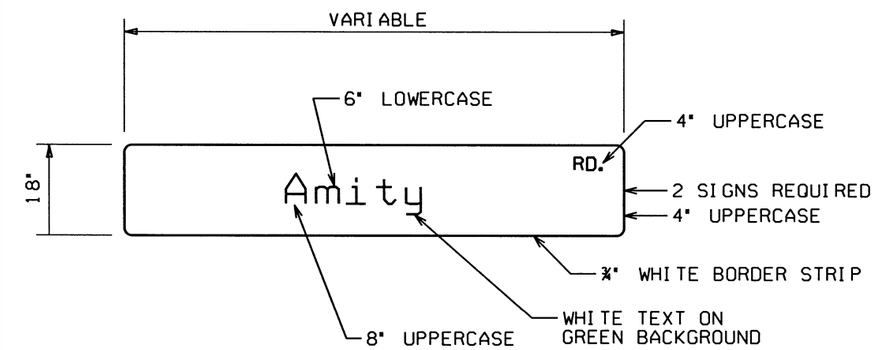
	ITEM NUMBER	ITEM	HWY. 7/AMITY ROAD (TEMPORARY SIGNAL)	HWY. 7/AMITY ROAD (PERMANENT SIGNAL)	QUANTITY	UNIT
	SP & 701	ACTUATED CONTROLLER TS2-TYPE 2 (8 PHASES)	1		1	EACH
	SP & 701	SYSTEM LOCAL CONTROLLER TS2-TYPE 2 (8 PHASES)		1	1	EACH
	SP	ANTENNA SUPPORT (SHOE BASE, 50' HT.)		1	1	EACH
	SP	LOCAL RADIO WITH ANTENNA		1	1	EACH
	SP & 706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	6	8	14	EACH
	SP & 706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)		1	1	EACH
	SP & 707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED		8	8	EACH
	708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	1120	1321	2441	LIN. FT.
	708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)		136	136	LIN. FT.
	708	TRAFFIC SIGNAL CABLE (12C/14 A.W.G.)		134	134	LIN. FT.
	708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)		259	259	LIN. FT.
	SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., E.G.C.)	20	450	470	LIN. FT.
	SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., E.G.C.)		100	100	LIN. FT.
	SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.)	20	20	40	LIN. FT.
	SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES		359	359	LIN. FT.
	709	GALVANIZED STEEL CONDUIT (1")		20	20	LIN. FT.
	709	GALVANIZED STEEL CONDUIT (1.25")	20	20	40	LIN. FT.
	709	GALVANIZED STEEL CONDUIT (2")	20		20	LIN. FT.
	710	NON-METALLIC CONDUIT (1.25")	20	20	40	LIN. FT.
	710	NON-METALLIC CONDUIT (2")		20	20	LIN. FT.
	710	NON-METALLIC CONDUIT (3")		370	370	LIN. FT.
	711	CONCRETE PULL BOX (TYPE 1 HD)		2	2	EACH
	711	CONCRETE PULL BOX (TYPE 2 HD)	1	4	5	EACH
	713	SPAN WIRE ASSEMBLY	1		1	EACH
	714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (44')		1	1	EACH
	714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (50'-46')		1	1	EACH
	SP	LED LUMINAIRE ASSEMBLY		2	2	EACH
	715	TRAFFIC SIGNAL PEDESTAL POLE WITH FOUNDATION		4	4	EACH
	SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1		1	EACH
	SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.50	0.50	1.00	LUMP SUM
	716	TREATED WOOD POLE (CLASS 2, 45')	4		4	EACH
	SP	18" STREET NAME SIGN		2	2	EACH
*	SP & 733	VIDEO DETECTOR (CLR)	3	6	9	EACH
	733	VIDEO CABLE	465	952	1417	LIN. FT.
	733	VIDEO MONITOR (CLR)	1	1	2	EACH
*	SP & 733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	2	4	6	EACH
	SP & 733	VEHICLE DETECTOR RACK (16 CHANNEL)	1	1	2	EACH

* ONE SPARE VIDEO DETECTOR AND ONE SPARE VIDEO PROCESSOR SHALL BE SUPPLIED FOR PERMANENT TRAFFIC SIGNAL.

NOTES:
TEMPORARY TRAFFIC SIGNAL:
THE EXISTING TRAFFIC SIGNAL INSTALLATION SHALL REMAIN IN OPERATION UNTIL THE ENTIRE TEMPORARY TRAFFIC SIGNAL INSTALLATION CAN BE PLACED INTO OPERATION. MAINTAIN THIS TRAFFIC SIGNAL CONFIGURATION AS SHOWN ON STAGE 1 AND STAGE 2 MAINTENANCE OF TRAFFIC SIGNAL PLANS.
(REFER TO MAINTENANCE OF TRAFFIC DETAILS).

PERMANENT TRAFFIC SIGNAL:
THE TEMPORARY TRAFFIC SIGNAL INSTALLATION SHALL REMAIN IN OPERATION UNTIL THE PERMANENT TRAFFIC SIGNAL IS COMPLETED AND OPERATIONAL. THEN ALL TEMPORARY TRAFFIC SIGNAL COMPONENTS SHALL BE REMOVED.
(REFER TO PERMANENT TRAFFIC SIGNAL PLANS).

OVERHEAD STREET NAME MARKER STANDARD MAST ARM MOUNTED



NOTES:
1. REFLECTIVE SHEETING SHALL COMPLY WITH ASTM 4956 TYPE 8 OR 9 REFLECTIVE SHEETING. SHEETING AND LEGEND SHALL BE APPLIED IN SUCH A MANNER TO PROVIDE WRINKLE AND BUBBLE FREE SURFACES. APPLICATION OF SHEETING IS CAUSE FOR REJECTION OF MATERIALS DUE TO WORKMANSHIP.

2. ALUMINUM SIGN BLANK SHALL BE ALLOY 6061-T6 OR 5052-H38. THE ALUMINUM SIGN SHALL ALSO BE ALODIZED. THE ALUMINUM SHEETING SHALL BE 0.100 INCH NOMINAL THICKNESS AND OF THE SIZE SHOWN WITH 1.5" CORNER RADII. PRIOR TO FABRICATION OF THE SIGNS, THE LAYOUT SHALL FIRST BE APPROVED BY AN AGENT OF THE CITY.

3. WHEN CROSSROAD HAS TWO NAMES, THE SIGN FOR THE CROSSROAD TO THE LEFT MAY BE INSTALLED ON THE BACKSIDE OF THE MAST ARM OF THE NEARSIDE LEFT POLE.
SEE STD. DETAIL SHEET FOR MORE INFORMATION FOR MOUNTING ON MAST ARM ASSEMBLY.

4. THE SERIES C 2000 STANDARD ALPHABET SHALL BE USED FOR ALL LETTERS.

DATE: 02-27-17 FILE NAME: t060432_new.dgn

LOCATION: HWY. 7/AMITY ROAD
CITY:
COUNTY: GARLAND
DISTRICT: 6 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
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(2) TRAFFIC SIGNAL NOTES

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

3-6-17

TRAFFIC SIGNAL NOTES:

1. PERFORM ELECTRICAL WORK IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE NFPA 70 (2014) NATIONAL ELECTRICAL CODE, NFPA 101 (2012) LIFE SAFETY CODE, STATE ELECTRICAL CODE AND LOCAL ELECTRICAL CODE.

2. EXTEND GREEN EQUIPMENT GROUNDING CONDUCTOR (E.G.C.) FROM GROUND BAR AT MAIN BREAKER TO CONTROL PANEL AND TO FIRST POLE. SOLIDLY BOND E.G.C. TO GROUND LUG OF CONTROL CABINET AND TO POLE GROUND. ENSURE THAT ONLY ONE NEUTRAL-TO-GROUND BOND EXISTS IN THE SYSTEM AND THAT IT IS AT THE MAIN BREAKER.

3. ELECTRICAL SERVICE SHALL BE PROVIDED BY THE CITY TO A SERVICE POLE WITH EXTERNAL RAINTIGHT BREAKER (MAIN BREAKER), GALVANIZED STEEL SERVICE RISER, METER LOOP (IF REQUIRED), AND WEATHERHEAD AT A MUTUALLY ACCEPTABLE POINT WITHIN THE RIGHT-OF-WAY. IF THE SERVICE POINT IS OVER 10 FEET FROM THE CONTROLLER, THE CONTRACTOR SHALL PROVIDE AND INSTALL A SEPARATE TWO CIRCUIT EXTERNAL BREAKER (SECONDARY BREAKER) ON OR NEAR THE TRAFFIC SIGNAL CONTROLLER CABINET AND SHALL INSTALL CONDUIT, ELECTRICAL SERVICE WIRE (2c/#6 USE RATED, WITH GROUND TYPICAL), AND PERFORM WIRING TO TAP INTO THE CITY'S MAIN BREAKER AS PART OF THIS CONTRACT. CONDUIT IS PAID FOR AS A SEPARATE ITEM OF THIS CONTRACT. TWO CIRCUIT BREAKERS, CONSIDERED SUBSIDIARY TO THE CONTROL EQUIPMENT, ARE NEEDED WHERE STREET LIGHTING IS INCLUDED. AS PART OF THE SIGNAL INSTALLATION, STREET LIGHTING CIRCUIT (2c/#12 A.W.G. UF RATED, TYPICAL) SHALL BE KEPT FROM THE CIRCUIT SERVING THE TRAFFIC SIGNAL CONTROL EQUIPMENT FROM THE POINT OF TIE-IN AT THE SECONDARY BREAKER PROVIDED BY THE CONTRACTOR.

4. CONTRACTOR SHALL CONNECT A SEPARATE NEUTRAL FOR EACH LOAD SWITCH REPRESENTED ON EACH SIGNAL POLE.

5. TRAFFIC CONTROLLER CABINET AND LAYOUT SHALL BE SUCH THAT IT IS NOT NECESSARY TO SHUT DOWN POWER OR REMOVE LOAD SWITCHES IN ORDER TO EASILY TEST OR MODIFY DETECTOR INPUTS TO THE CONTROLLER.

6. CONTROLLER CABINET SHALL BE WIRED SUCH THAT DURING FLASH OPERATIONS POWER TO THE LOAD SWITCHES CANNOT BACKFEED TO LOAD SWITCH POWER BUSS.

7. ALL PARTS OF THIS INSTALLATION SHALL BE IN ACCORDANCE WITH THE AHTD STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, STANDARD DRAWINGS AND WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITIONS.

8. CONDUIT INSTALLED UNDER ROADWAY SURFACES SHALL BE INSTALLED BY PUSHING OR BORING METHODS. IF THE ENGINEER DETERMINES THIS IS NOT FEASIBLE, THEN A TRENCHING METHOD AS SHOWN IN THE DETAILS MAY BE USED.

9. TRAFFIC SIGNAL POLES SHALL BE GALVANIZED. BACKPLATES SHALL BE SUPPLIED FOR ALL SIGNAL HEADS.

10. PAVEMENT MARKING SHOWN FOR REFERENCE ONLY. SEE PAVEMENT MARKING PLAN SHEETS.

11. FOUNDATION FOR ALL POLES SHALL BE EXTENDED IF NECESSARY TO ACCOMMODATE THE REQUIREMENTS FOR SIGNAL HEAD CLEARANCE ABOVE ROADWAY ONLY AT LOCATIONS WHERE THE GROUND ELEVATION AT THE POLE IS BELOW THE ELEVATION OF THE ROADWAY (SEE NOTES ON STANDARD DRAWING). PAYMENT WILL BE INCLUDED IN SECTION 714, AHTD STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, CURRENT EDITION.

12. ALL CONCRETE PULL BOXES SHALL BE (TYPE 2 HD) UNLESS OTHERWISE INDICATED. ALL CONDUIT SHALL BE 3" DIAMETER UNLESS SPECIFIED ON PLANS.

13. CONTRACTOR SHALL NOTIFY ALL EXISTING UTILITY OWNERS BEFORE BEGINNING WORK ON THIS PROJECT.

14. LUMINAIRE ASSEMBLIES SHALL BE OF THE FULL CUTOFF TYPE.

15. HARDWARE INPUTS MAY BE DETERMINED BY SUPPLIER. EACH DETECTOR OUTPUT SHALL INPUT THE CONTROLLER THROUGH A SEPARATE INPUT UNLESS OTHERWISE NOTED AND BE PROGRAMMED TO ACTUATE THE ASSOCIATED PHASE. COMBINATION (COMB.) DETECTORS SHALL ALSO BE PROGRAMMED TO PROVIDE VEHICLE COUNT/OCCUPANCY DATA.

16. THE LOCAL RADIO WITH ANTENNA SHALL BE COMPATIBLE WITH THE EXISTING CLOSED LOOP COORDINATION SYSTEM IN THE CITY.

17. TO DETERMINE UTILITY CLEARANCES ABOVE THE TRAFFIC SIGNAL POLE, REFER TO THE POLE SCHEDULE FOR VERTICAL SHAFT HEIGHT. WHERE THE POLE SCHEDULE INDICATES THAT A LUMINAIRE ARM WILL BE USED, 38 FEET SHOULD BE USED TO DETERMINE UTILITY CLEARANCE ABOVE THE LUMINAIRE ARM. WHERE THE POLE SCHEDULE INDICATES A TRAFFIC SIGNAL POLE WITHOUT A LUMINAIRE ARM, A HEIGHT OF 21' SHOULD BE USED TO DETERMINE UTILITY CLEARANCE ABOVE THE TRAFFIC SIGNAL MAST ARM. AN ADDITIONAL 6 FEET SHOULD BE USED DIRECTLY ABOVE "VIDEO DETECTOR" AT LOCATIONS SHOWN ON THE SIGNAL PLANS.

18. THE DESIRABLE MINIMUM DISTANCE FROM THE FACE OF ROADWAY CURB OR SHOULDER EDGE TO THE FACE OF NON-BREAKAWAY POLE OR OBSTRUCTION IS 6 FEET. REFER TO TRAFFIC SIGNAL PLANS FOR SPECIFIC LOCATION OF POLES, CONTROLLER AND ANY OTHER NON-BREAKAWAY OBSTRUCTIONS. REFER TO "DESIGN PARAMETERS, MINIMUM CLEAR ZONE DISTANCE" FOR MINIMUM DISTANCE FROM THE EDGE OF TRAVELED WAY TO THE FACE OF A NON-BREAKAWAY POLE OR OBSTRUCTION. TRAFFIC SIGNAL POLES OR ANY OTHER NON-BREAKAWAY OBSTRUCTION SHALL NOT BE INSTALLED WITHIN THE CLEAR ZONE.

19. AS DETERMINED BY THE ENGINEER, FOUNDATION EMBEDMENT MAY BE DECREASED BY A MAXIMUM OF TWO FEET IF COMPETENT ROCK IS ENCOUNTERED PRIOR TO ACHIEVING PLAN EMBEDMENT AND AT LEAST HALF OF THE REMAINING PLAN EMBEDMENT LENGTH IS KEYED INTO COMPETENT ROCK.

20. CONNECTION OF TRAFFIC SIGNAL DISPLAY TO FIELD WIRING SHALL UTILIZE AN APPROVED TERMINAL STRIP BEHIND HAND-HOLE COVER AT BASE OF POLE. TERMINAL STRIP SHALL PROVIDE PROTECTION TO PREVENT EXPOSURE TO THE PUBLIC IN THE EVENT THAT POLE COVER IS MISSING. PAYMENT FOR TERMINAL STRIPS SHALL BE INCLUDED IN ITEM 714-TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION.

21. CONTROLLER CABINET LAYOUT AND ORIENTATION SHALL CONFORM TO IMSA STANDARDS.

22. ONE VIDEO PROGRAMMNG MODULE SHALL BE PROVIDED FOR AIMING AND SETUP OF DETECTORS IF THE VIDEO SYSTEM CANNOT BE ADJUSTED THROUGH HARDWARE AND SOFTWARE PROVIDED BY ITEMS WITHIN THE JOB.

23. TRAFFIC SIGNAL CONTRACTOR MUST NOTIFY RESIDENT ENGINEER OR ASSIGNED DEPARTMENT PROJECT INSPECTOR EACH DAY PRIOR TO SIGNAL RELATED WORK. NO WORK ON TRAFFIC SIGNALS WILL BE ALLOWED OR APPROVED WITHOUT THIS PRIOR NOTIFICATION.

24. ALL STEEL POLES SHALL BE DESIGNED TO MEET THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4th EDITION (2001) WITH 2003 AND 2006 INTERIMS.

25. DOOR PANEL TEST PUSH BUTTONS SHALL ACTUATE INDICATED PHASES. DETECTOR ASSIGNMENTS AND/OR SIDE PANEL JUMPERS MAY REQUIRE MODFICATION.

26. ALL SYSTEM DETECTOR RACKS AND ASSOCIATED EQUIPMENT SHALL BE PROTECTED BY THE MAIN CONTROLLER CABINET POWER SURGE PROTECTION.

DATE: 02-27-17 FILE NAME: t060432_new.dgn

LOCATION: HWY. 7/AMITY ROAD
CITY:
COUNTY: GARLAND
DISTRICT: 6 SCALE: N/A DRAWN BY: GWE

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(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-6-17

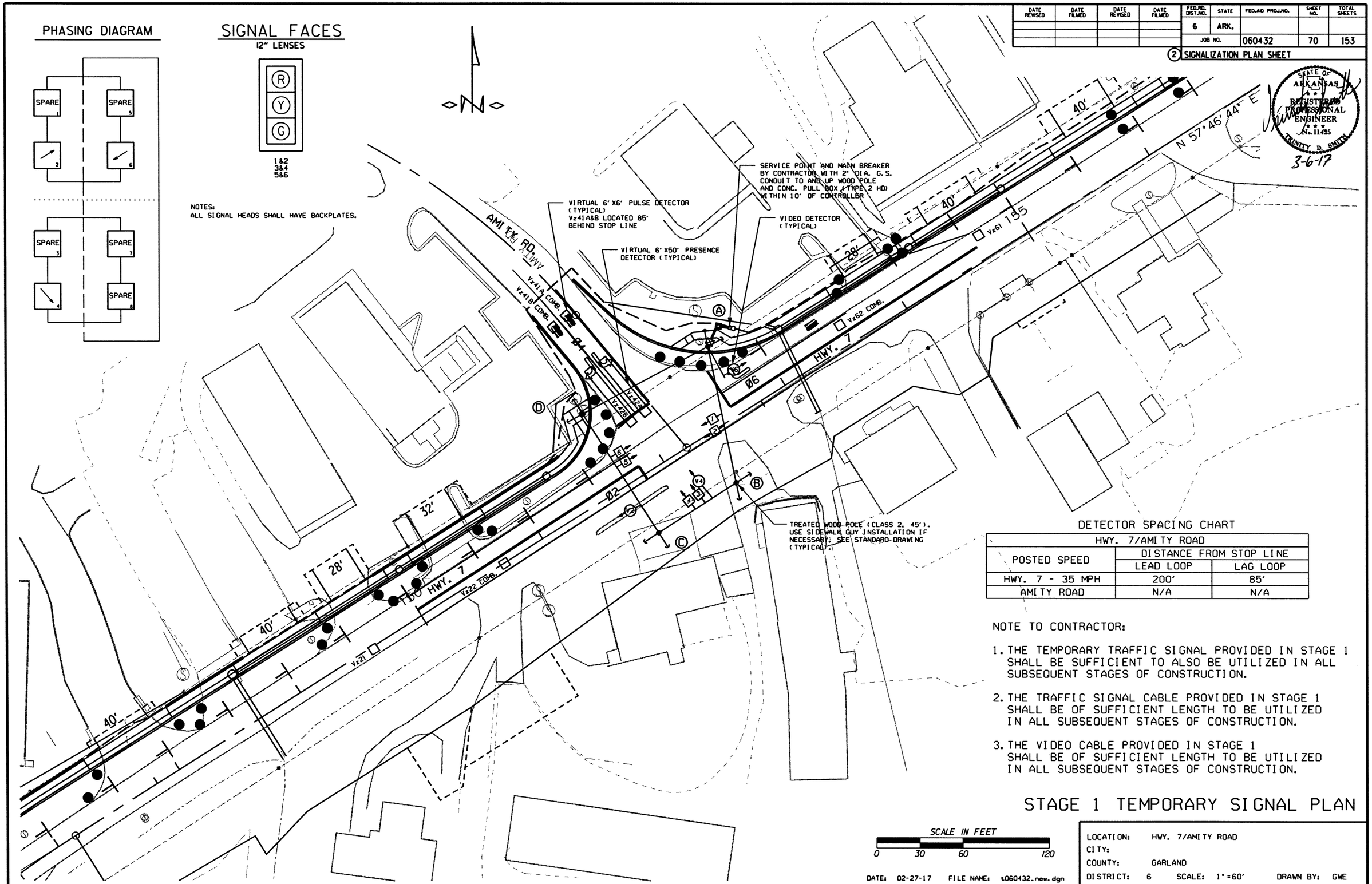
PHASING DIAGRAM

SIGNAL FACES

12" LENSES

1&2
3&4
5&6

NOTES:
ALL SIGNAL HEADS SHALL HAVE BACKPLATES.



DETECTOR SPACING CHART

HWY. 7/AMITY ROAD		
POSTED SPEED	DISTANCE FROM STOP LINE	
	LEAD LOOP	LAG LOOP
HWY. 7 - 35 MPH	200'	85'
AMITY ROAD	N/A	N/A

NOTE TO CONTRACTOR:

1. THE TEMPORARY TRAFFIC SIGNAL PROVIDED IN STAGE 1 SHALL BE SUFFICIENT TO ALSO BE UTILIZED IN ALL SUBSEQUENT STAGES OF CONSTRUCTION.
2. THE TRAFFIC SIGNAL CABLE PROVIDED IN STAGE 1 SHALL BE OF SUFFICIENT LENGTH TO BE UTILIZED IN ALL SUBSEQUENT STAGES OF CONSTRUCTION.
3. THE VIDEO CABLE PROVIDED IN STAGE 1 SHALL BE OF SUFFICIENT LENGTH TO BE UTILIZED IN ALL SUBSEQUENT STAGES OF CONSTRUCTION.

STAGE 1 TEMPORARY SIGNAL PLAN

DATE: 02-27-17 FILE NAME: t060432_new.dgn

LOCATION: HWY. 7/AMITY ROAD
CITY:
COUNTY: GARLAND
DISTRICT: 6 SCALE: 1"=60' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	71	153

(2) SIGNALIZATION PLAN SHEET

TYPICAL WOOD POLE WITH LUMINAIRE ARM

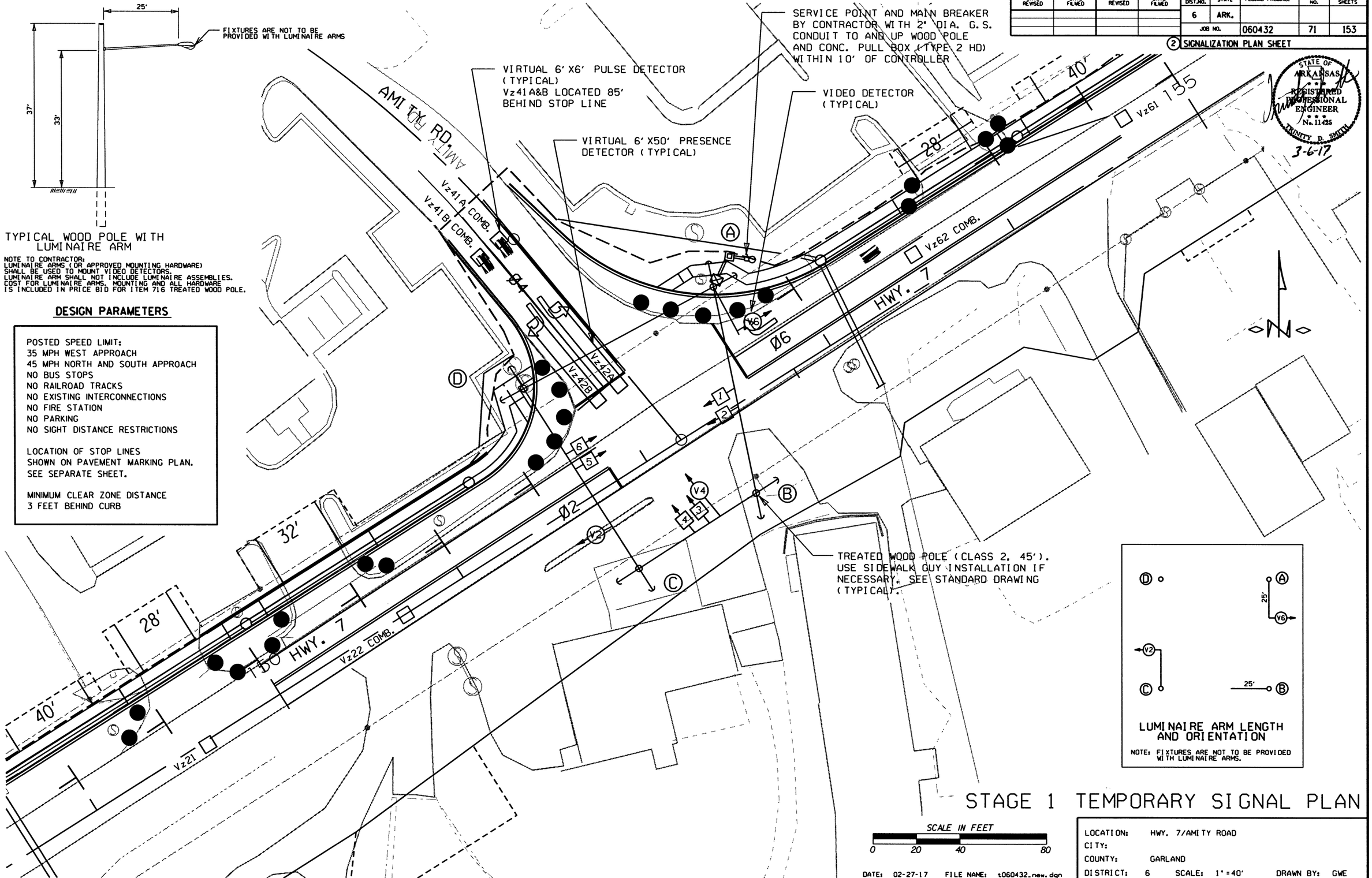
NOTE TO CONTRACTOR:
LUMINAIRE ARMS (OR APPROVED MOUNTING HARDWARE) SHALL BE USED TO MOUNT VIDEO DETECTORS. LUMINAIRE ARM SHALL NOT INCLUDE LUMINAIRE ASSEMBLIES. COST FOR LUMINAIRE ARMS, MOUNTING AND ALL HARDWARE IS INCLUDED IN PRICE BID FOR ITEM 716 TREATED WOOD POLE.

DESIGN PARAMETERS

POSTED SPEED LIMIT:
35 MPH WEST APPROACH
45 MPH NORTH AND SOUTH APPROACH
NO BUS STOPS
NO RAILROAD TRACKS
NO EXISTING INTERCONNECTIONS
NO FIRE STATION
NO PARKING
NO SIGHT DISTANCE RESTRICTIONS

LOCATION OF STOP LINES SHOWN ON PAVEMENT MARKING PLAN. SEE SEPARATE SHEET.

MINIMUM CLEAR ZONE DISTANCE 3 FEET BEHIND CURB



STAGE 1 TEMPORARY SIGNAL PLAN

DATE: 02-27-17 FILE NAME: t060432_new.dgn

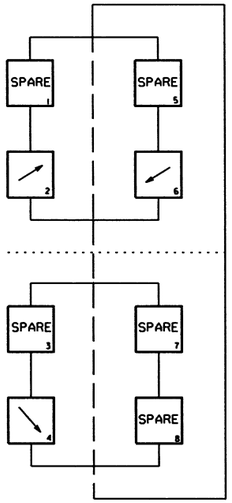
LOCATION: HWY. 7/AMITY ROAD
CITY:
COUNTY: GARLAND
DISTRICT: 6 SCALE: 1"=40' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	72	153

(2) SIGNALIZATION PLAN SHEET

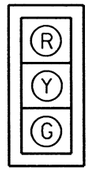
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-6-17

PHASING DIAGRAM



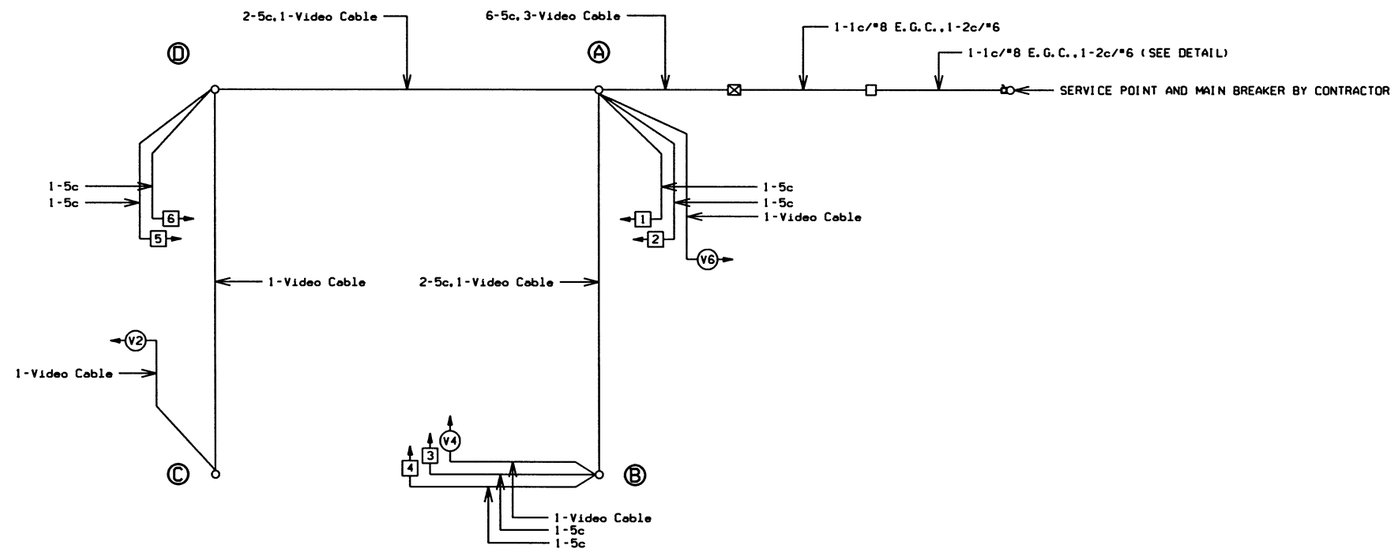
SIGNAL FACES

12" LENSES



1&2
3&4
5&6

NOTES:
ALL SIGNAL HEADS SHALL HAVE BACKPLATES.



STAGES 1 & 2 TEMPORARY SIGNAL WIRING DIAGRAM

NOTES TO CONTRACTOR:

1. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.
2. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.

TEMPORARY DETECTOR SYSTEM DESCRIPTION: JOB 060432											
GARLAND COUNTY - HWY. 7/AMITY ROAD DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS			COMMENTS	TUBE LENGTHS
							LOCAL		MASTER SYSTEM DETECTOR NUMBERS		
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *			
Vz21	NB ADVANCE	LOCAL			5	V2	2			CAMERA V2	23"
Vz22	NB NEAR	COMB.			6	V10	2	2		CAMERA V5	23"
Vz41A&B	EB ADVANCE	COMB.			11	V12	4	4		CAMERA V4	23"
Vz42A&B	EB NEAR	LOCAL			12	V4	4			CAMERA V4	23"
Vz61	SB ADVANCE	LOCAL			3	V6	6			CAMERA V6	23"
Vz62	SB NEAR	COMB.			4	V14	6	6		CAMERA V1	23"
					SPARE						

CONTROLLER INPUT ABBREVIATIONS:
V = VEHICLE INPUT
D = SYSTEM OR AUXILIARY INPUT
P = PEDESTRIAN INPUT

NOTE: "AMP CHN*" REFERS TO THE DETECTOR RACK OUTPUT POSITION.
THIS IS WIRED TO CONTROLLER INPUT DETECTOR NUMBER WHICH IS PROGRAMMED TO ACTUATE THE DESIGNATED PHASE.
EXAMPLE: V9 = SYSTEM DETECTOR 1, V10 = SYSTEM DETECTOR 2.

INTERVAL CHART

SIGNAL FACES	HWY. 7/AMITY RD.					FLASH SEQ.
	2+6	CLR.	4	CLR.		
1&2	G	••	R	R		R
3&4	R	R	G	••		R
5&6	G	••	R	R		R

• DENOTES GREEN OR YELLOW ARROW DEPENDING ON NEXT PHASE
•• DENOTES GREEN OR YELLOW BALL DEPENDING ON NEXT PHASE
••• DENOTES FLASHING YELLOW ARROW OR YELLOW ARROW DEPENDING ON NEXT PHASE

DATE: 02-27-17 FILE NAME: t060432_new.dgn

LOCATION: HWY. 7/AMITY ROAD
CITY:
COUNTY: GARLAND
DISTRICT: 6 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	73	153

(2) SIGNALIZATION PLAN SHEET

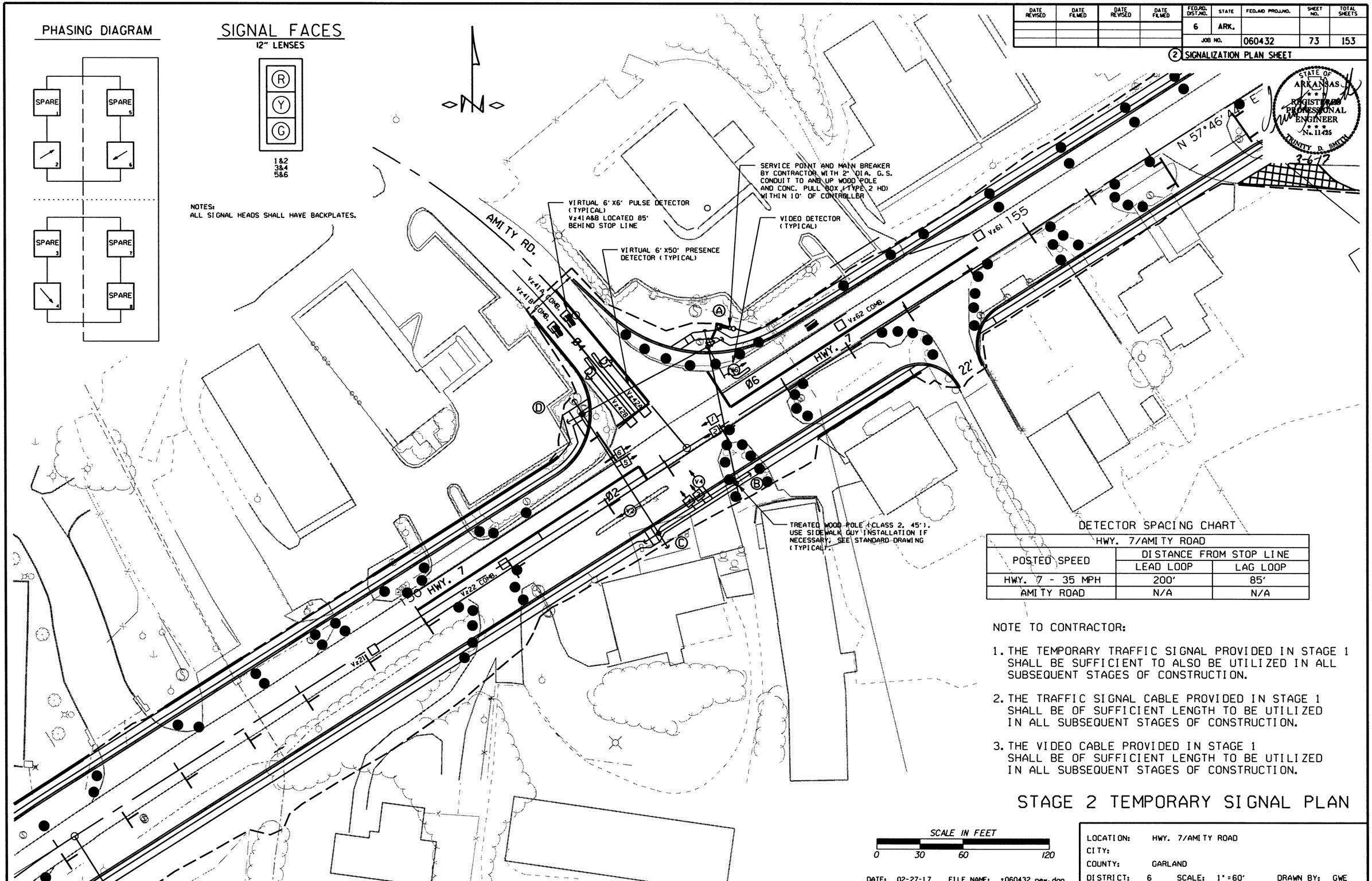
PHASING DIAGRAM

SIGNAL FACES

12" LENSES

1&2
3&4
5&6

NOTES:
ALL SIGNAL HEADS SHALL HAVE BACKPLATES.



DETECTOR SPACING CHART

HWY. 7/AMITY ROAD		
POSTED SPEED	DISTANCE FROM STOP LINE	
	LEAD LOOP	LAG LOOP
HWY. 7 - 35 MPH	200'	85'
AMITY ROAD	N/A	N/A

NOTE TO CONTRACTOR:

1. THE TEMPORARY TRAFFIC SIGNAL PROVIDED IN STAGE 1 SHALL BE SUFFICIENT TO ALSO BE UTILIZED IN ALL SUBSEQUENT STAGES OF CONSTRUCTION.
2. THE TRAFFIC SIGNAL CABLE PROVIDED IN STAGE 1 SHALL BE OF SUFFICIENT LENGTH TO BE UTILIZED IN ALL SUBSEQUENT STAGES OF CONSTRUCTION.
3. THE VIDEO CABLE PROVIDED IN STAGE 1 SHALL BE OF SUFFICIENT LENGTH TO BE UTILIZED IN ALL SUBSEQUENT STAGES OF CONSTRUCTION.

STAGE 2 TEMPORARY SIGNAL PLAN

SCALE IN FEET
0 30 60 120

DATE: 02-27-17 FILE NAME: t060432_new.dgn

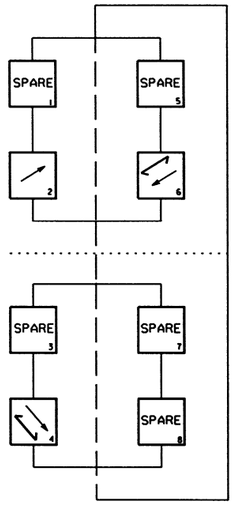
LOCATION: HWY. 7/AMITY ROAD
CITY:
COUNTY: GARLAND
DISTRICT: 6 SCALE: 1"=60' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	74	153

(2) SIGNALIZATION PLAN SHEET

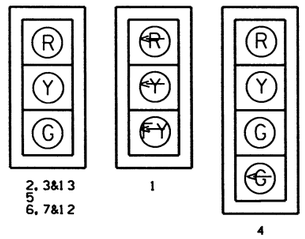
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-6-17

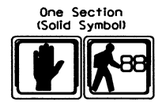
PHASING DIAGRAM



SIGNAL FACES

12" LENSES





NOTES:

1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS.
3. ALL PEDESTRIAN SIGNAL HEADS CAN BE PLACED INTO OPERATION IF THERE ARE BOTH WHEELCHAIR RAMPS AND A CROSSWALK THAT MEET A.D.A.S. STANDARDS.

LOCAL ANTENNA, ANTENNA CABLE SHALL BE INSTALLED IN A SEPARATE 2" DIA. NMC WHICH SHALL CONTAIN NO OTHER POWER CARRYING CONDUCTORS

CONC. PULL BOX (TYPE 1 HD)

SERVICE POINT AND MAIN BREAKER BY CONTRACTOR WITH 2" DIA. NMC AND CONC. PULL BOX (TYPE 2 HD) WITHIN 10' OF CONTROLLER (PROVIDED IN STAGE 1)

VIRTUAL 6'X6' PULSE DETECTOR (TYPICAL) Vz41A&B LOCATED 85' BEHIND STOP LINE

VIRTUAL 6'X50' PRESENCE DETECTOR (TYPICAL)

Vz51 LOCATED 85' BEHIND STOP LINE

VIDEO DETECTOR (TYPICAL)

CONC. PULL BOX (TYPE 1 HD)

AMITY RD.

HWY. 7

N 57°46'44" E

DETECTOR SPACING CHART

HWY. 7/AMITY ROAD		
POSTED SPEED	DISTANCE FROM STOP LINE	
	LEAD LOOP	LAG LOOP
HWY. 7 - 45 MPH	260'	115'
AMITY ROAD	N/A	N/A

HWY. 7/AMITY ROAD POLE DIMENSIONS

POLE	MAST ARM	*MAST ARM ANGLE	VERT. SHAFT	LUM. ARM	*LUM. ANGLE
A	N/A	N/A	50'	N/A	N/A
B	50'/46'	90°-180°	35'	15'	180°
C	N/A	N/A	15'	N/A	N/A
D	44'	270°	35'	15'	180°
E	N/A	N/A	15'	N/A	N/A
F	N/A	N/A	15'	N/A	N/A

*ANGLE MEASURED CLOCKWISE FROM HAND HOLE.

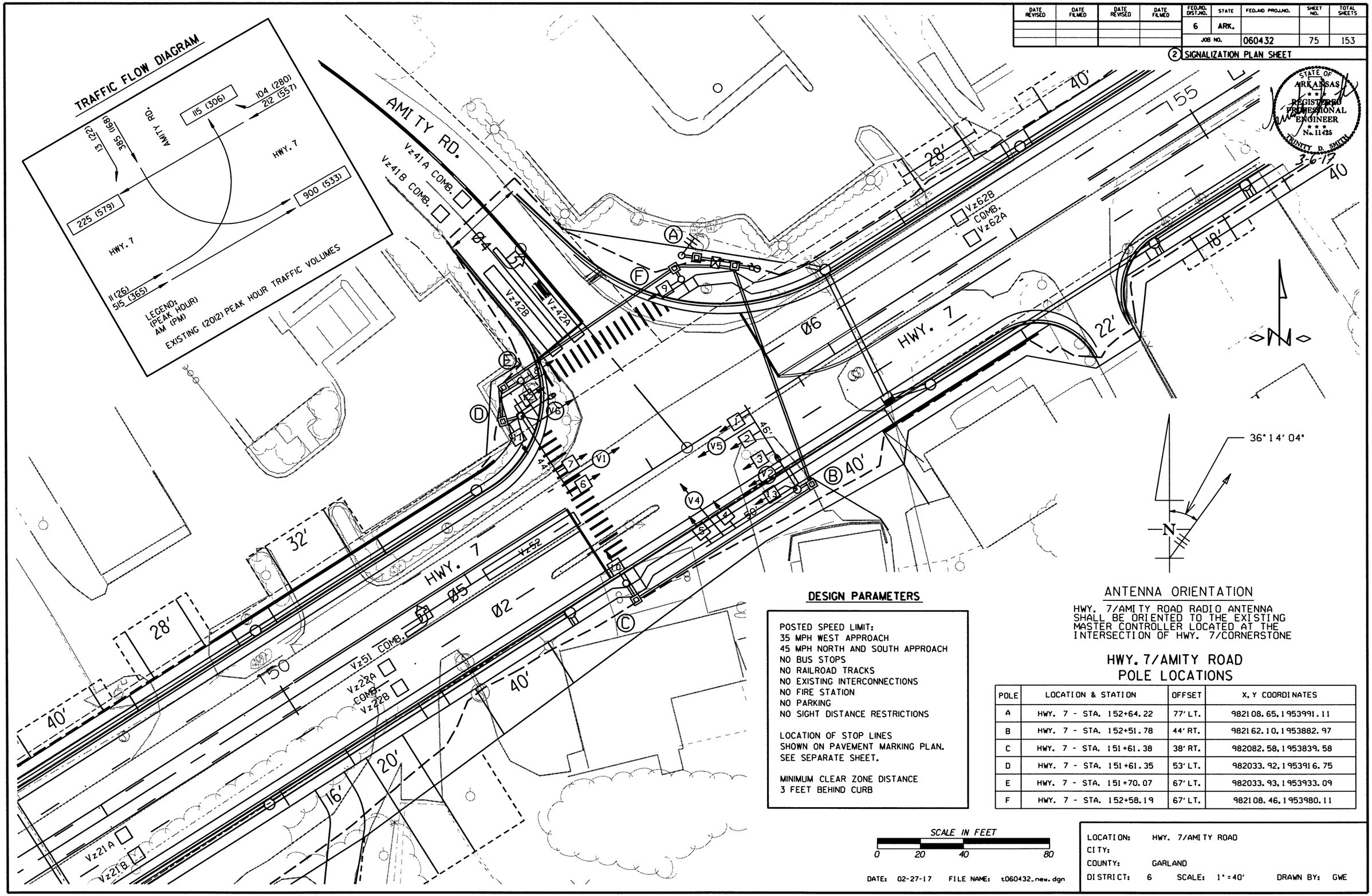
SCALE IN FEET 0 30 60 120

DATE: 02-27-17 FILE NAME: t060432_new.dgn

LOCATION: HWY. 7/AMITY ROAD
CITY:
COUNTY: GARLAND
DISTRICT: 6 SCALE: 1"=60' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	75	153

(2) SIGNALIZATION PLAN SHEET



DESIGN PARAMETERS

POSTED SPEED LIMIT:
35 MPH WEST APPROACH
45 MPH NORTH AND SOUTH APPROACH
NO BUS STOPS
NO RAILROAD TRACKS
NO EXISTING INTERCONNECTIONS
NO FIRE STATION
NO PARKING
NO SIGHT DISTANCE RESTRICTIONS

LOCATION OF STOP LINES SHOWN ON PAVEMENT MARKING PLAN. SEE SEPARATE SHEET.

MINIMUM CLEAR ZONE DISTANCE 3 FEET BEHIND CURB

ANTENNA ORIENTATION

HWY. 7/AMITY ROAD RADIO ANTENNA SHALL BE ORIENTED TO THE EXISTING MASTER CONTROLLER LOCATED AT THE INTERSECTION OF HWY. 7/CORNERSTONE

HWY. 7/AMITY ROAD POLE LOCATIONS

POLE	LOCATION & STATION	OFFSET	X, Y COORDINATES
A	HWY. 7 - STA. 152+64.22	77' LT.	982108.65, 1953991.11
B	HWY. 7 - STA. 152+51.78	44' RT.	982162.10, 1953882.97
C	HWY. 7 - STA. 151+61.38	38' RT.	982082.58, 1953839.58
D	HWY. 7 - STA. 151+61.35	53' LT.	982033.92, 1953916.75
E	HWY. 7 - STA. 151+70.07	67' LT.	982033.93, 1953933.09
F	HWY. 7 - STA. 152+58.19	67' LT.	982108.46, 1953980.11

SCALE IN FEET
0 20 40 80

DATE: 02-27-17 FILE NAME: t060432_new.dgn

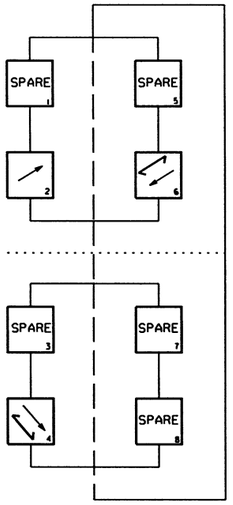
LOCATION: HWY. 7/AMITY ROAD
CITY:
COUNTY: GARLAND
DISTRICT: 6 SCALE: 1"=40' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	76	153

(2) SIGNALIZATION PLAN SHEET

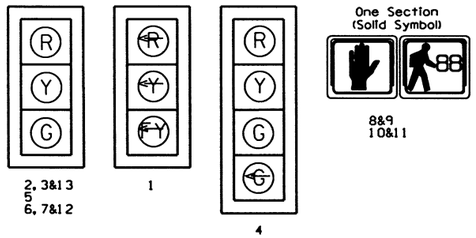
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 3-6-17

PHASING DIAGRAM



SIGNAL FACES

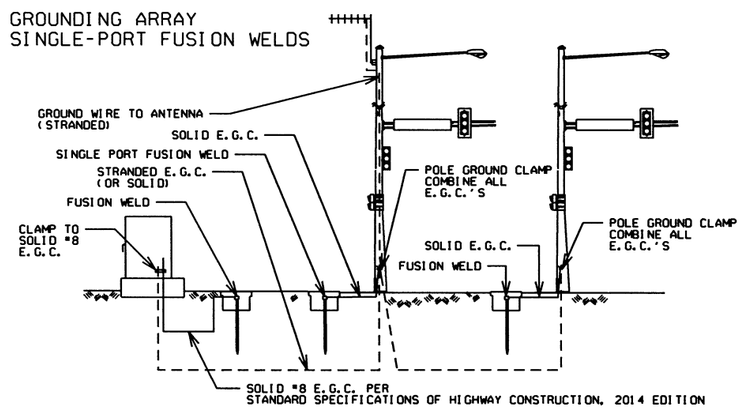
12" LENSES

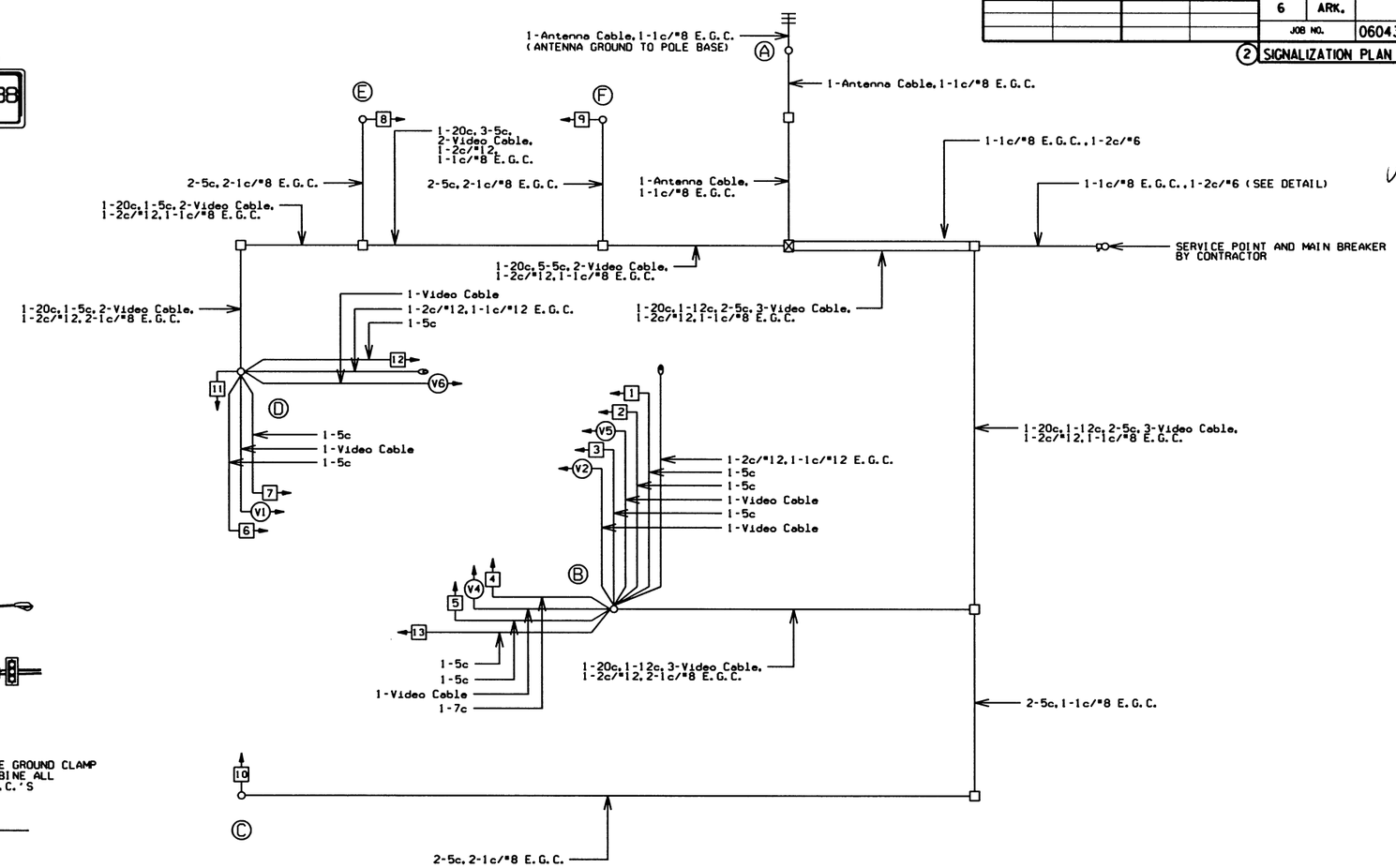


NOTES:

1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS.
3. ALL PEDESTRIAN SIGNAL HEADS CAN BE PLACED INTO OPERATION IF THERE ARE BOTH WHEELCHAIR RAMPS AND A CROSSWALK THAT MEET A.D.A.S. STANDARDS.

GROUNDING ARRAY SINGLE-PORT FUSION WELDS





WIRING DIAGRAM

NOTES TO CONTRACTOR:

1. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.
2. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.

INTERVAL CHART

SIGNAL FACES	HWY. 7/AMITY RD. 2+6	CLR.	4	CLR.		FLASH SEQ.
1	~~FY~~	***	~~R~~	~~R~~		~~R~~
2,3&13	G	**	R	R		R
4	R	R	G / ~~G~~	* / **		R
5	R	R	G	**		R
6,7&12	G	**	R	R		R
8&9	W	FDW	DW	DW		BLK
10&11	DW	DW	W	FDW		BLK

* DENOTES GREEN OR YELLOW ARROW DEPENDING ON NEXT PHASE
** DENOTES GREEN OR YELLOW BALL DEPENDING ON NEXT PHASE
*** DENOTES FLASHING YELLOW ARROW OR YELLOW ARROW DEPENDING ON NEXT PHASE

DETECTOR SYSTEM DESCRIPTION: JOB 060432

GARLAND COUNTY - HWY. 7/AMITY ROAD DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS LOCAL		MASTER SYSTEM DETECTOR NUMBERS	COMMENTS	TUBE LENGTHS
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *			
Vz21A&B	NB ADVANCE	LOCAL			1	V2	2			CAMERA V2	23'
Vz22A&B	NB INSIDE NEAR	COMB.			2	V10	2	2		CAMERA V5	23'
Vz41A&B	EB ADVANCE	COMB.			5	V12	4	4		CAMERA V4	23'
Vz42A&B	EB NEAR	LOCAL			6	V4	4			CAMERA V4	23'
Vz51	NB LEFT TURN FAR	COMB.			3	V13	2	2		CAMERA V5	23'
Vz52	NB LEFT TURN	LOCAL			4	V5	2			CAMERA V5	23'
Vz61A&B	SB ADVANCE	LOCAL			7	V6	6			CAMERA V6	23'
Vz62A&B	SB INSIDE NEAR	COMB.			8	V14	6	6		CAMERA V1	23'
PB4A&B	AMITY RD. W. LEG	PED.				P4	4				
PB6A&B	HWY. 7 S. LEG	PED.				P6	6				
					SPARE 9, 10, 11&12						

CONTROLLER INPUT ABBREVIATIONS:
V = VEHICLE INPUT
D = SYSTEM OR AUXILIARY INPUT
P = PEDESTRIAN INPUT

NOTE: "AMP CHN#" REFERS TO THE DETECTOR RACK OUTPUT POSITION. THIS IS WIRED TO CONTROLLER INPUT DETECTOR NUMBER WHICH IS PROGRAMMED TO ACTUATE THE DESIGNATED PHASE. EXAMPLE: V9 = SYSTEM DETECTOR 1, V10 = SYSTEM DETECTOR 2.

DATE: 02-27-17 FILE NAME: t060432_new.dgn

LOCATION: HWY. 7/AMITY ROAD
CITY:
COUNTY: GARLAND
DISTRICT: 6 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	77	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2

STA. 103+36 - IN PLACE
18" X 29' R.C. PIPE CULVERT
LT. SIDE DRAIN
RETAIN

STA. 103+53 - CONSTRUCT
TURNOUT ON LT. = 15 CU. YDS. EXC.

C.L. CONST.

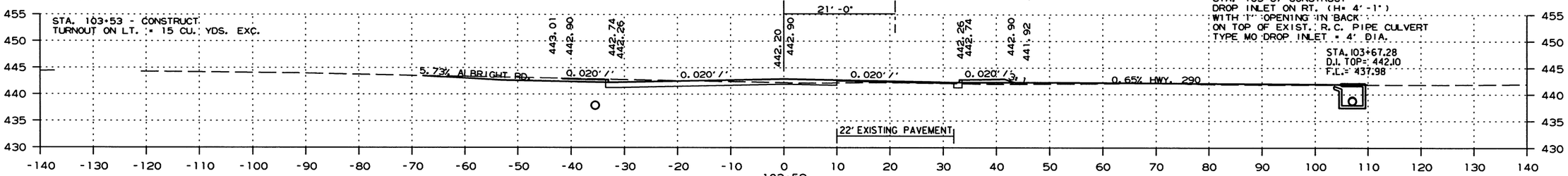
C.L. STAGE 2 CONSTRUCTION & C.L. EXIST.

21'-0"

STA. 103+61 - CONSTRUCT
STATE HWY. 290 ON RT. = 5 CU. YDS. EXC.

STA. 103+67 CONSTRUCT
DROP INLET ON RT. (H= 4'-1")
WITH "I" OPENING IN BACK
ON TOP OF EXIST. R.C. PIPE CULVERT
TYPE MO DROP INLET = 4' DIA.

STA. 103+67.28
D.I. TOP= 442.10
F.L.= 437.98



CUT AREA 37 SQ.FT.
FILL AREA 0 SQ.FT.

CUT AREA 3 SQ.FT.
FILL AREA 12 SQ.FT.

CUT VOLUME 11 CU.YD.
FILL VOLUME 0 CU.YD.

CUT VOLUME 1 CU.YD.
FILL VOLUME 4 CU.YD.

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

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

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

CUT VOLUME 0 CU.YD.
FILL VOLUME 00 CU.YD.

STA. 103+35.00 BEGIN JOB 060432
END 100' TRANSITION
L.M. 2.36

STA. 103+37 - IN PLACE
24" X82' R.C. PIPE CULVERT
RT. SIDE DRAIN
RETAIN

STA. 102+35.00
BEGIN 100' TRANSITION

CROSS SECTION STA. 103+35 TO STA. 103+52

2/13/2017

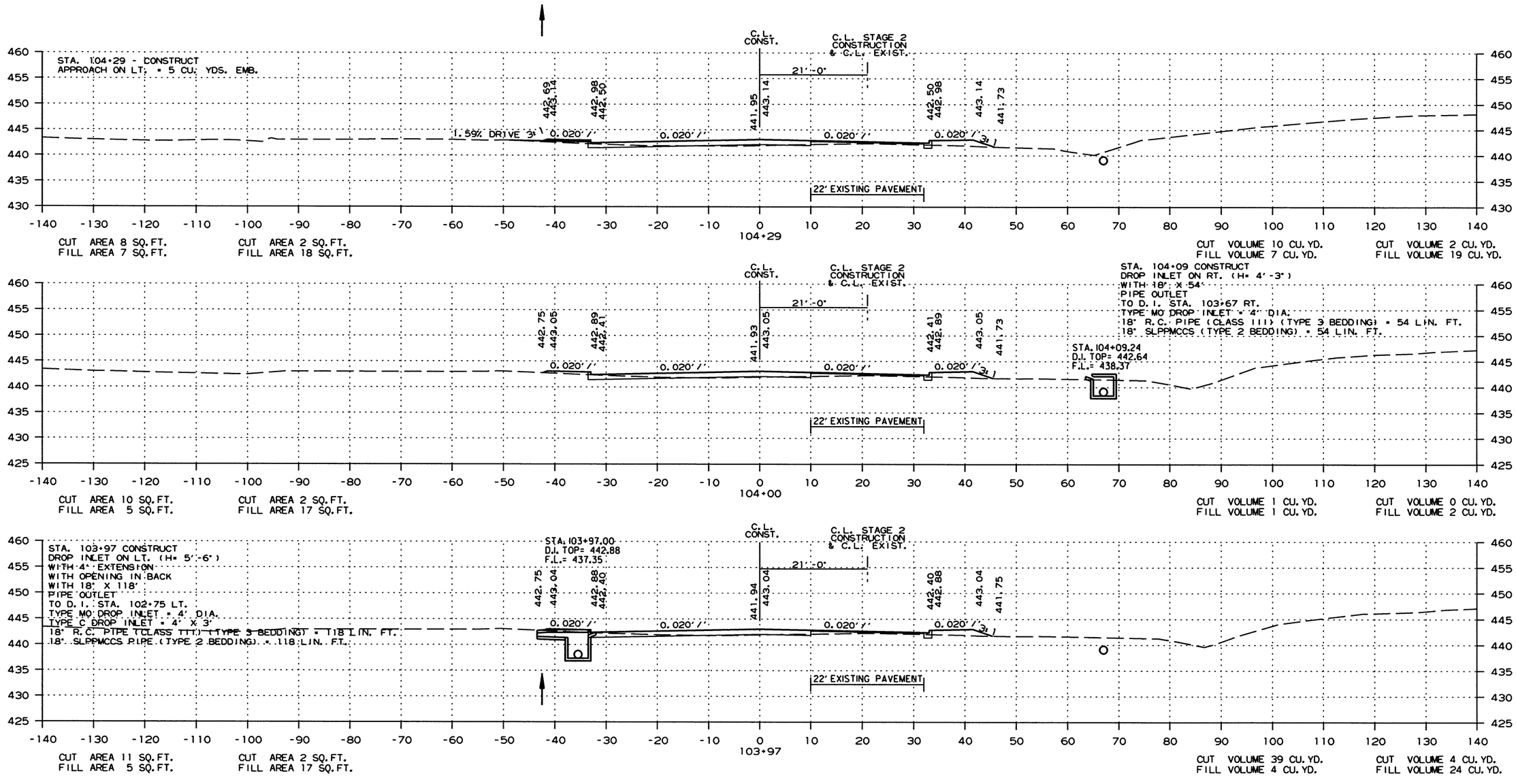
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	78	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 103+97 TO STA. 104+29

2/13/2017

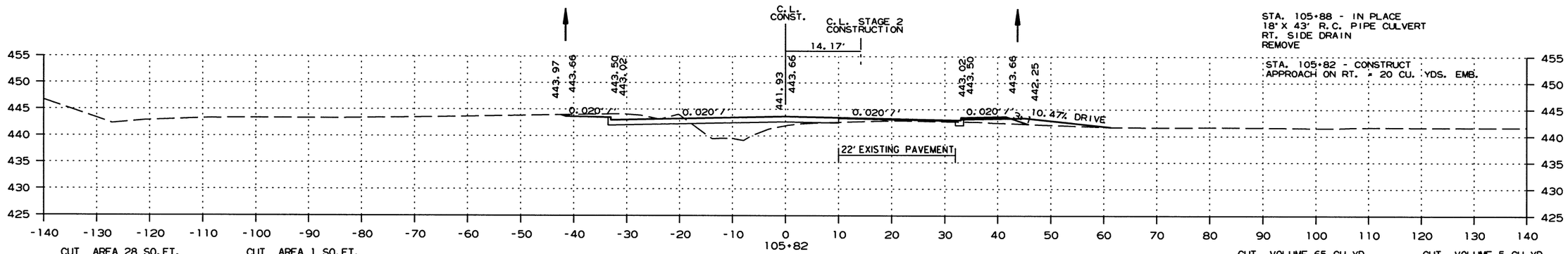
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	79	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 104+74 TO STA. 105+82

2/13/2017

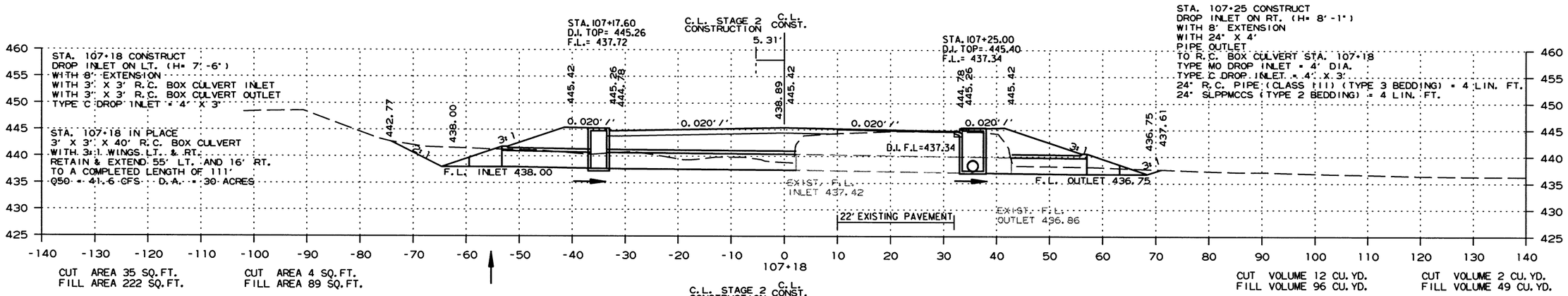
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	80	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 106+00 TO STA. 107+18

2/13/2017

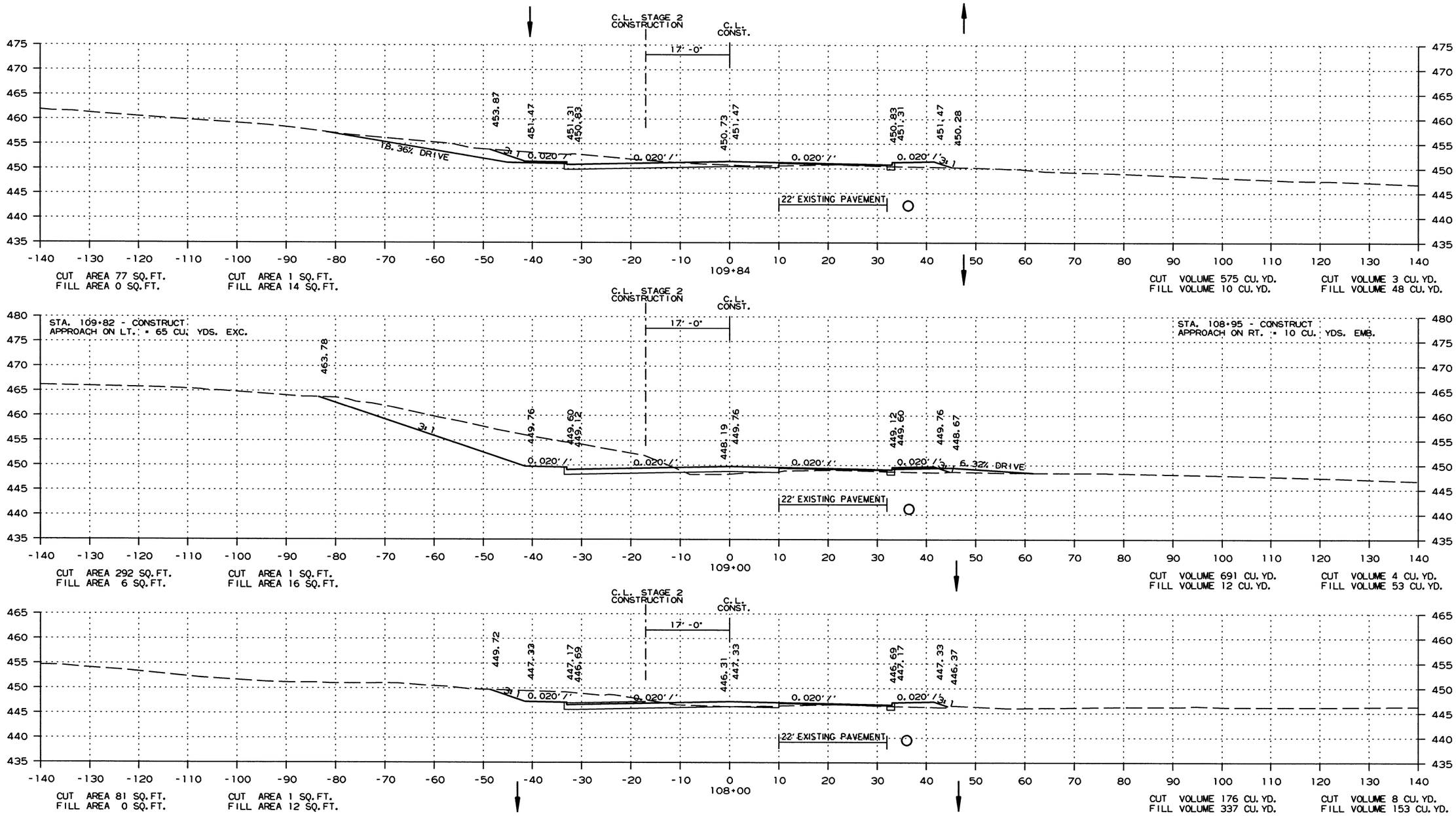
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	81	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 108+00 TO STA. 109+84

2/13/2017

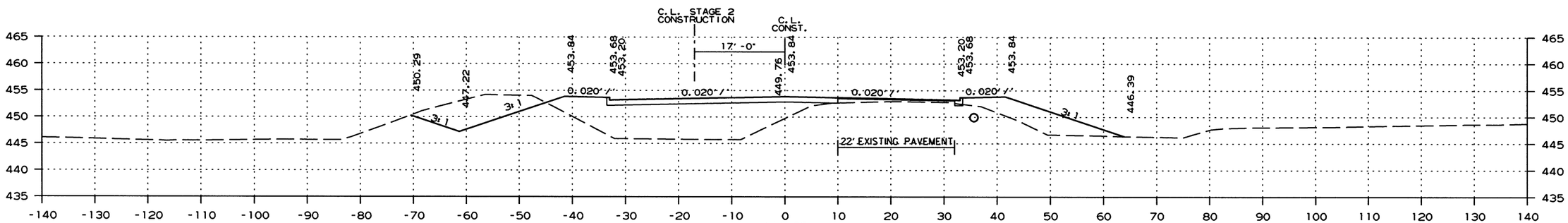
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	82	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2

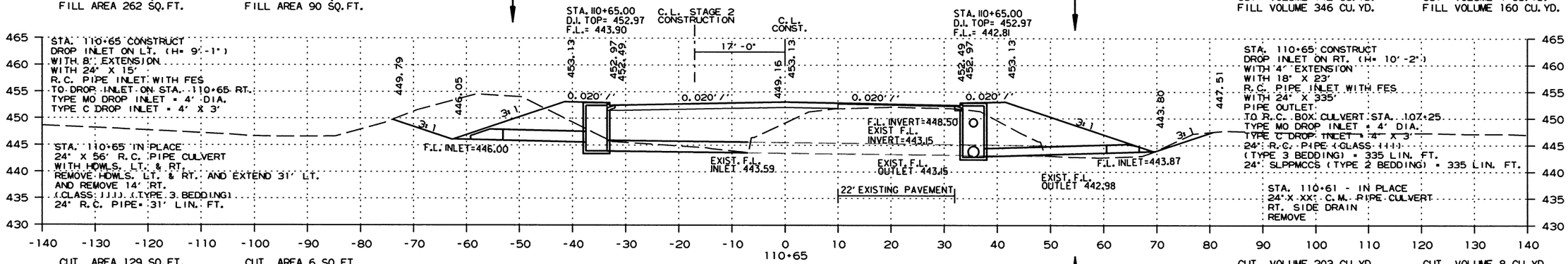


CUT AREA 91 SQ.FT.
FILL AREA 262 SQ.FT.

CUT AREA 1 SQ.FT.
FILL AREA 90 SQ.FT.

CUT VOLUME 142 CU.YD.
FILL VOLUME 346 CU.YD.

CUT VOLUME 4 CU.YD.
FILL VOLUME 160 CU.YD.

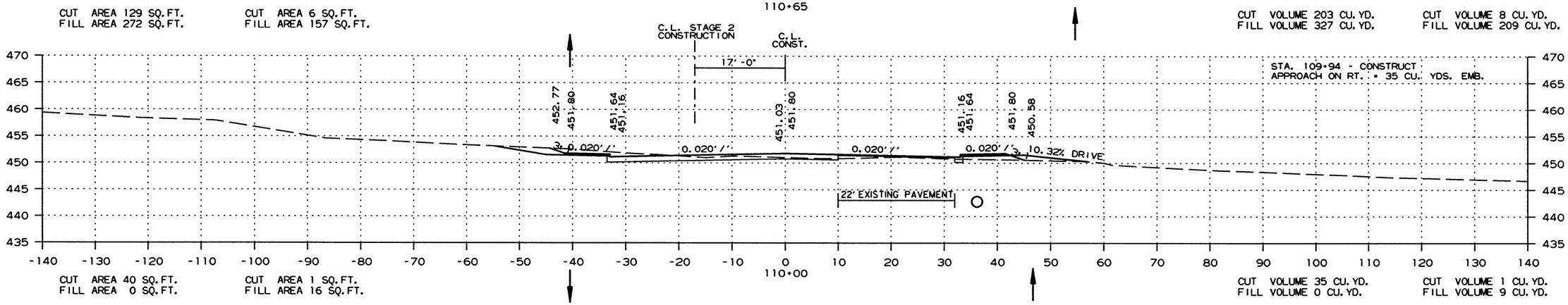


CUT AREA 129 SQ.FT.
FILL AREA 272 SQ.FT.

CUT AREA 6 SQ.FT.
FILL AREA 157 SQ.FT.

CUT VOLUME 203 CU.YD.
FILL VOLUME 327 CU.YD.

CUT VOLUME 8 CU.YD.
FILL VOLUME 209 CU.YD.



CUT AREA 40 SQ.FT.
FILL AREA 0 SQ.FT.

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

CUT VOLUME 35 CU.YD.
FILL VOLUME 0 CU.YD.

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

CROSS SECTION STA. 110+00 TO STA. 111+00

2/13/2017

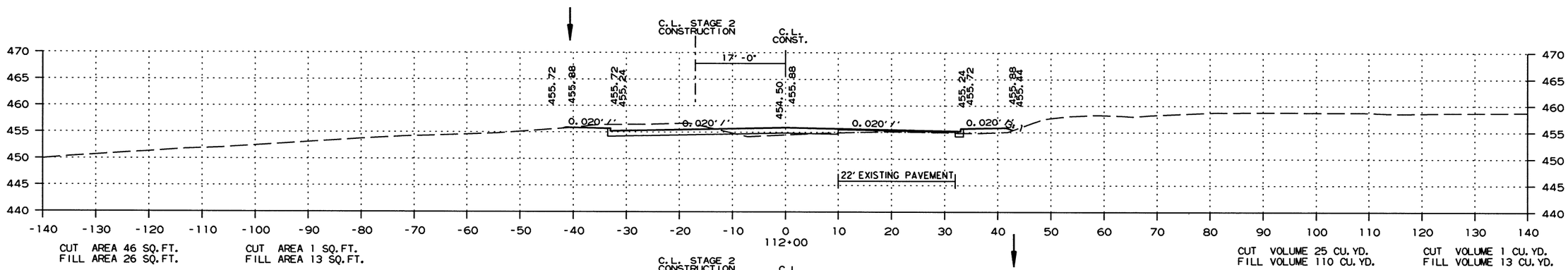
R060432.DGN

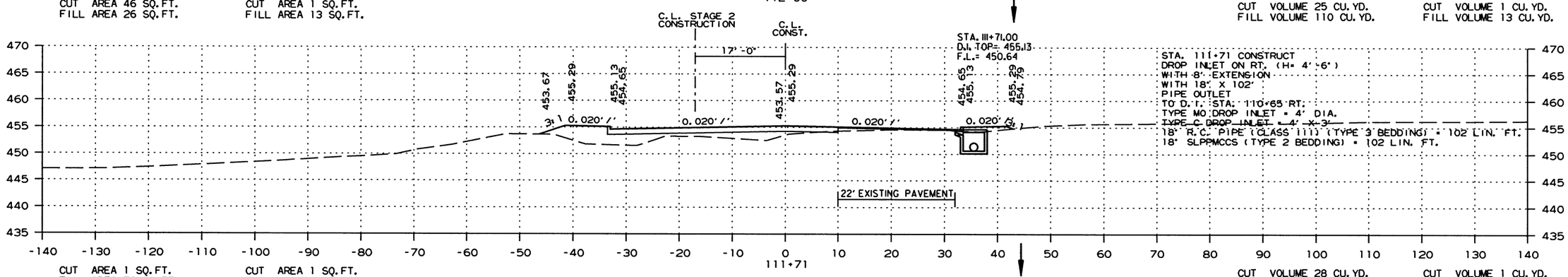
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	83	153

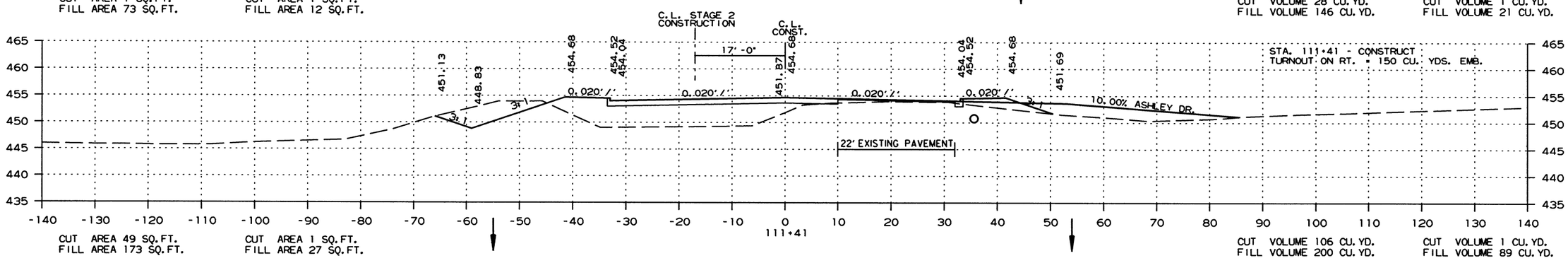
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 111+41 TO STA. 112+00

2/13/2017

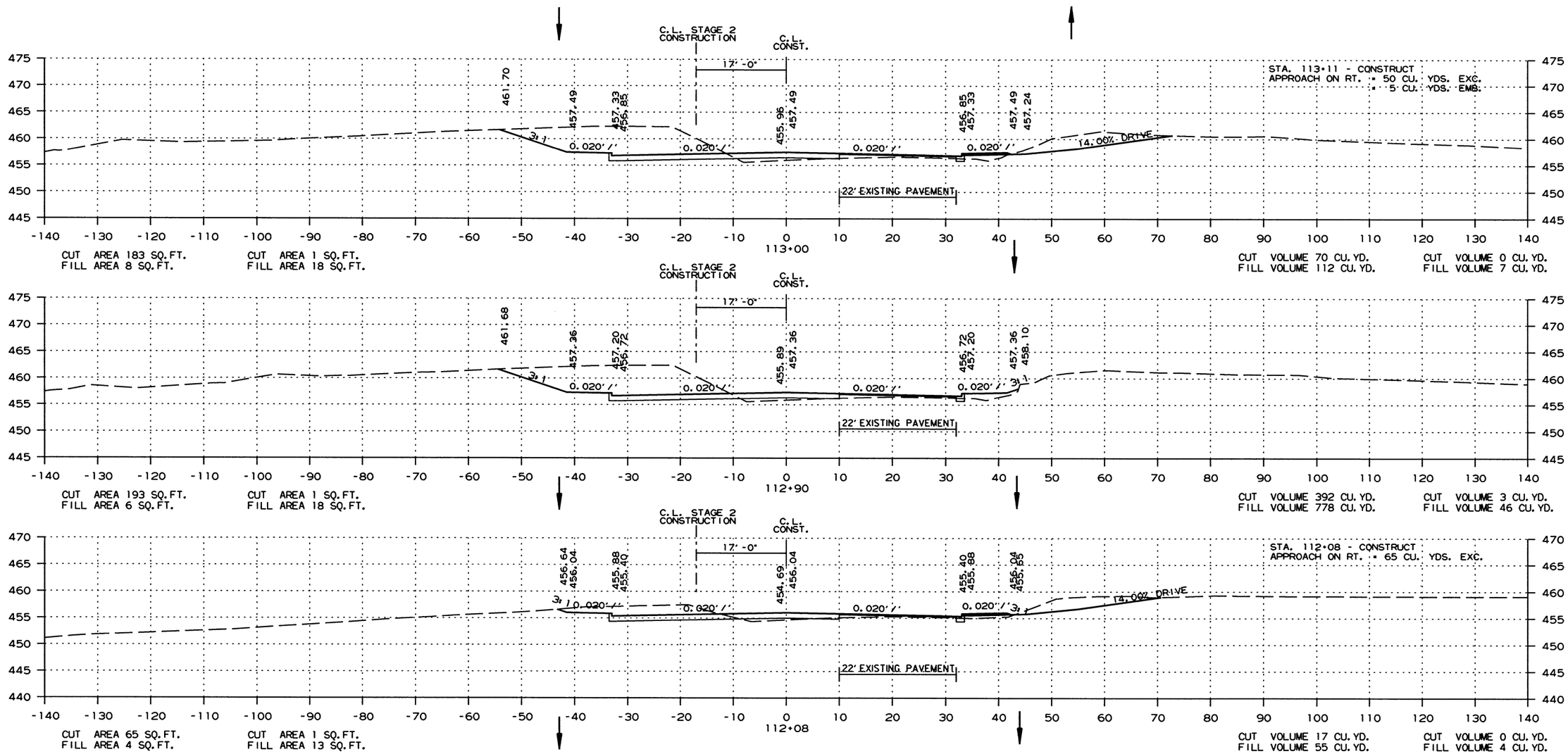
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	84	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 112+08 TO STA. 113+00

2/13/2017

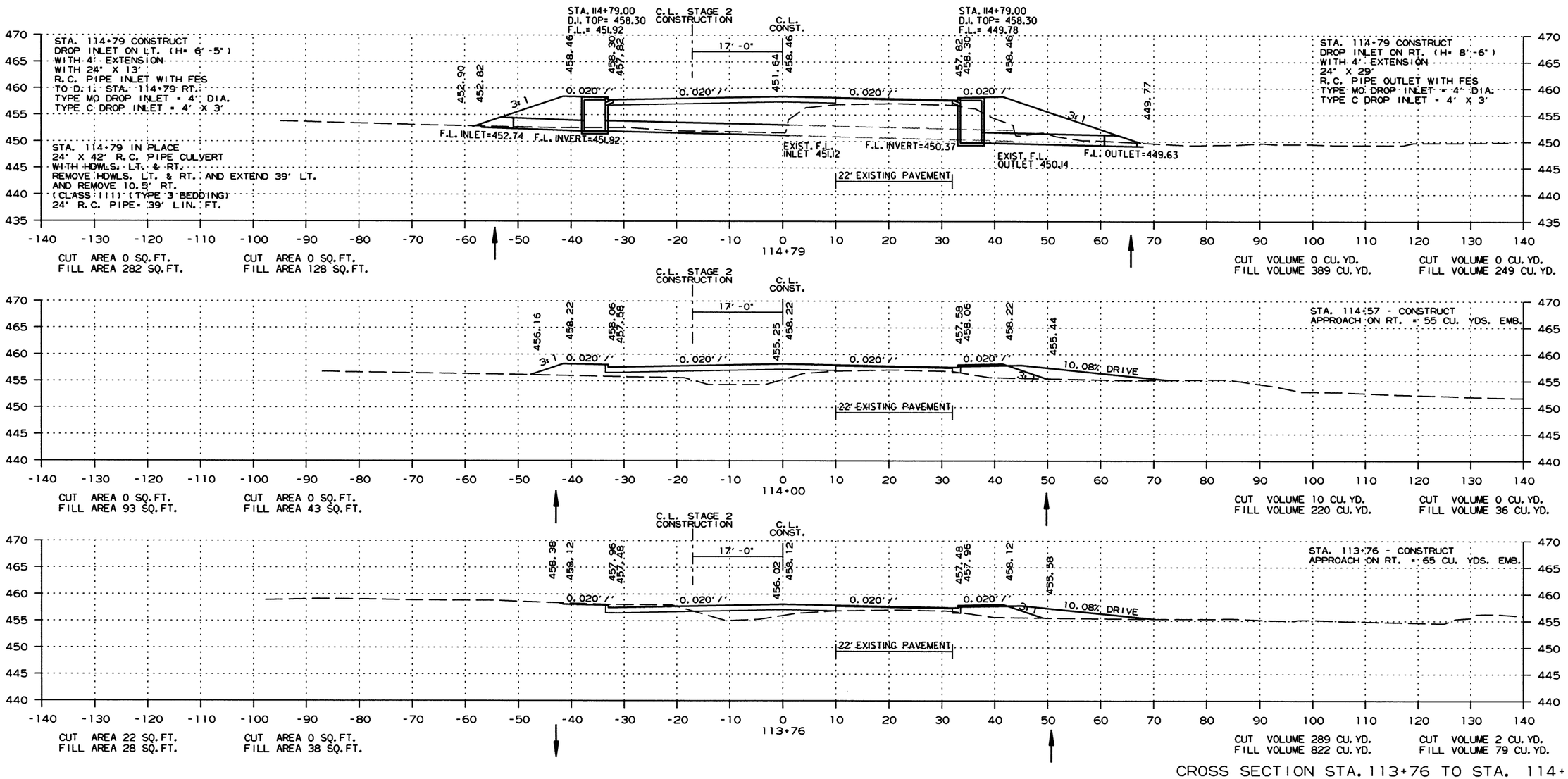
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	85	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 113+76 TO STA. 114+79

2/13/2017

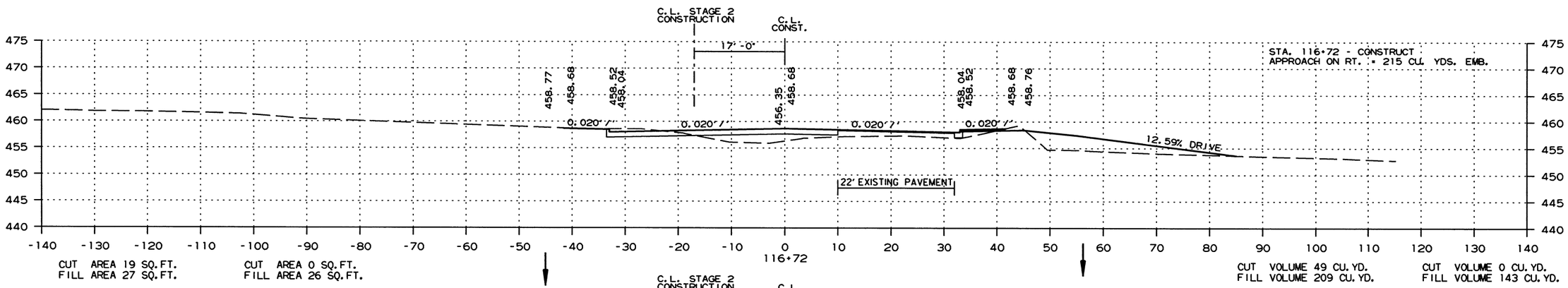
R060432.DGN

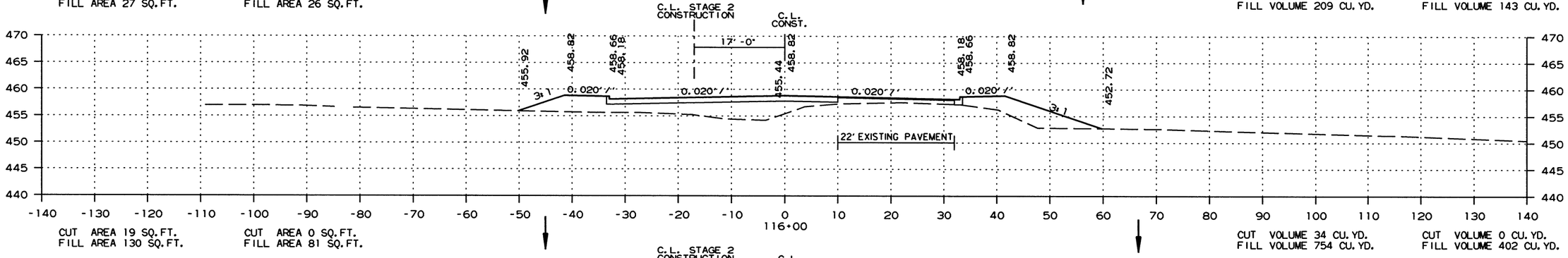
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	86	153

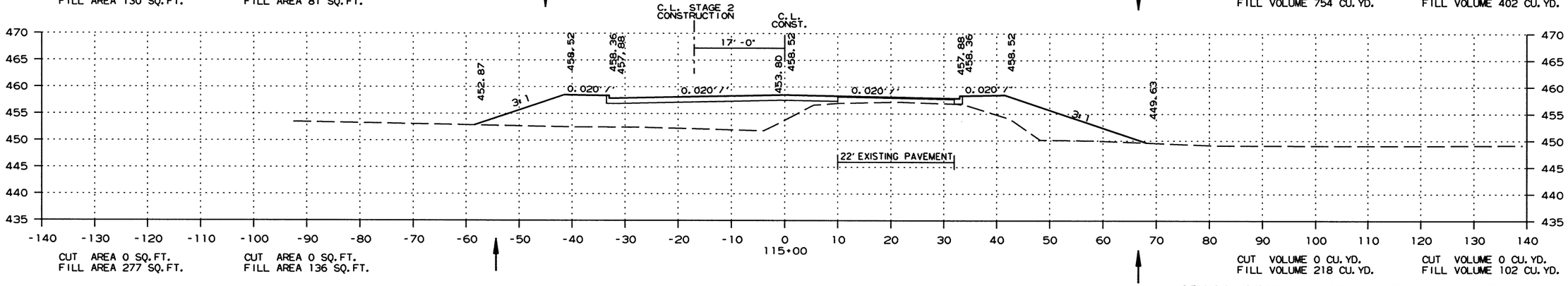
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 115+00 TO STA. 116+72

2/13/2017

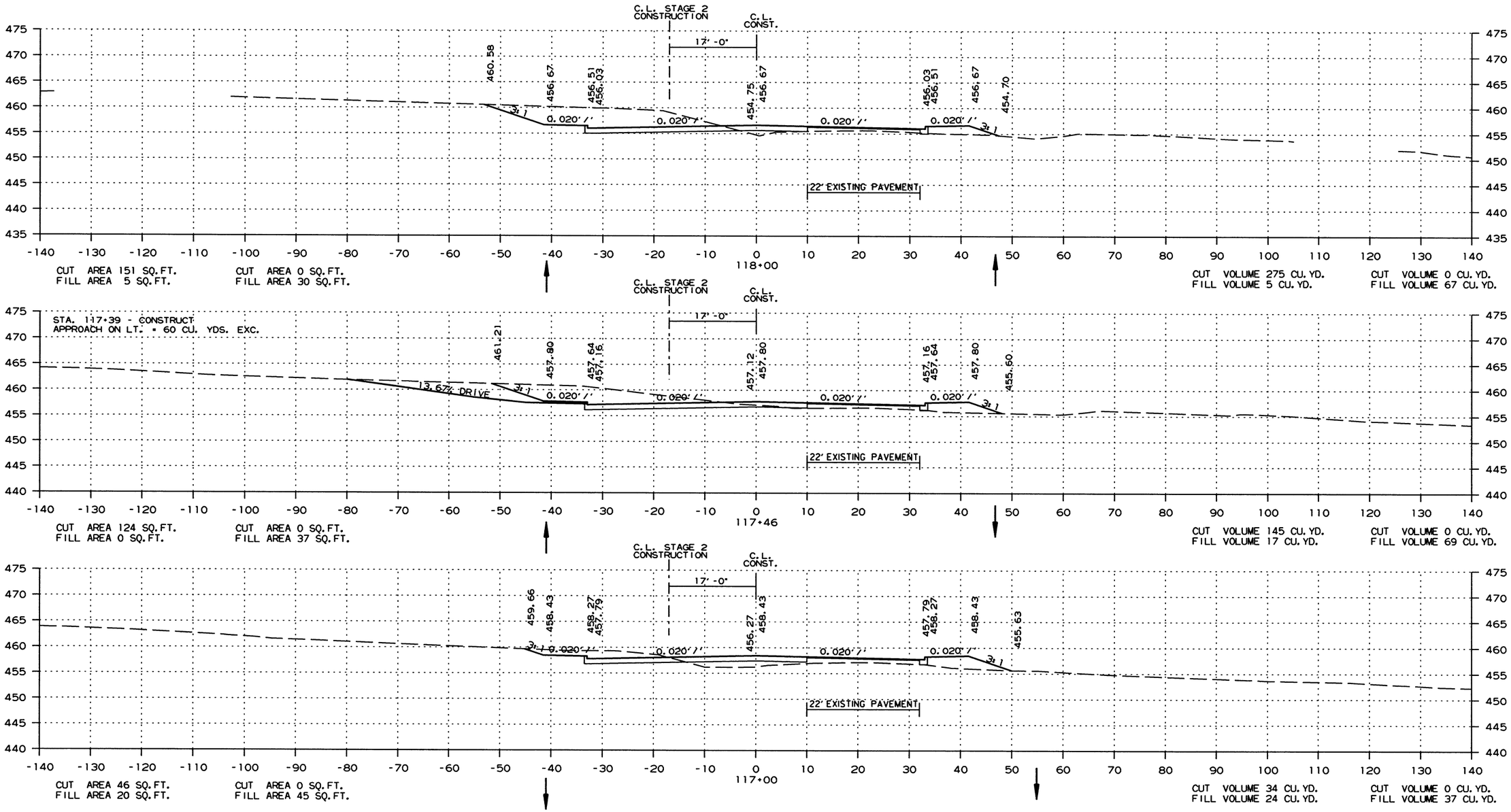
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	87	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 117+00 TO STA. 118+00

2/13/2017

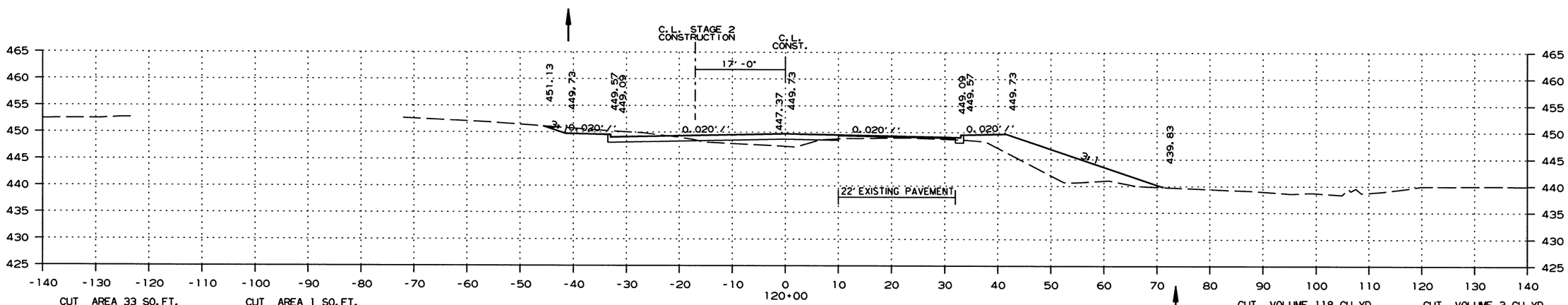
R060432.DGN

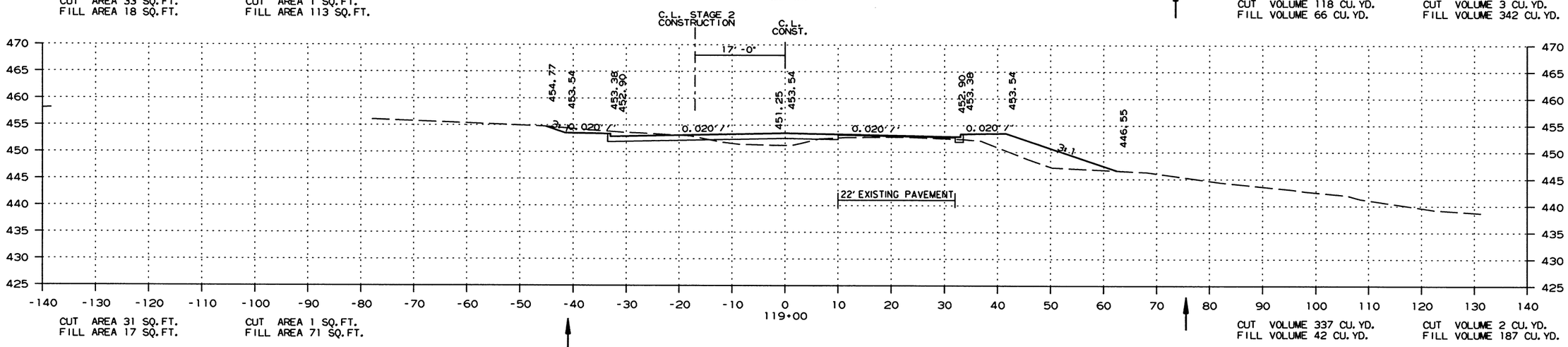
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	88	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 119+00 TO STA. 120+00

2/13/2017

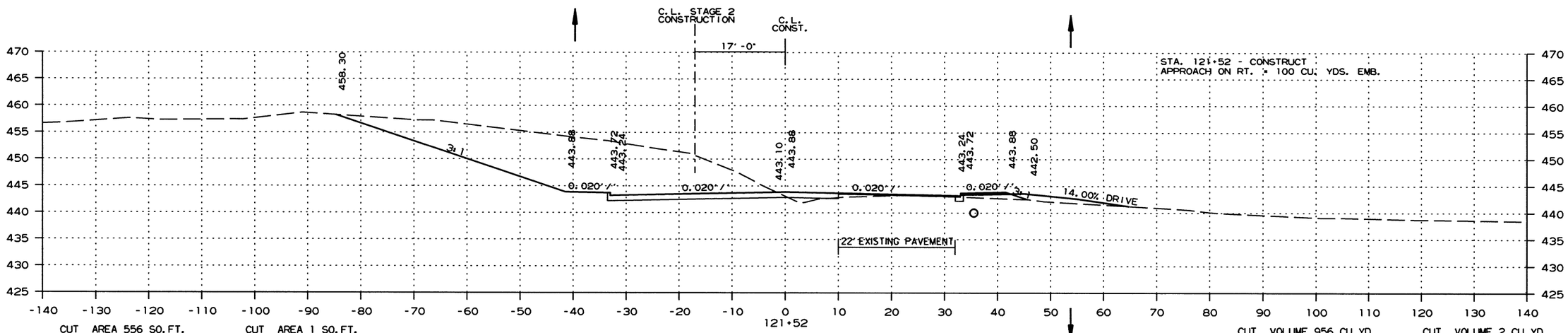
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	89	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2

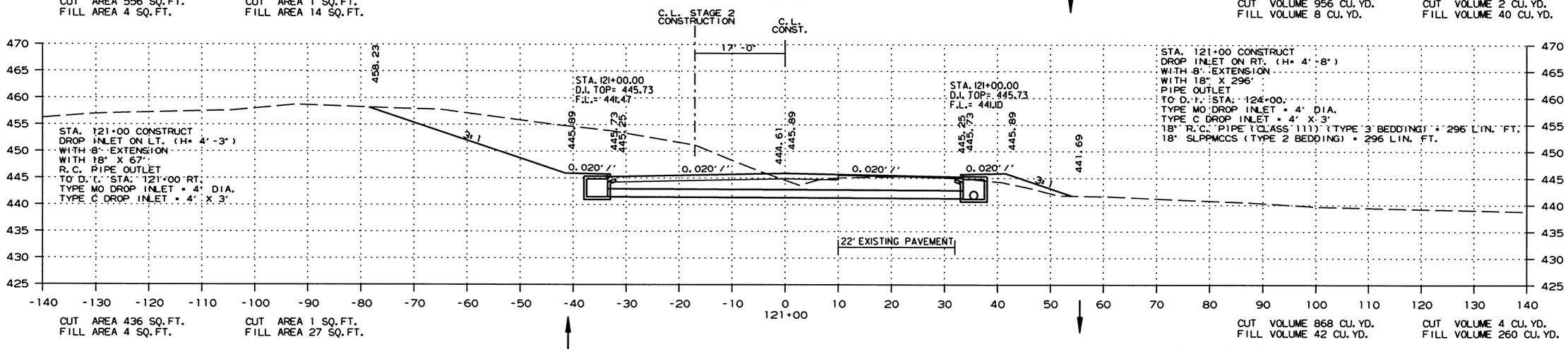


CUT AREA 556 SQ.FT.
FILL AREA 4 SQ.FT.

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

CUT VOLUME 956 CU.YD.
FILL VOLUME 8 CU.YD.

CUT VOLUME 2 CU.YD.
FILL VOLUME 40 CU.YD.



CUT AREA 436 SQ.FT.
FILL AREA 4 SQ.FT.

CUT AREA 1 SQ.FT.
FILL AREA 27 SQ.FT.

CUT VOLUME 868 CU.YD.
FILL VOLUME 42 CU.YD.

CUT VOLUME 4 CU.YD.
FILL VOLUME 260 CU.YD.

CROSS SECTION STA. 121+00 TO STA. 121+52

2/13/2017

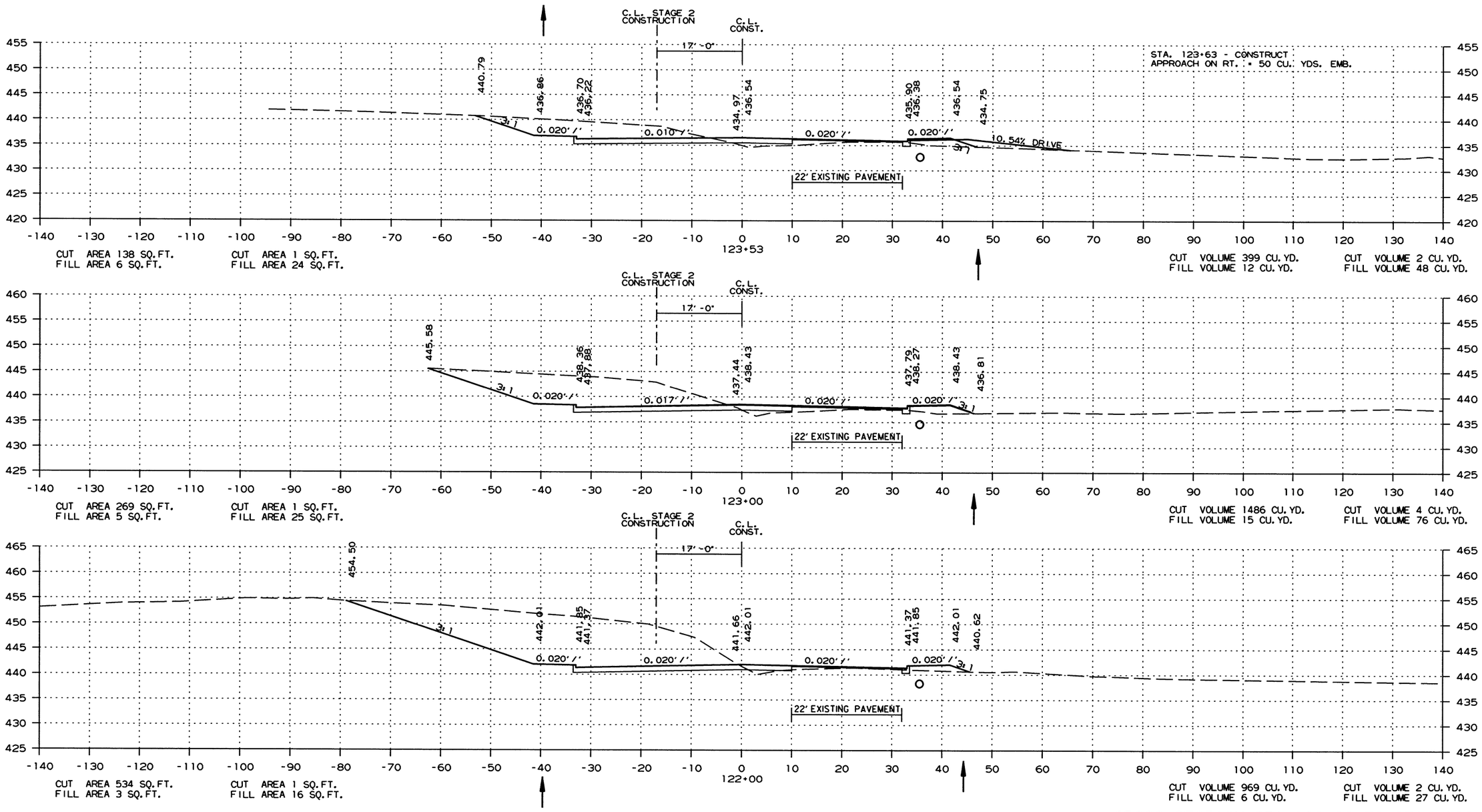
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	90	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 122+00 TO STA. 123+53

2/13/2017

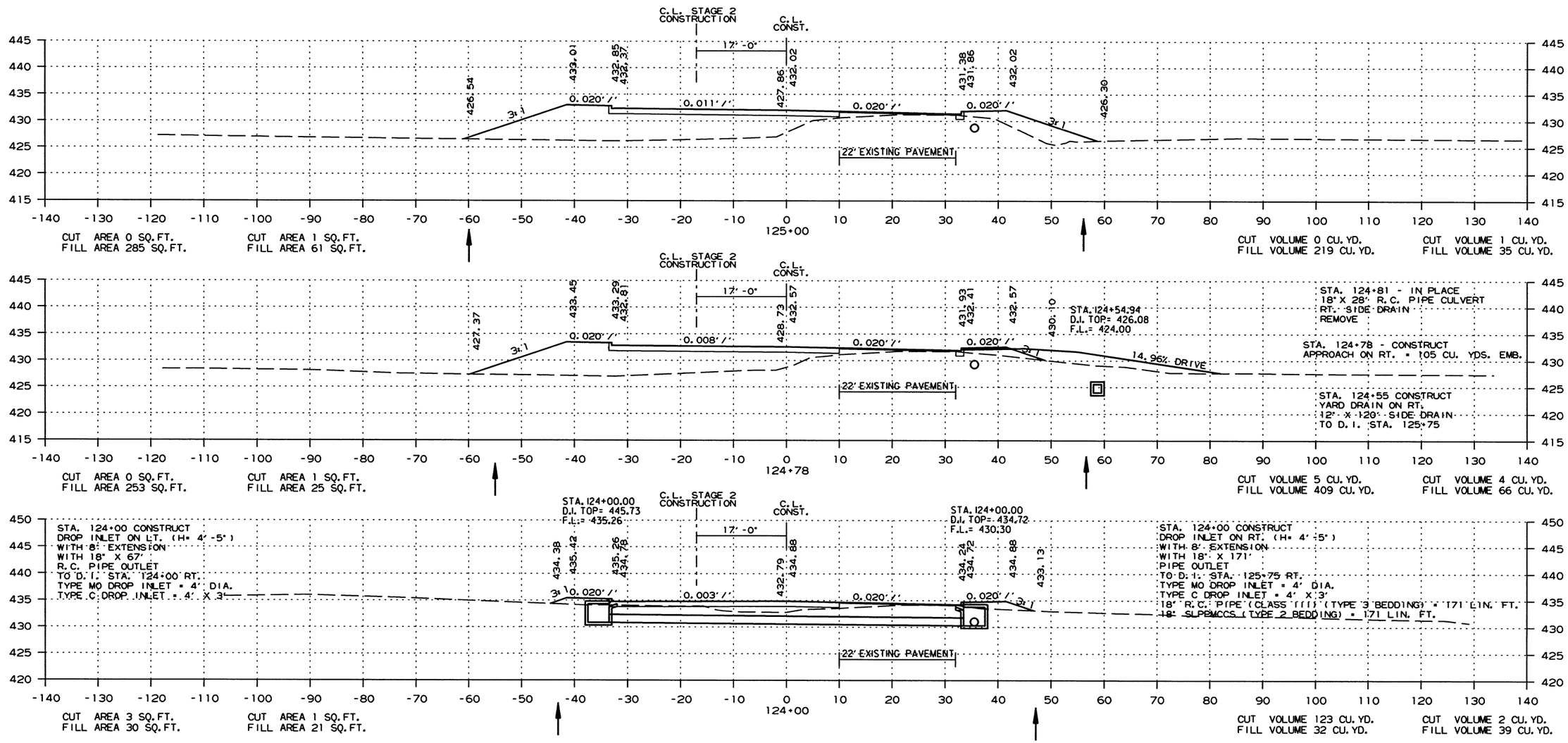
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	91	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 124+00 TO STA. 125+00

2/13/2017

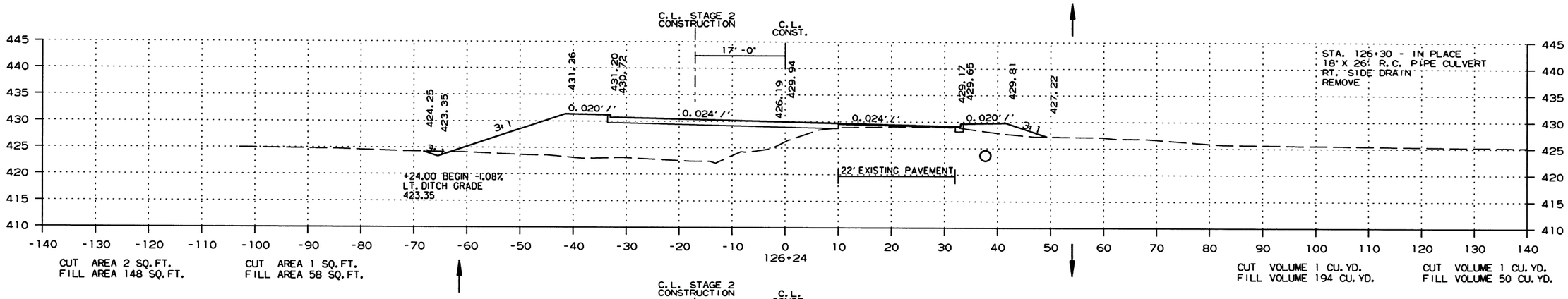
R060432.DGN

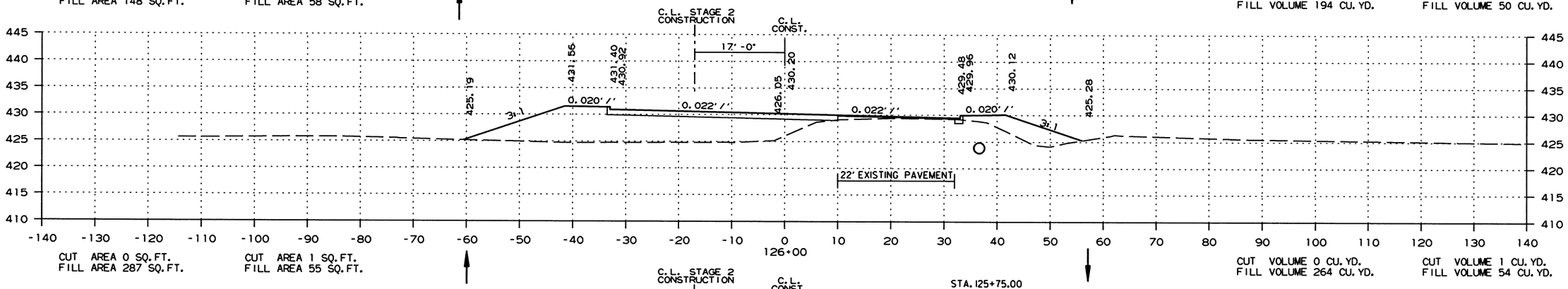
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	92	153

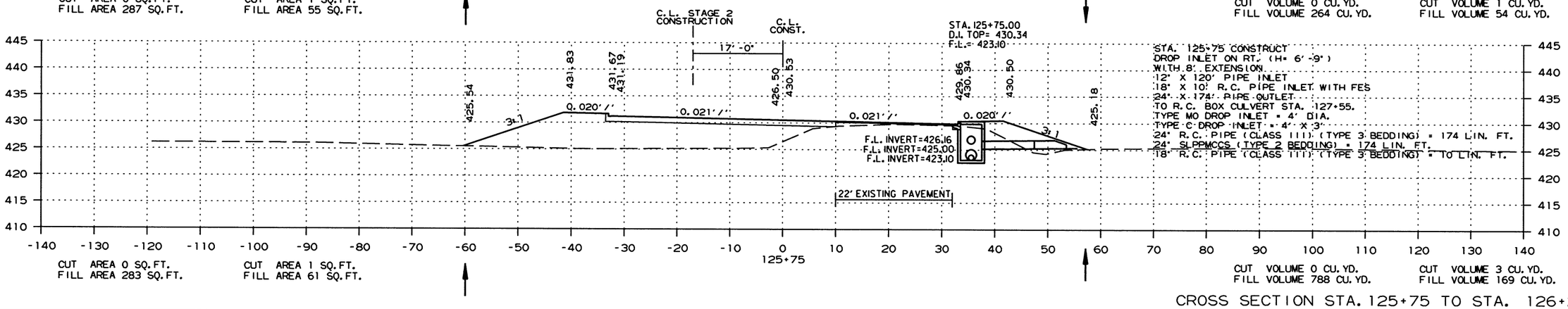
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 125+75 TO STA. 126+24

2/13/2017

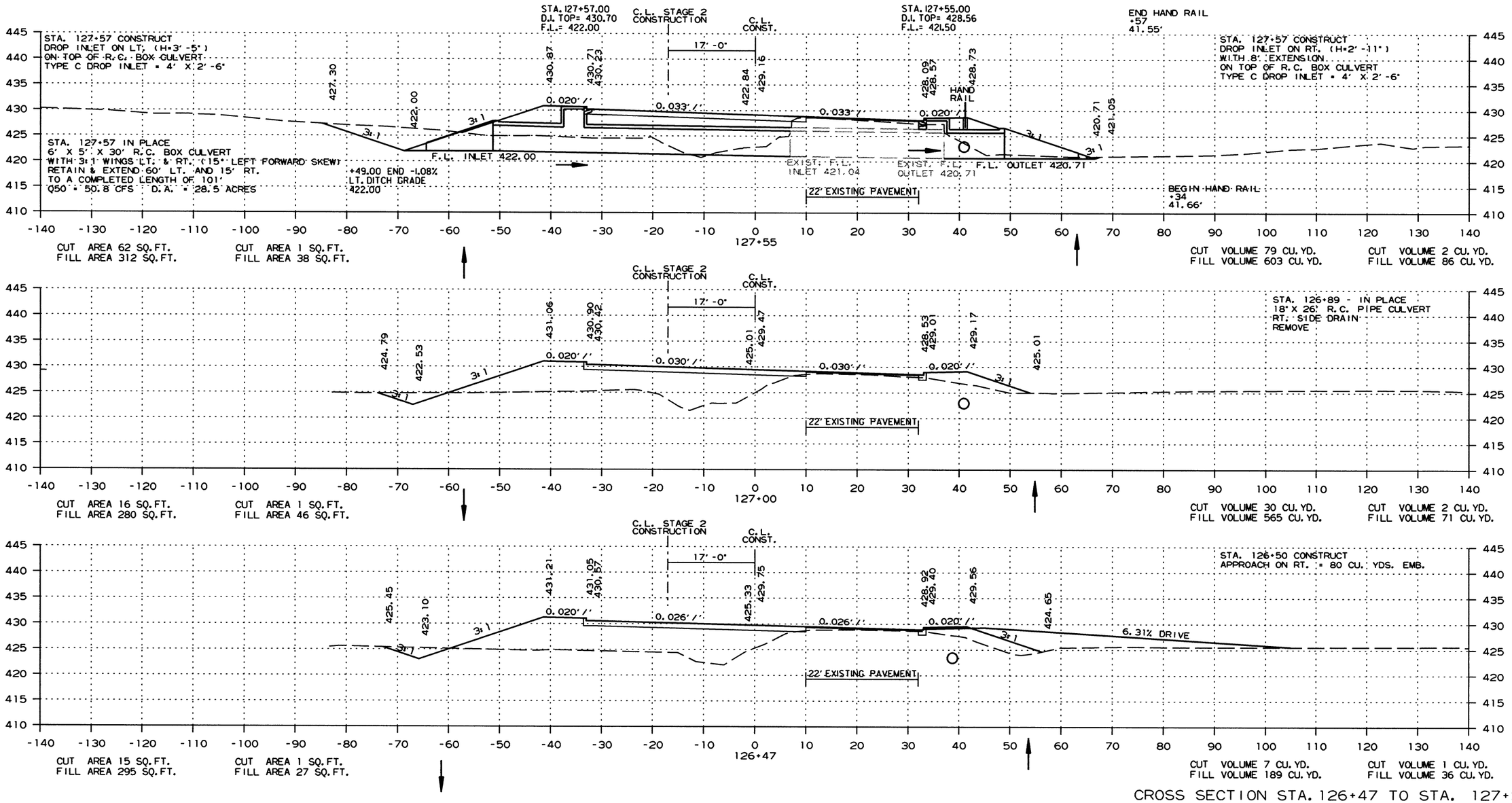
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	93	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 126+47 TO STA. 127+55

2/13/2017

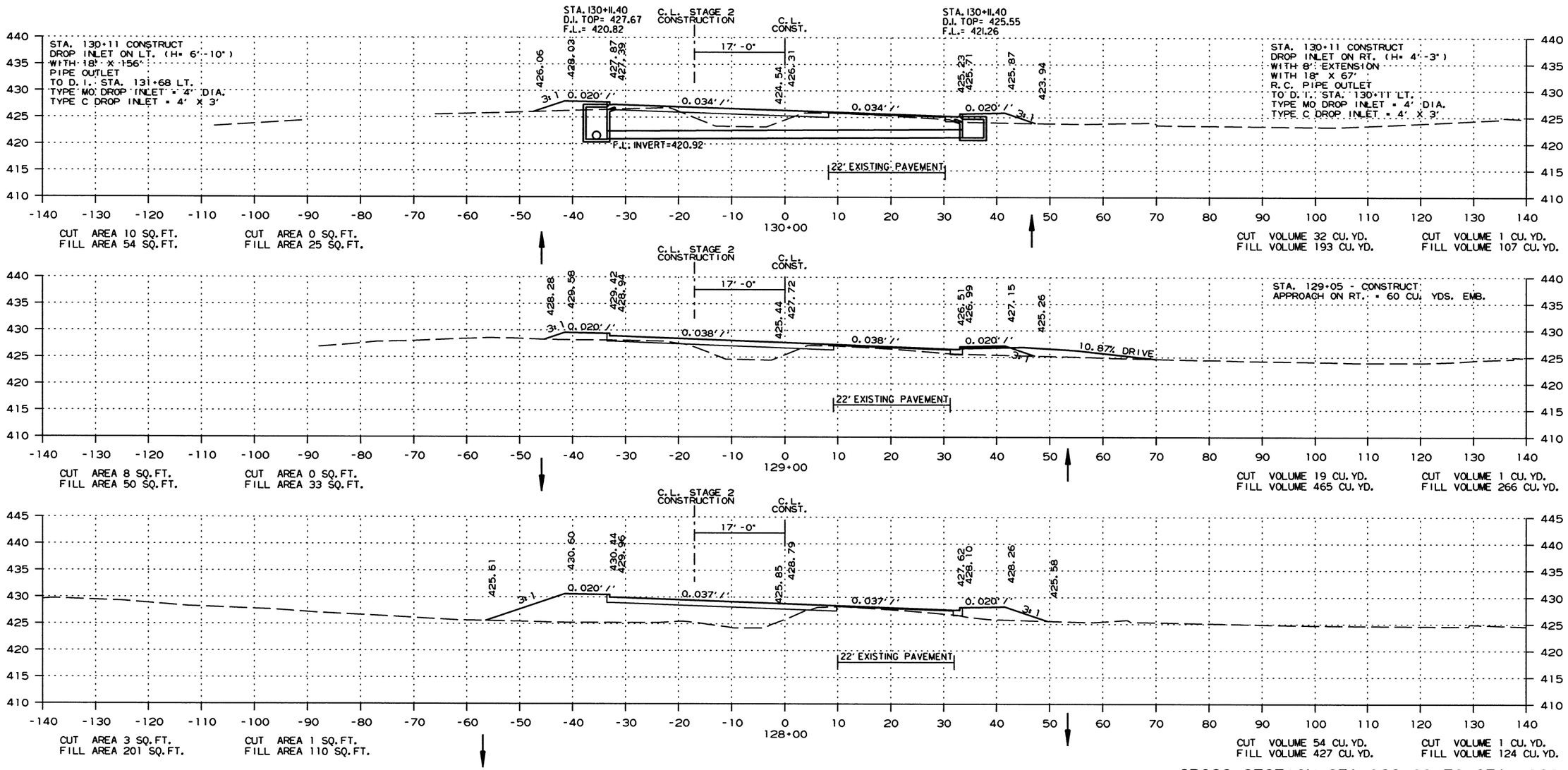
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	94	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 128+00 TO STA. 130+00

2/13/2017

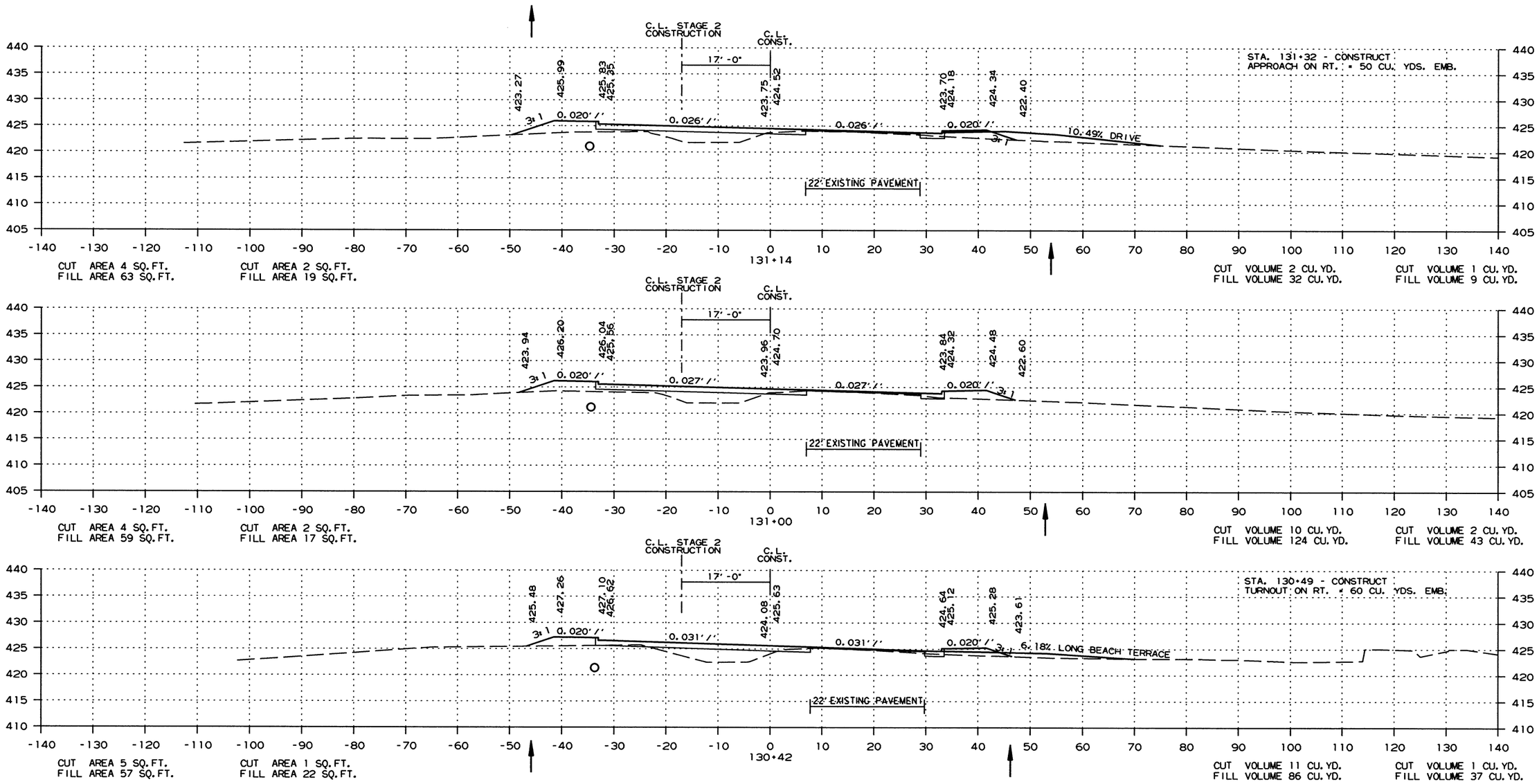
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	95	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 130+42 TO STA. 131+14

2/13/2017

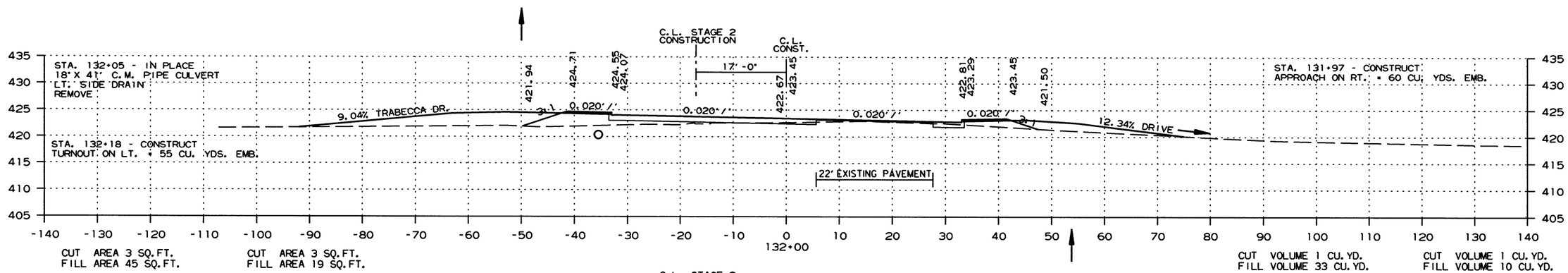
R060432.DGN

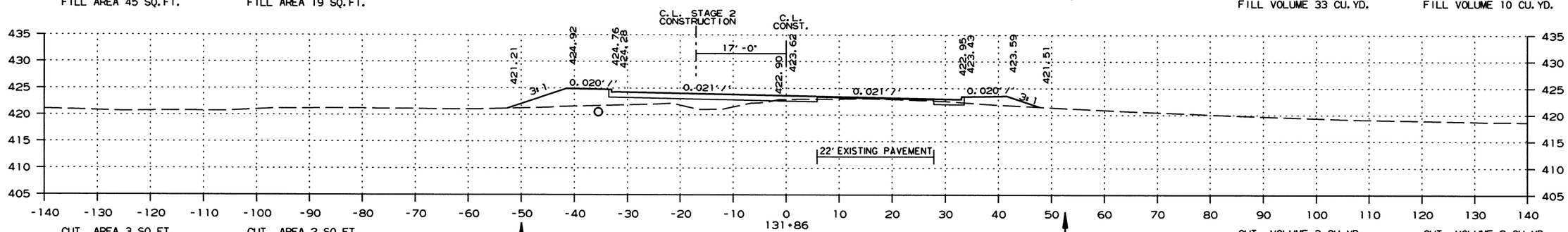
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	96	153

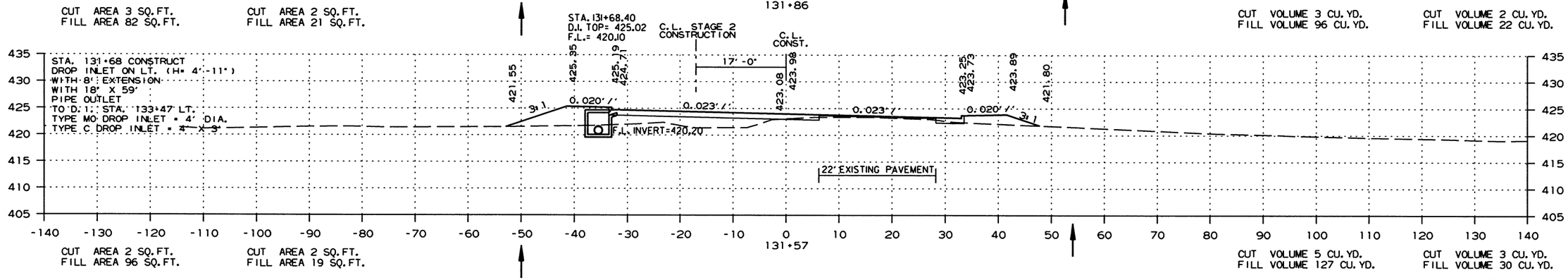
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 131+57 TO STA. 132+00

2/13/2017

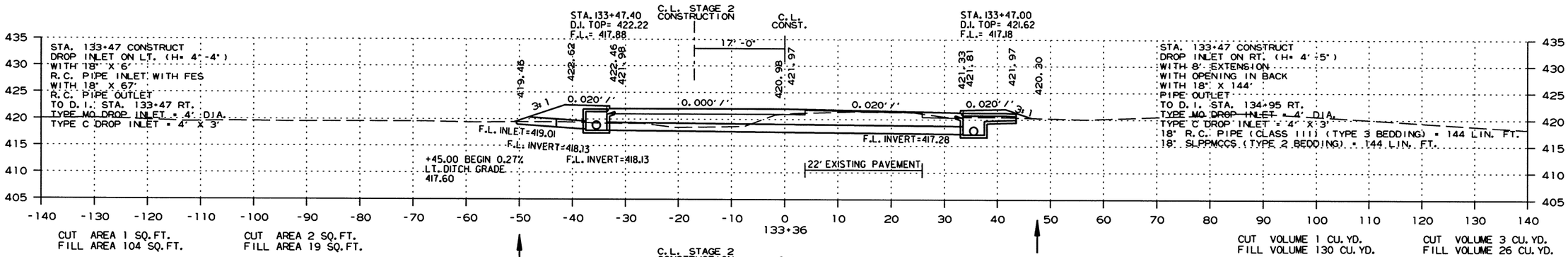
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	97	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 132+23 TO STA. 133+36

2/13/2017

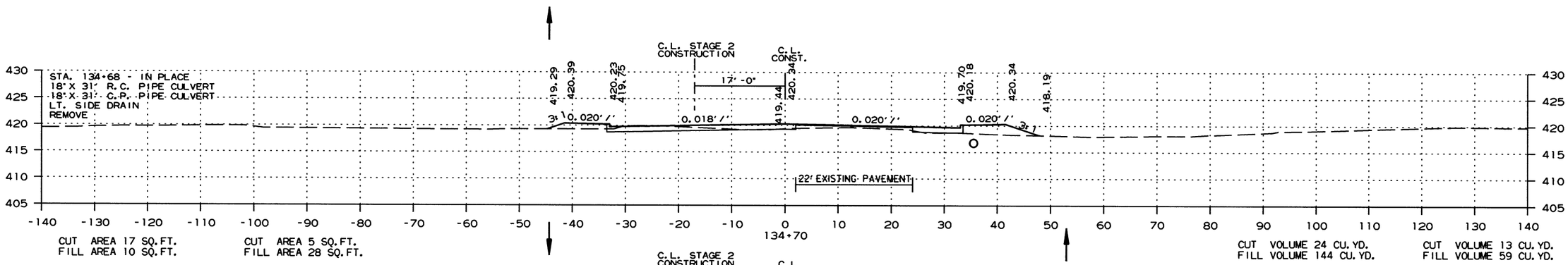
R060432.DGN

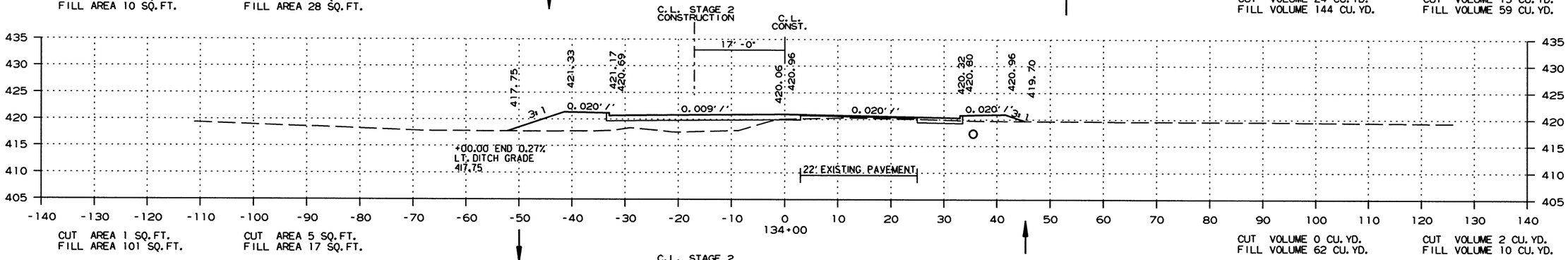
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	98	153

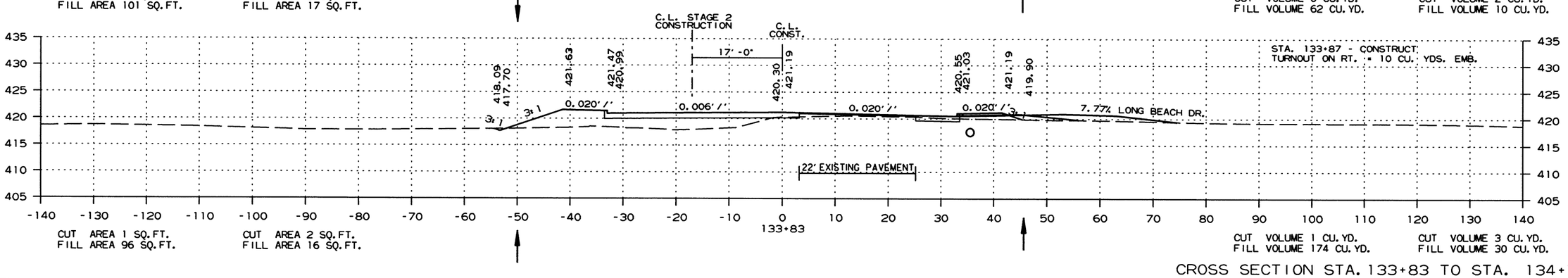
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 133+83 TO STA. 134+70

2/13/2017

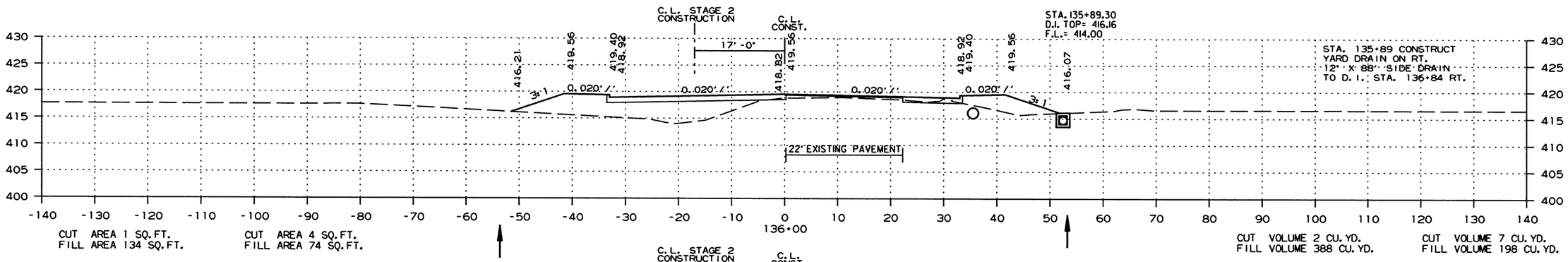
R060432.DGN

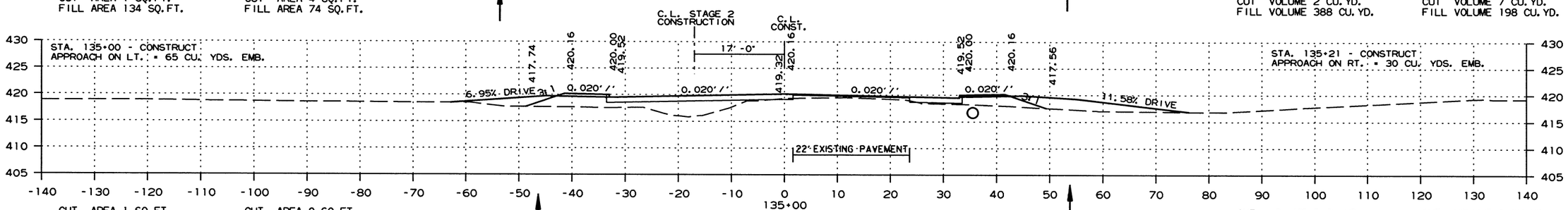
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	99	153

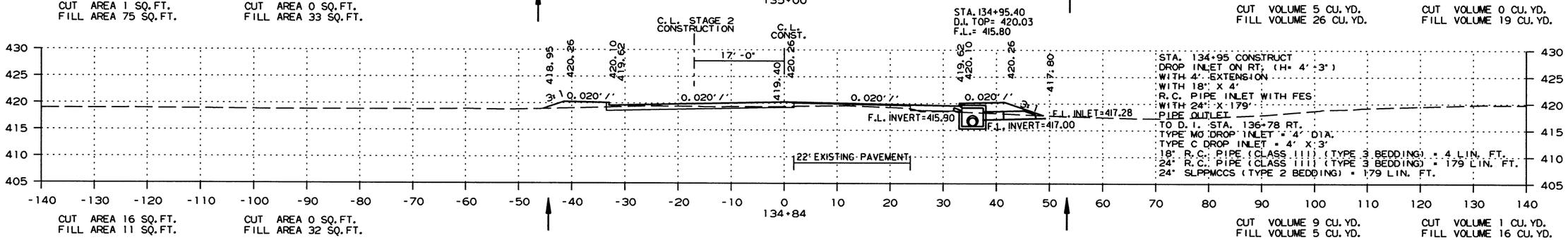
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 134+84 TO STA. 136+00

2/13/2017

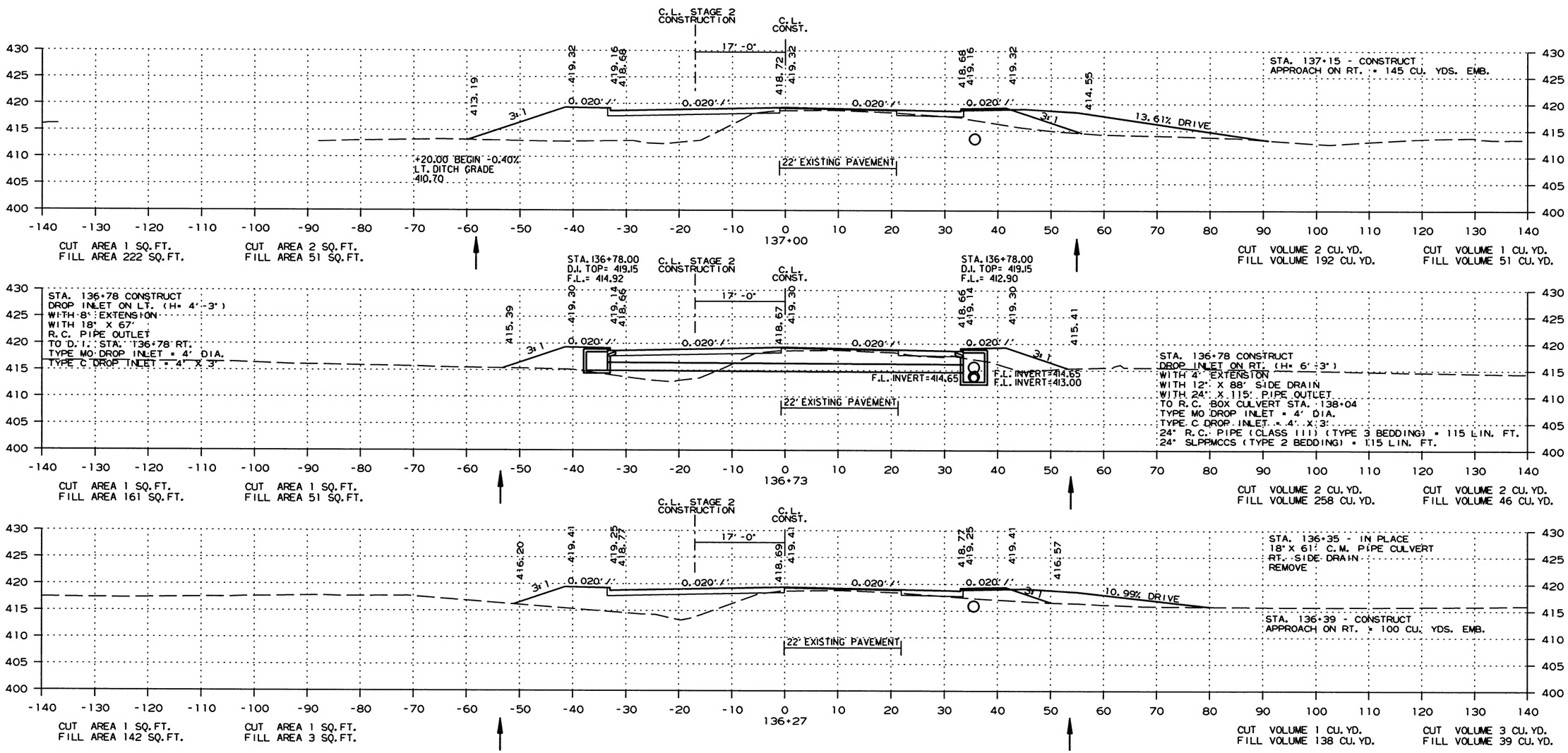
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	100	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 136+27 TO STA. 137+00

2/13/2017

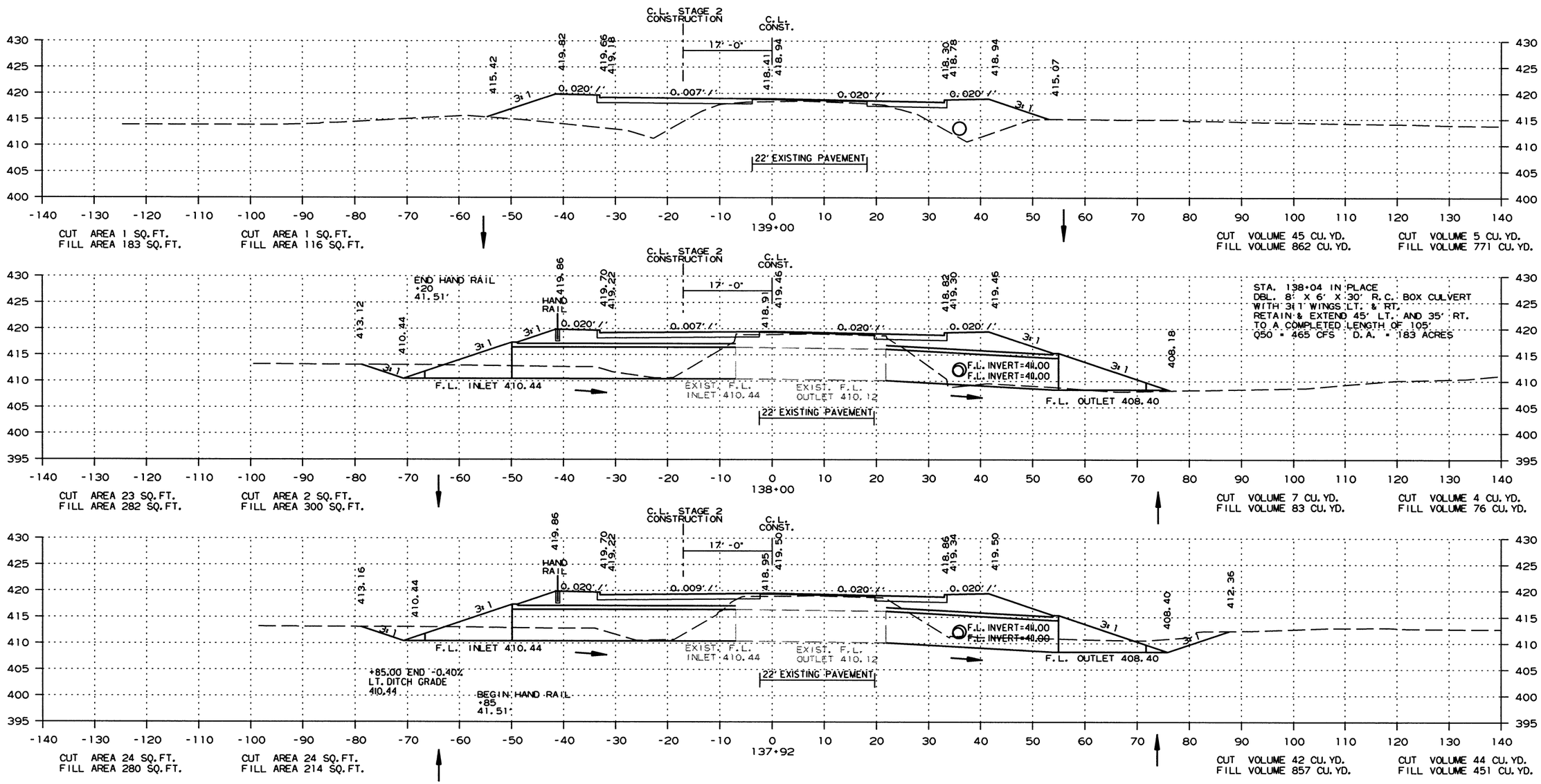
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	101	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 137+92 TO STA. 139+00

2/13/2017

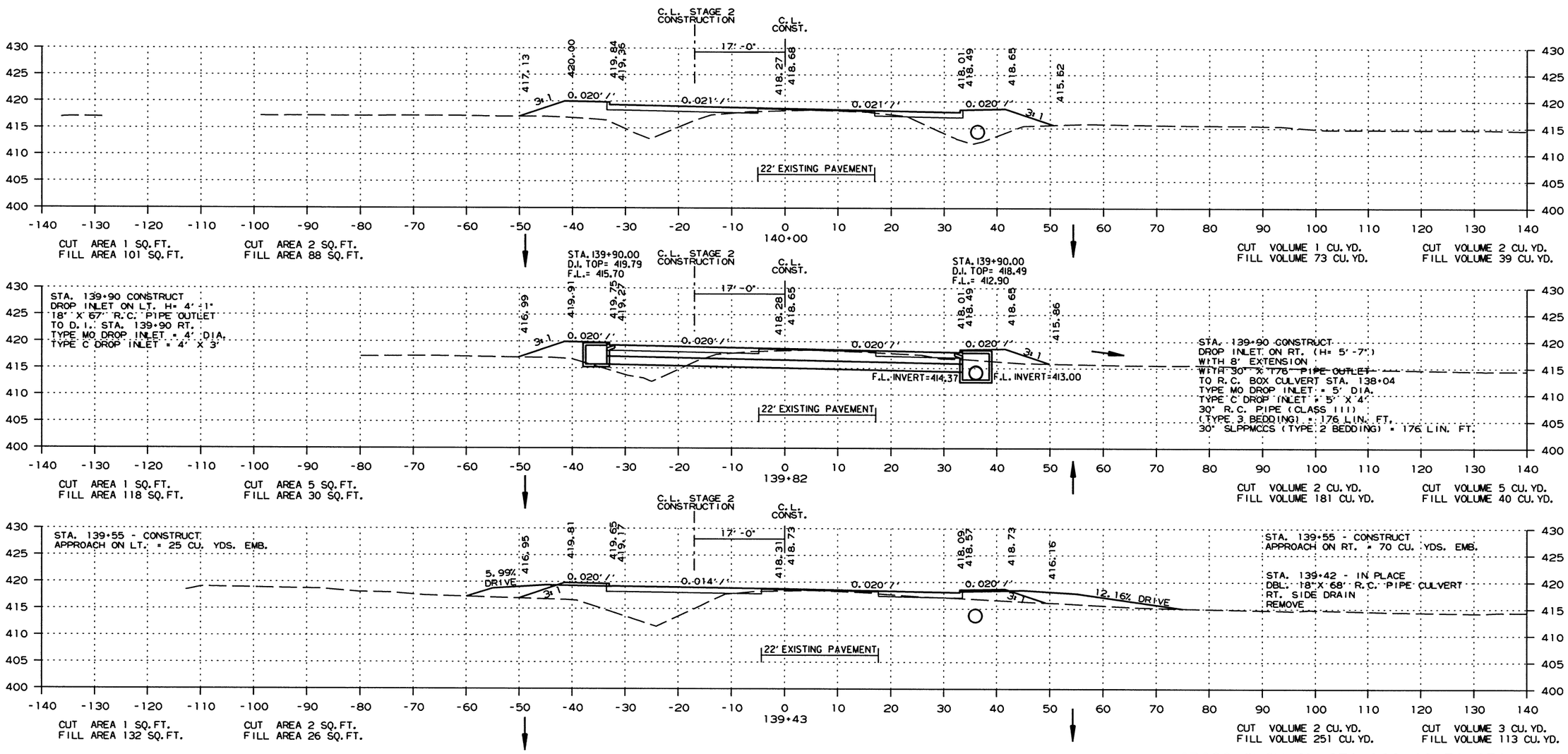
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	102	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 139+43 TO STA. 140+00

2/13/2017

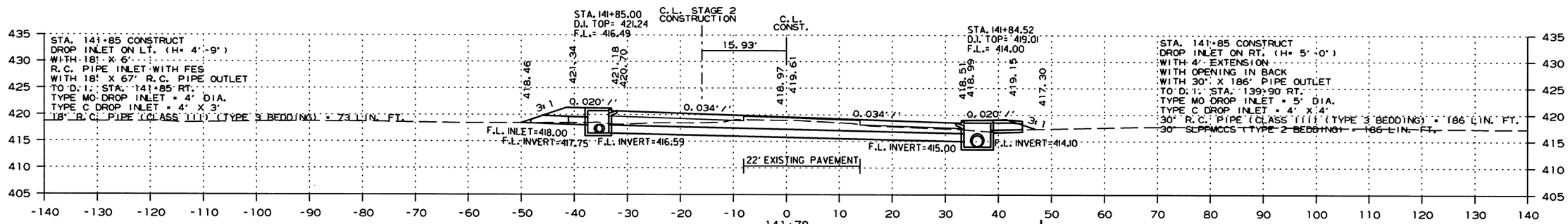
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	103	153

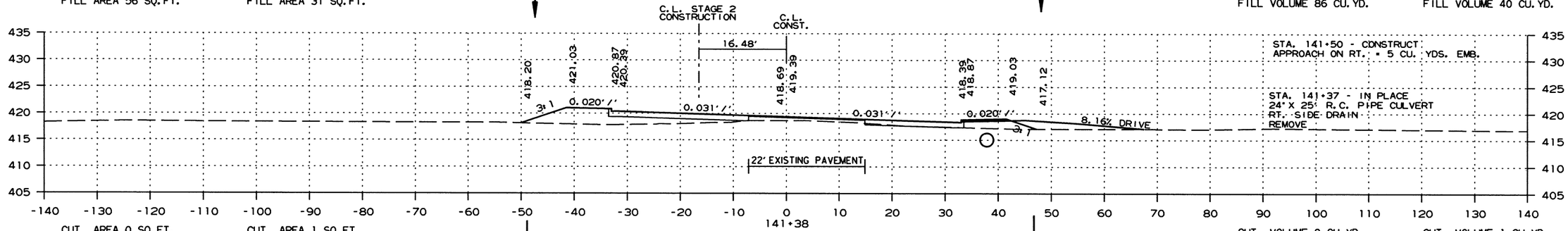
(2) CROSS SECTIONS

STAGE 1 STAGE 2

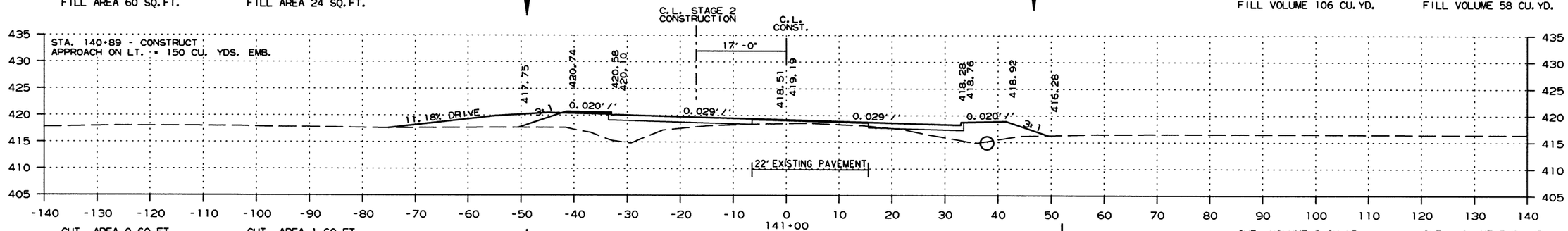
STAGE 1 STAGE 2



CUT AREA 0 SQ.FT. FILL AREA 56 SQ.FT.
CUT AREA 0 SQ.FT. FILL AREA 31 SQ.FT.
CUT VOLUME 0 CU.YD. FILL VOLUME 86 CU.YD.
CUT VOLUME 1 CU.YD. FILL VOLUME 40 CU.YD.



CUT AREA 0 SQ.FT. FILL AREA 60 SQ.FT.
CUT AREA 1 SQ.FT. FILL AREA 24 SQ.FT.
CUT VOLUME 0 CU.YD. FILL VOLUME 106 CU.YD.
CUT VOLUME 1 CU.YD. FILL VOLUME 58 CU.YD.



CUT AREA 0 SQ.FT. FILL AREA 90 SQ.FT.
CUT AREA 1 SQ.FT. FILL AREA 58 SQ.FT.
CUT VOLUME 2 CU.YD. FILL VOLUME 354 CU.YD.
CUT VOLUME 5 CU.YD. FILL VOLUME 270 CU.YD.

CROSS SECTION STA. 141+00 TO STA. 141+78

2/13/2017

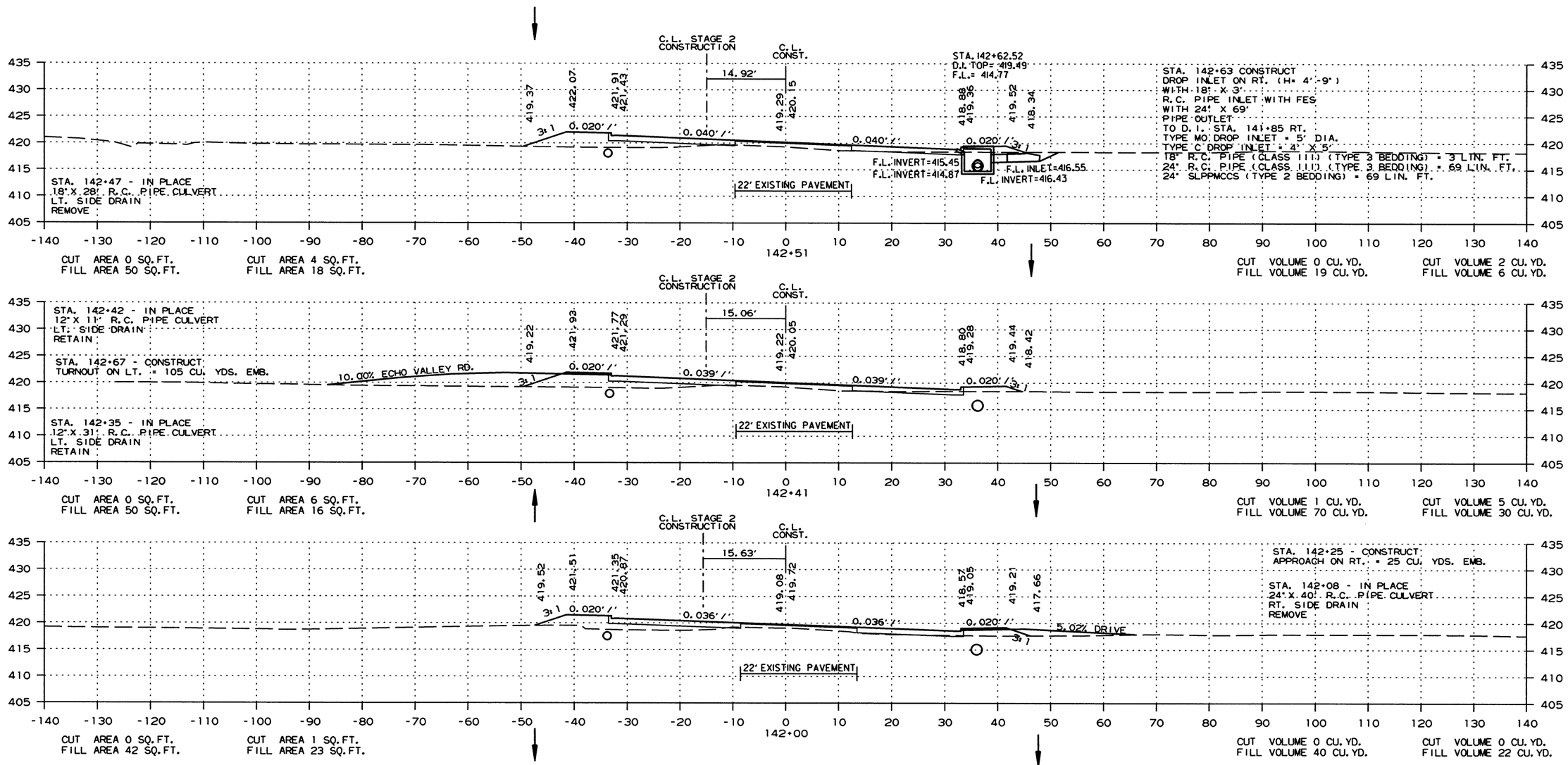
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	104	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 142+00 TO STA. 142+51

2/13/2017

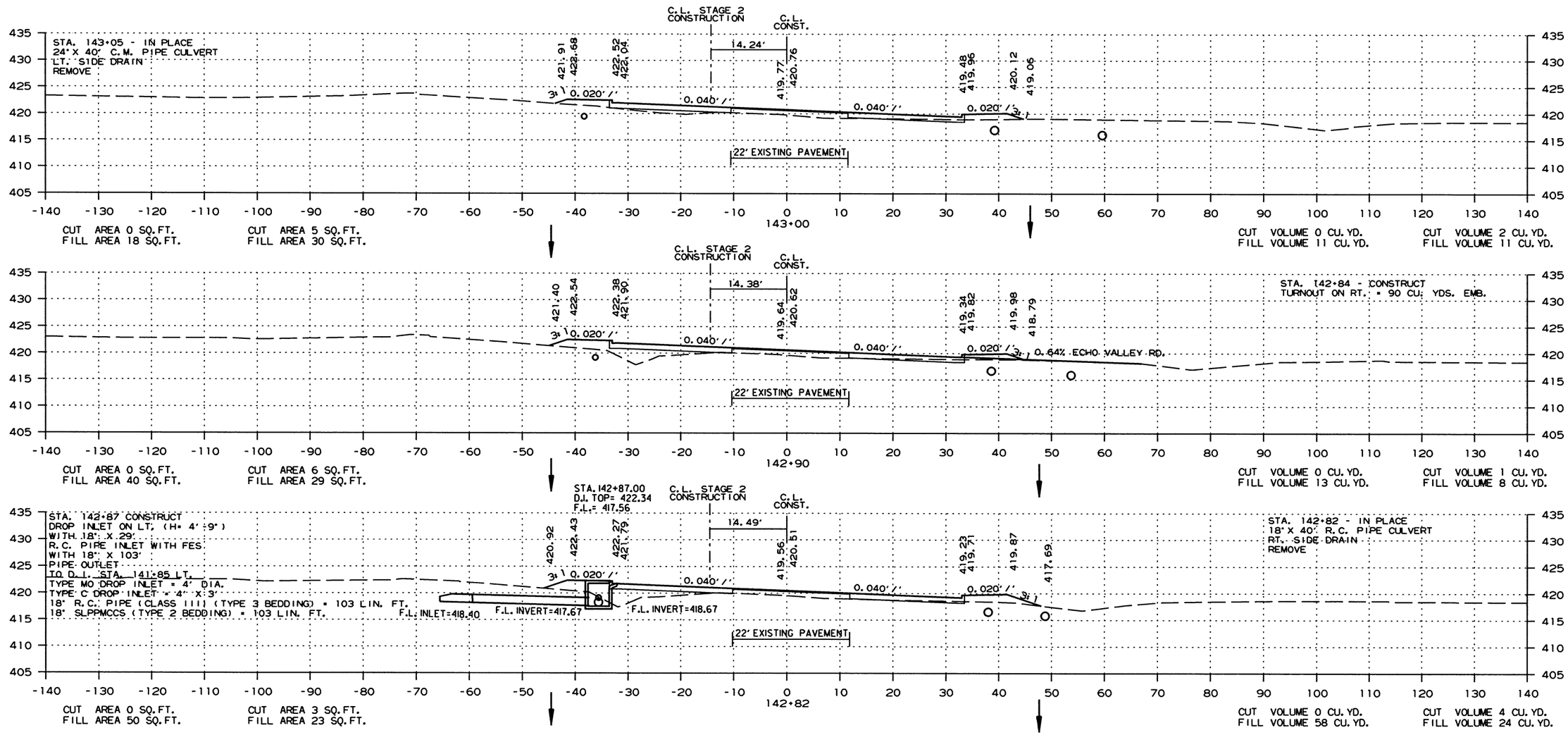
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	105	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 142+82 TO STA. 143+00

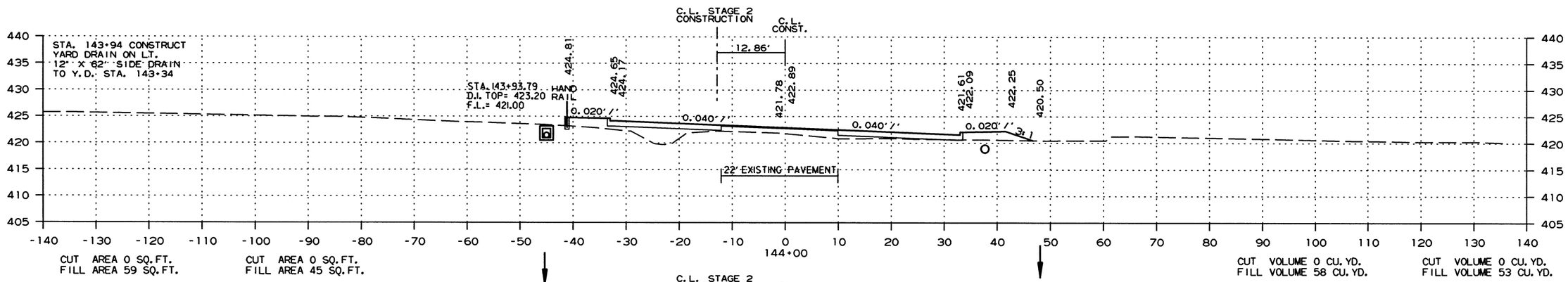
2/13/2017

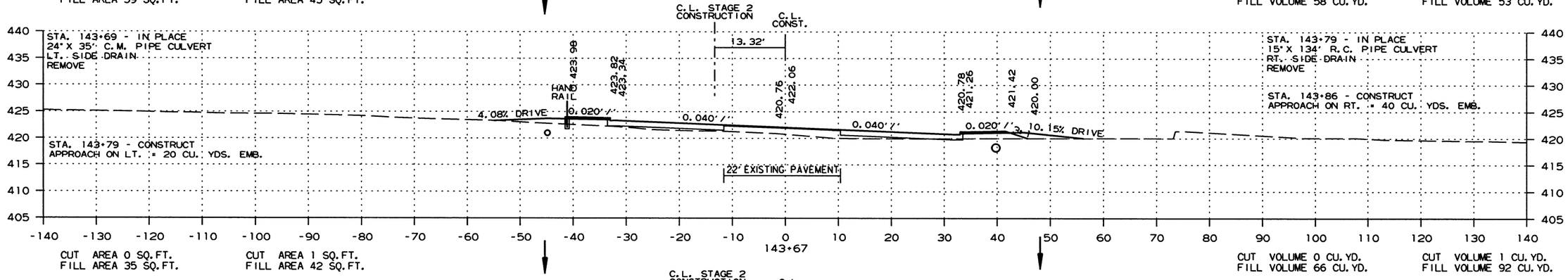
R060432.DGN

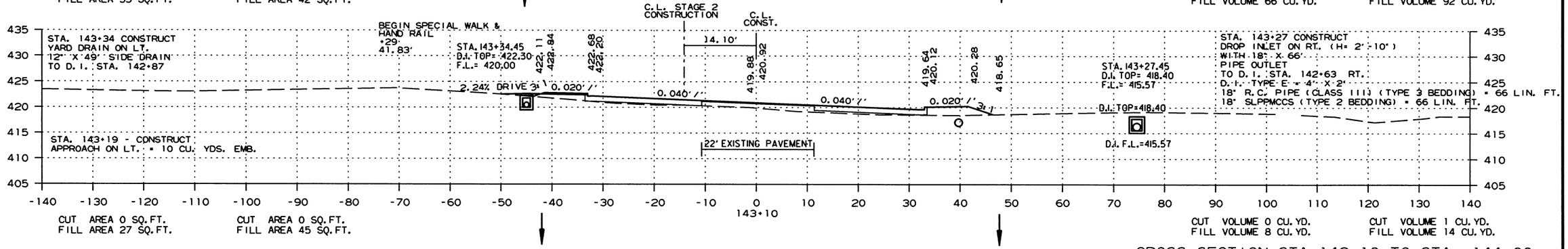
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	106	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2 STAGE 1 STAGE 2







CROSS SECTION STA. 143+10 TO STA. 144+00

2/13/2017

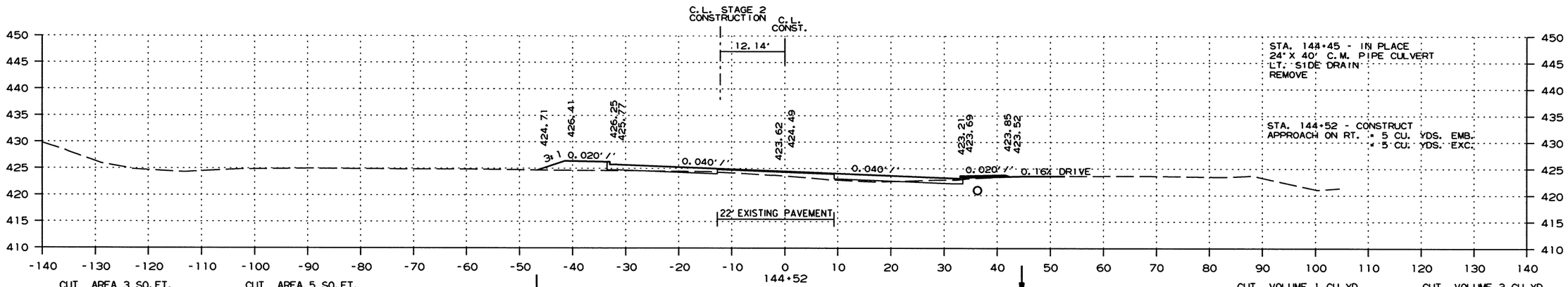
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	107	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2

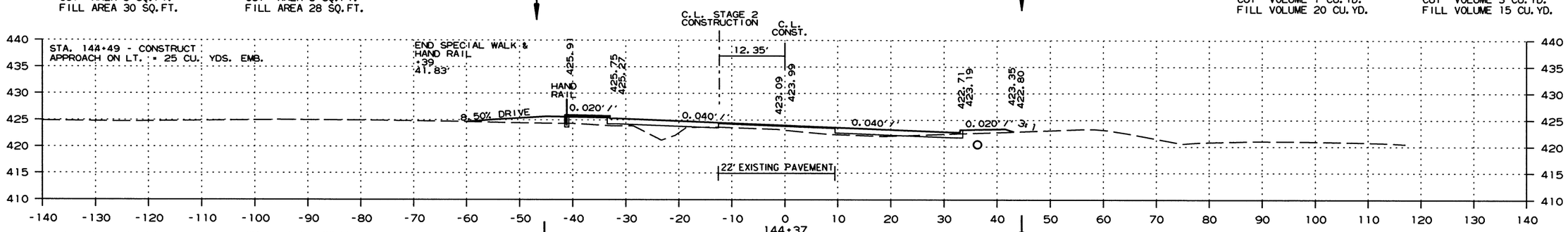


CUT AREA 3 SQ.FT.
FILL AREA 30 SQ.FT.

CUT AREA 5 SQ.FT.
FILL AREA 28 SQ.FT.

CUT VOLUME 1 CU.YD.
FILL VOLUME 20 CU.YD.

CUT VOLUME 3 CU.YD.
FILL VOLUME 15 CU.YD.

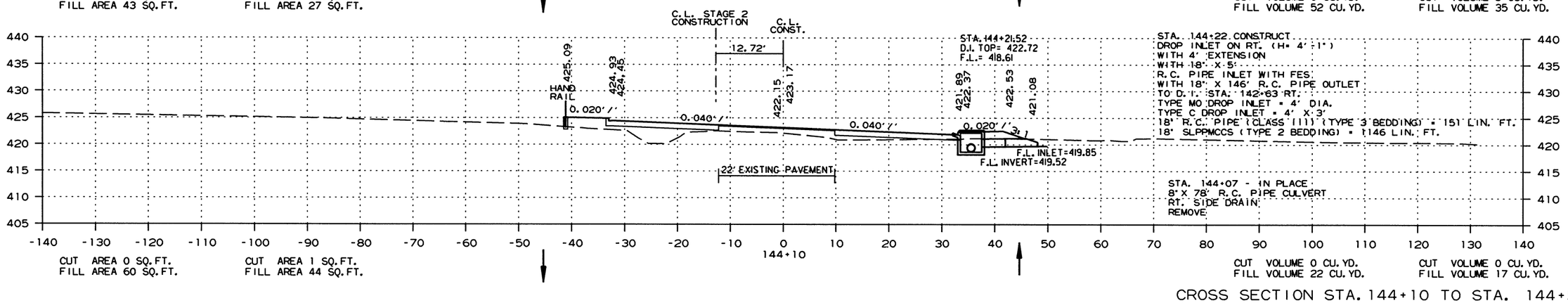


CUT AREA 0 SQ.FT.
FILL AREA 43 SQ.FT.

CUT AREA 5 SQ.FT.
FILL AREA 27 SQ.FT.

CUT VOLUME 0 CU.YD.
FILL VOLUME 52 CU.YD.

CUT VOLUME 3 CU.YD.
FILL VOLUME 35 CU.YD.



CUT AREA 0 SQ.FT.
FILL AREA 60 SQ.FT.

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

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

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

CROSS SECTION STA. 144+10 TO STA. 144+52

2/13/2017

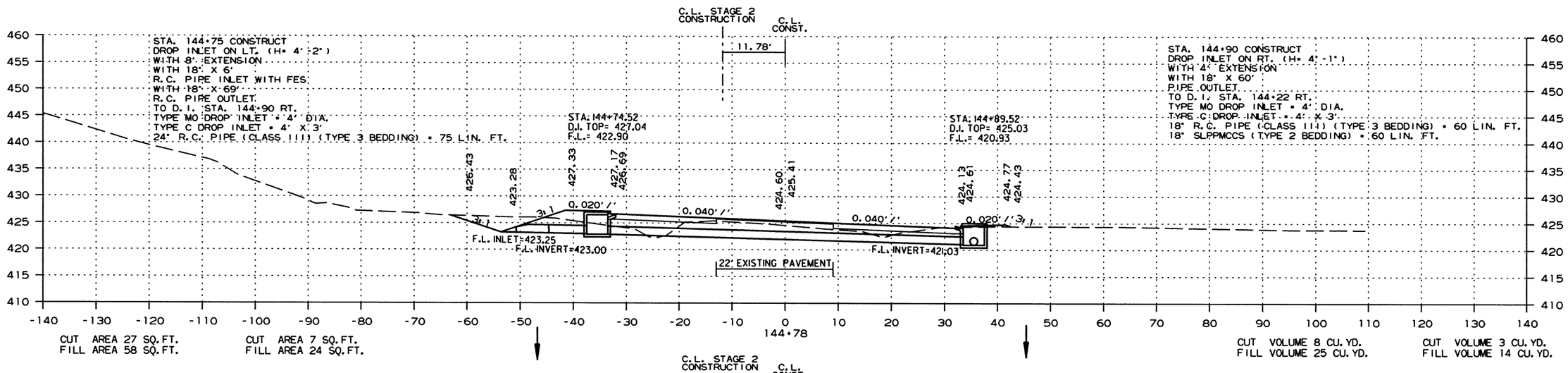
R060432.DGN

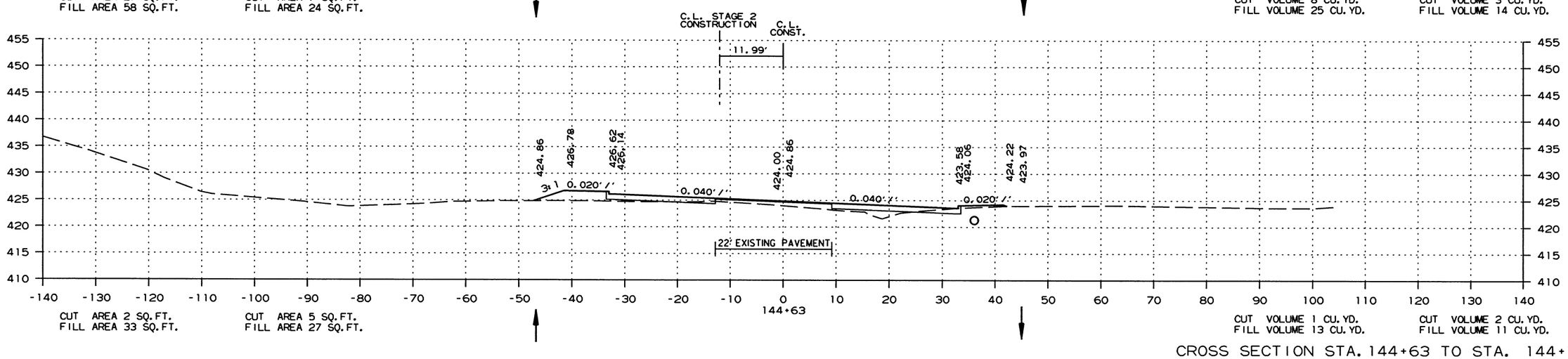
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	108	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 144+63 TO STA. 144+78

2/13/2017

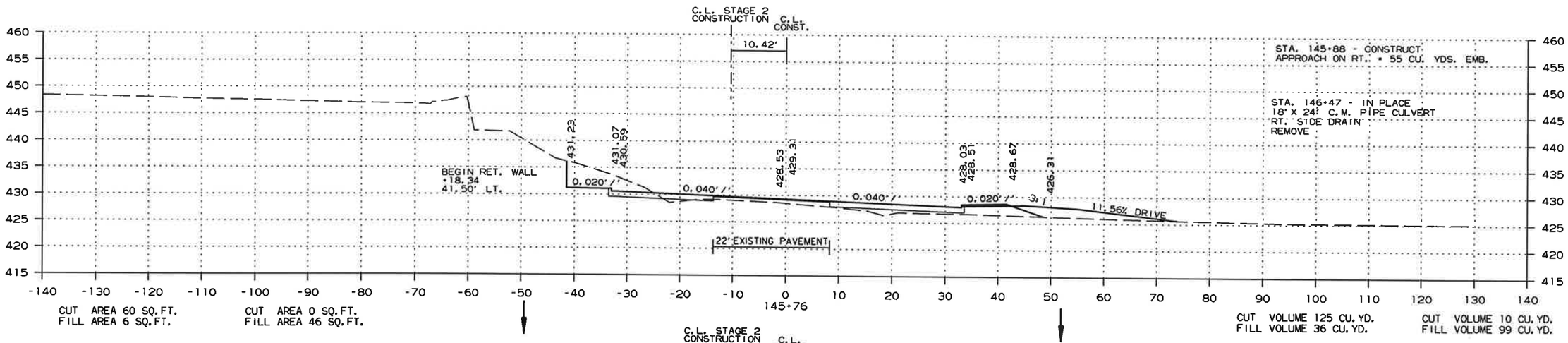
R060432.DGN

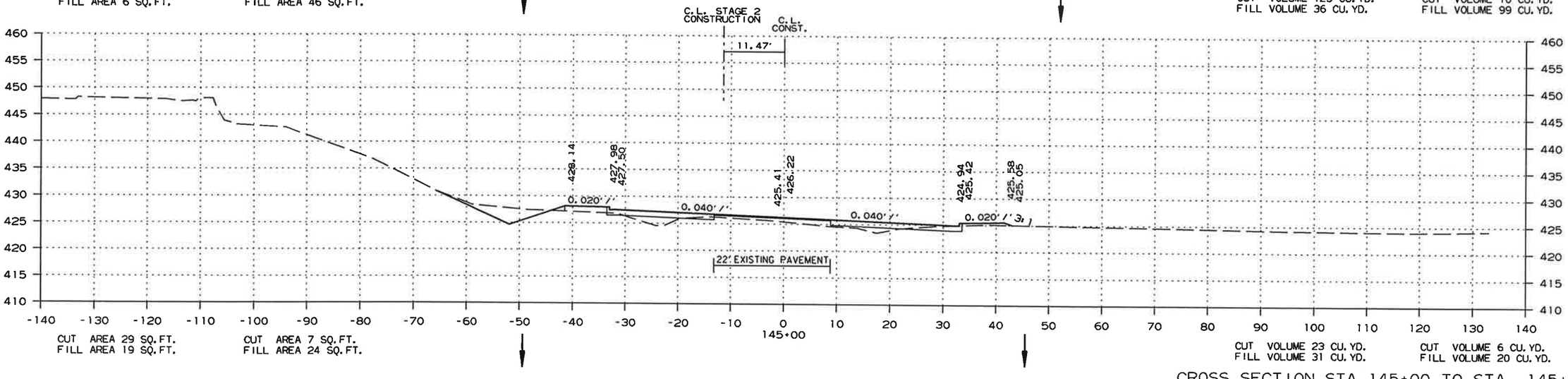
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	109	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 145+00 TO STA. 145+76

2/13/2017

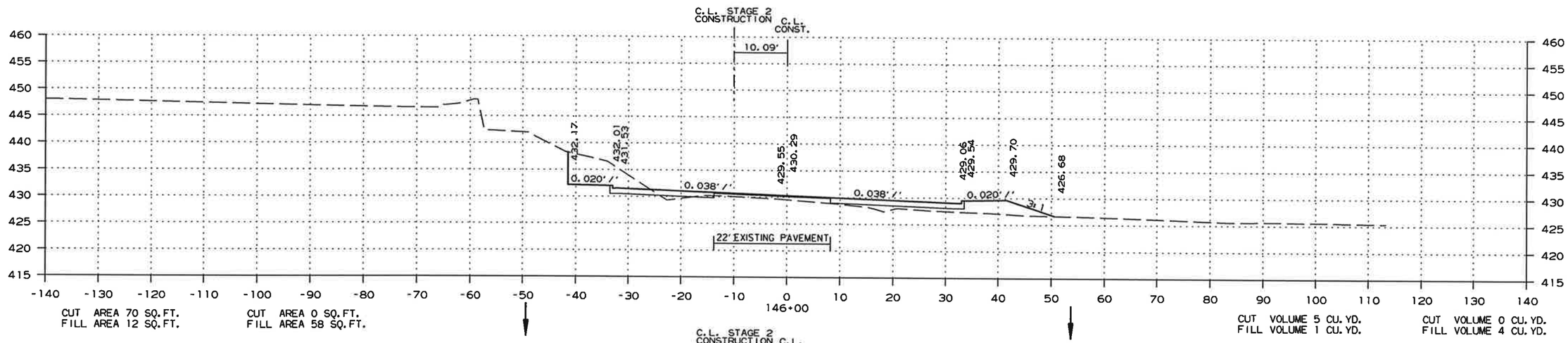
R060432.DGN

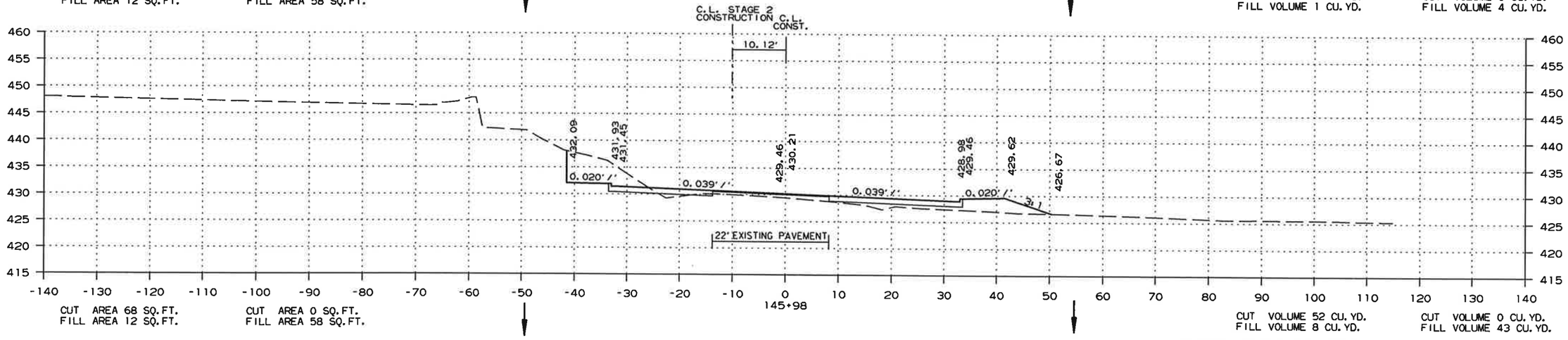
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	110	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 145+98 TO STA. 146+00

2/13/2017

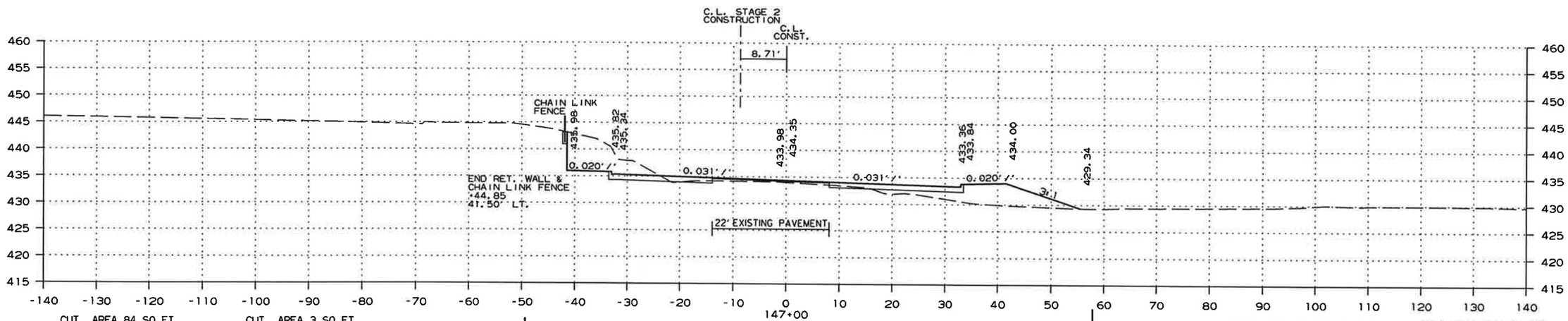
R060432.DGN

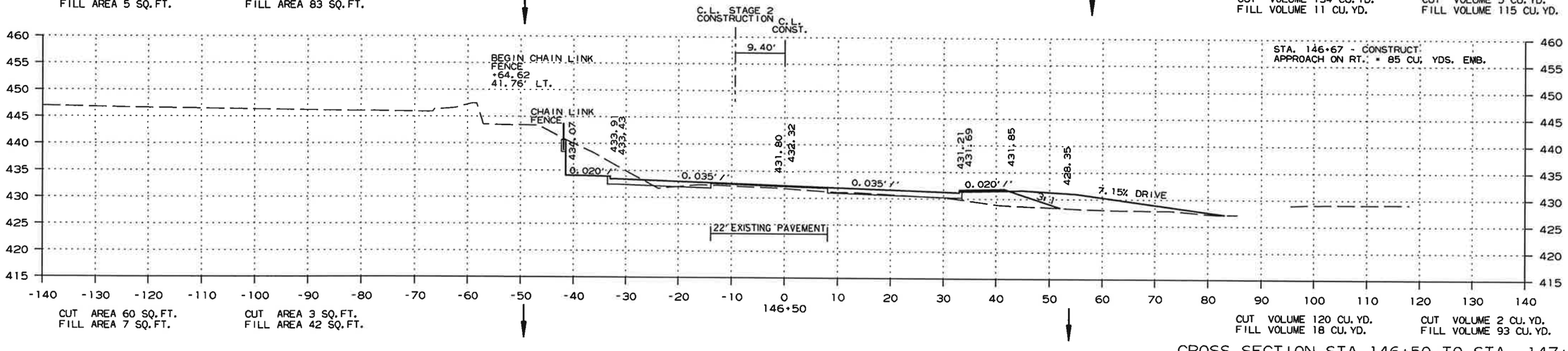
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	111	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 146+50 TO STA. 147+00

2/13/2017

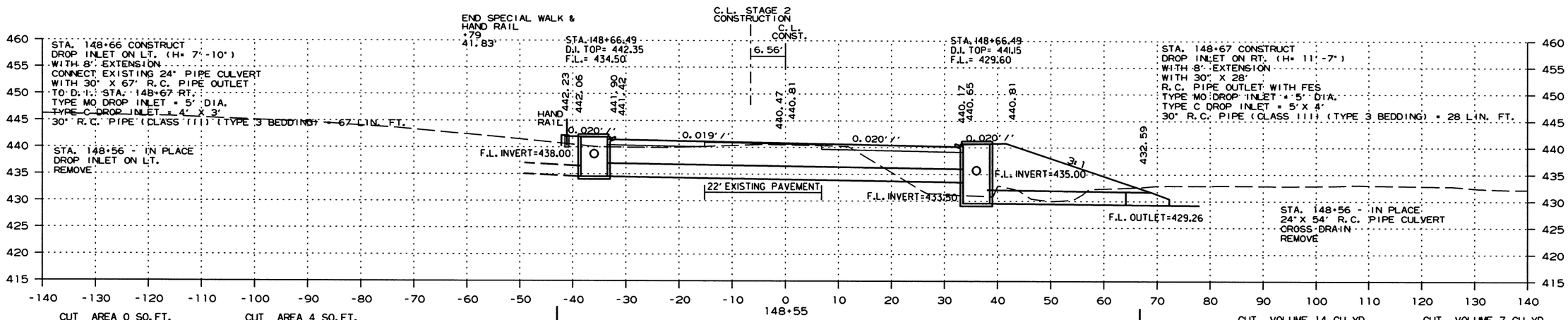
R060432.DGN

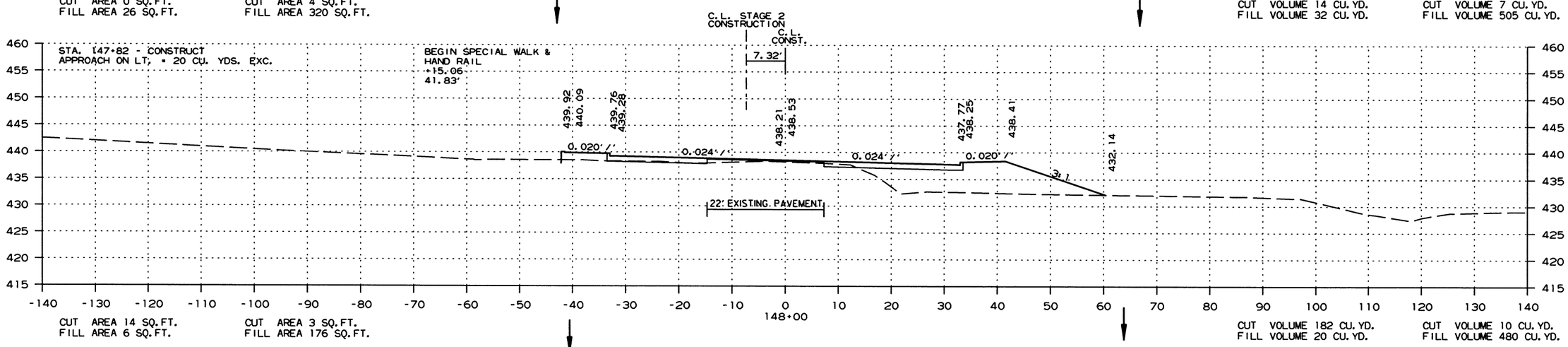
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	112	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 148+00 TO STA. 148+55

2/13/2017

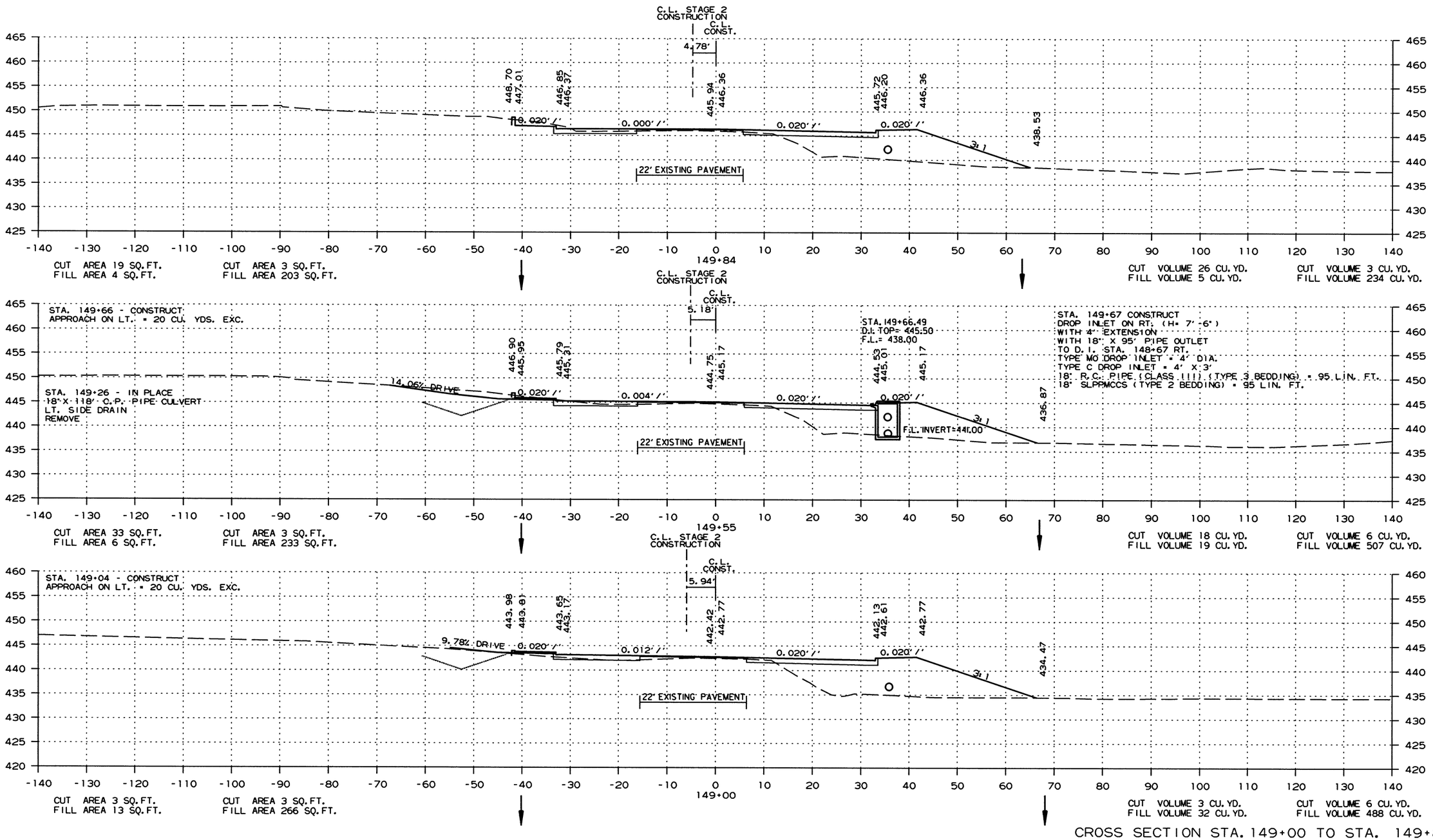
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	113	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 149+00 TO STA. 149+84

2/13/2017

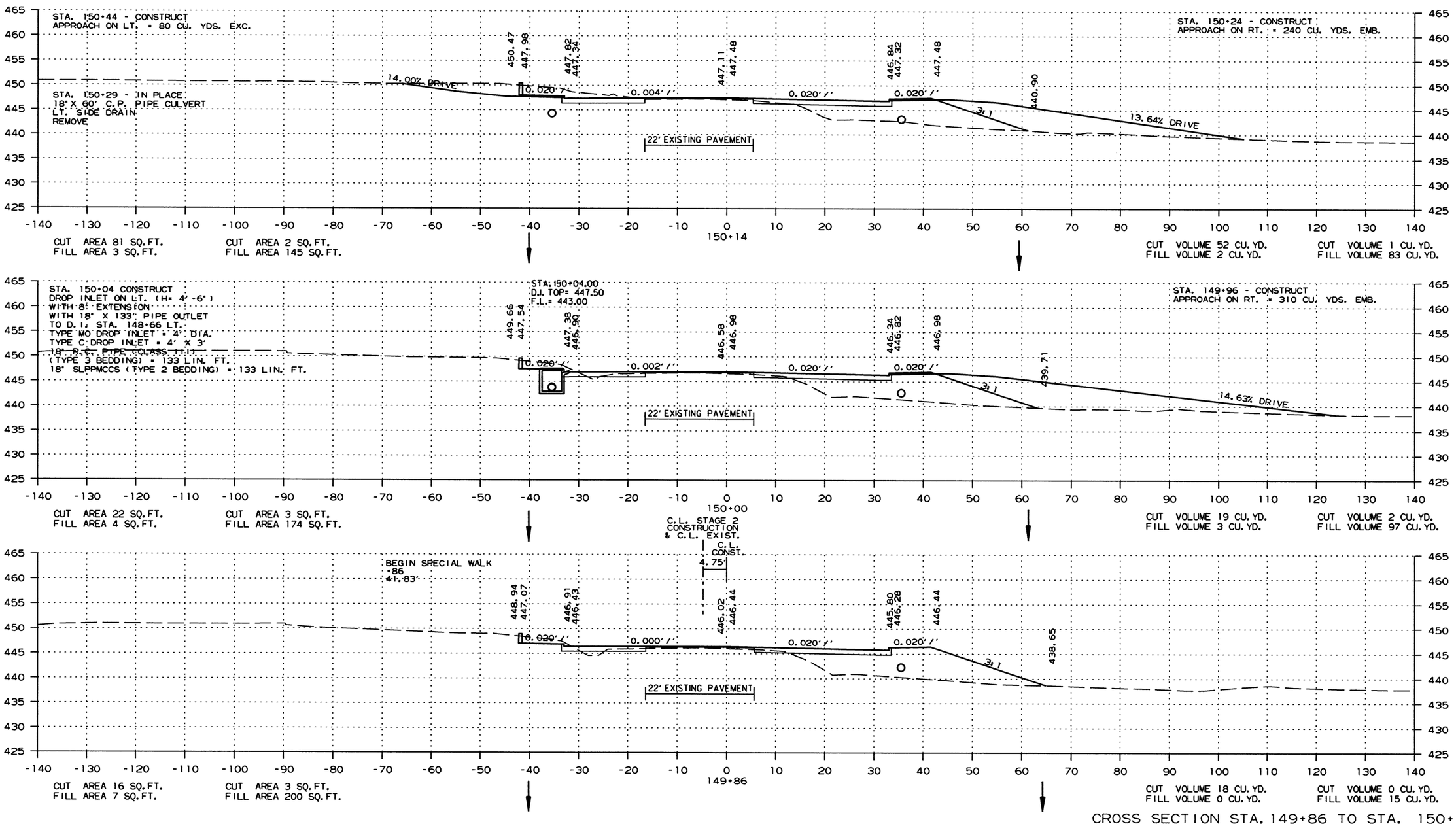
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	114	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 149+86 TO STA. 150+14

2/13/2017

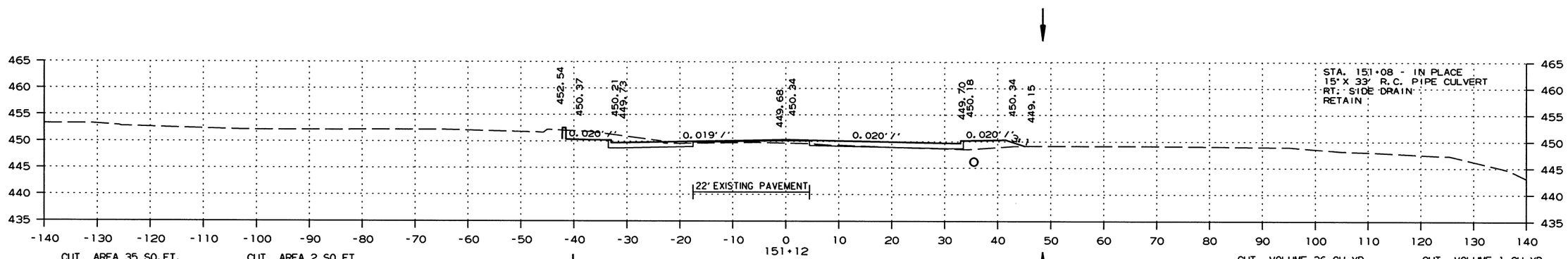
R060432.DGN

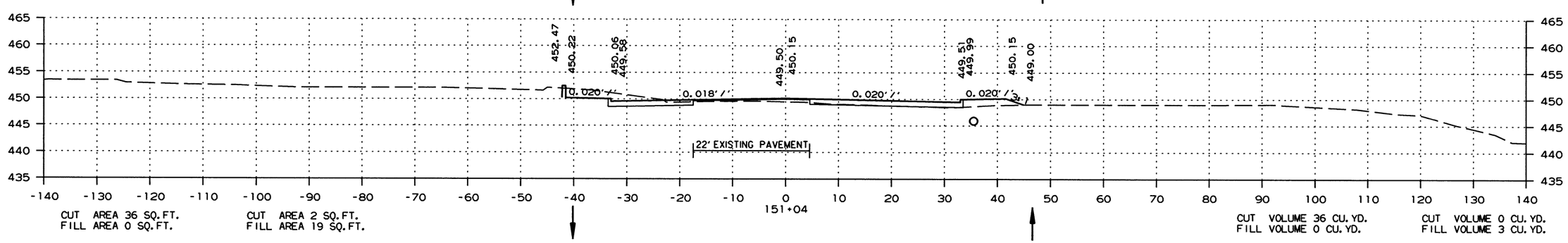
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	115	153

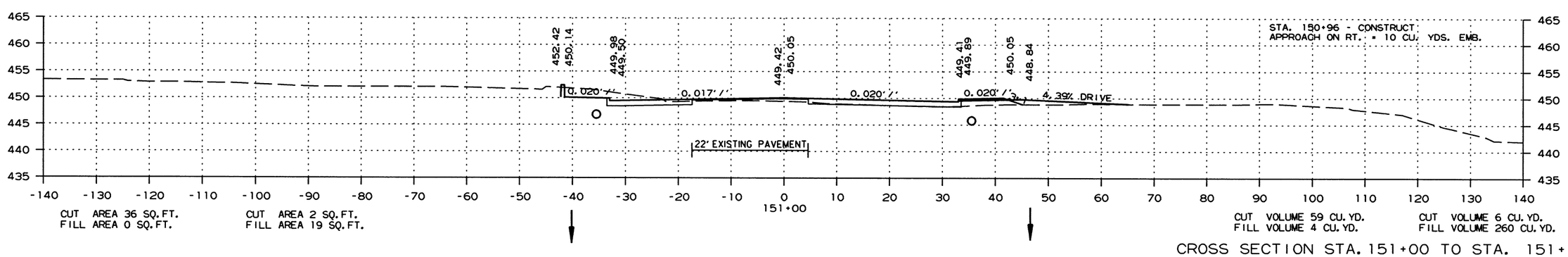
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 151+00 TO STA. 151+12

2/13/2017

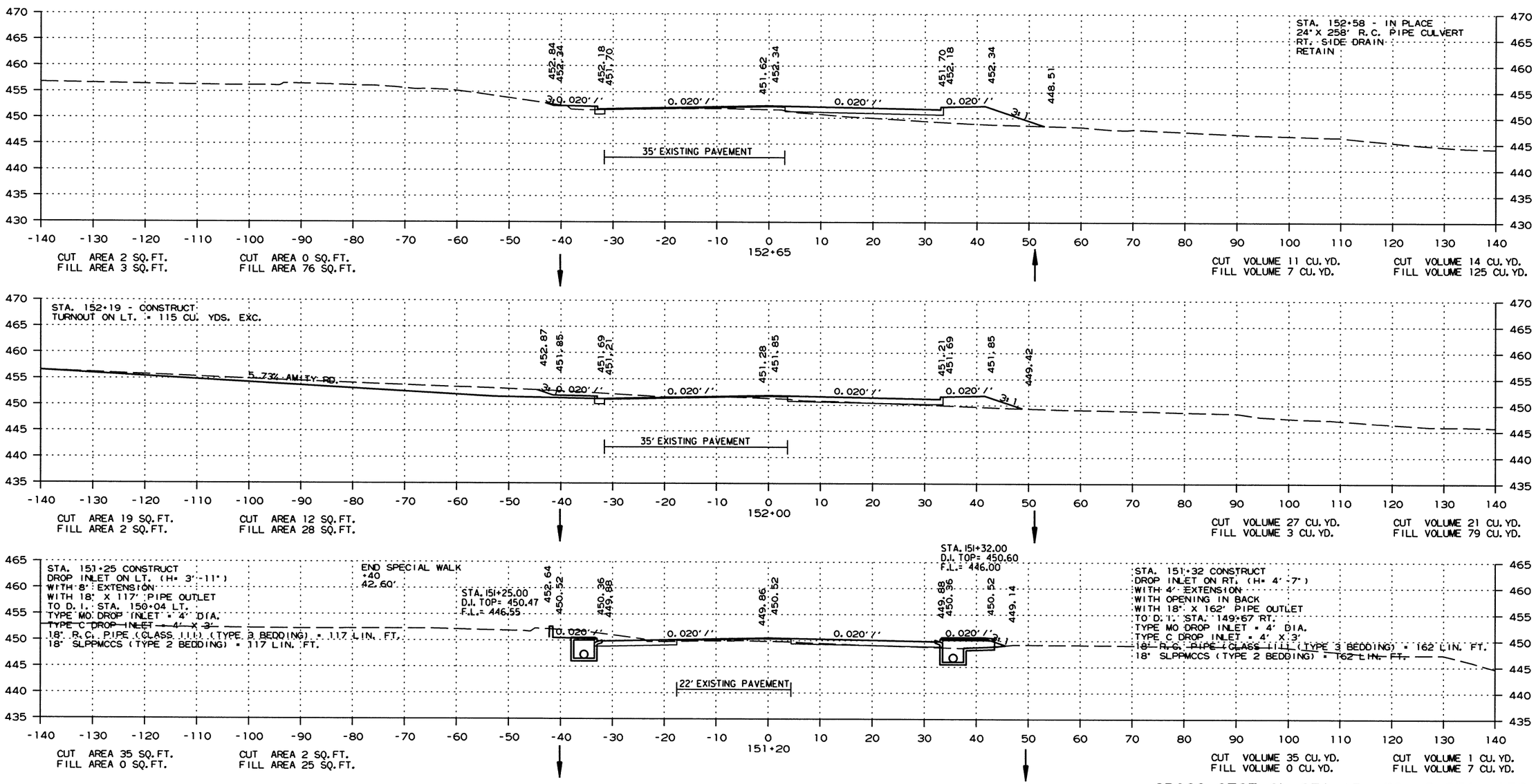
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	116	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 151+20 TO STA. 152+65

2/13/2017

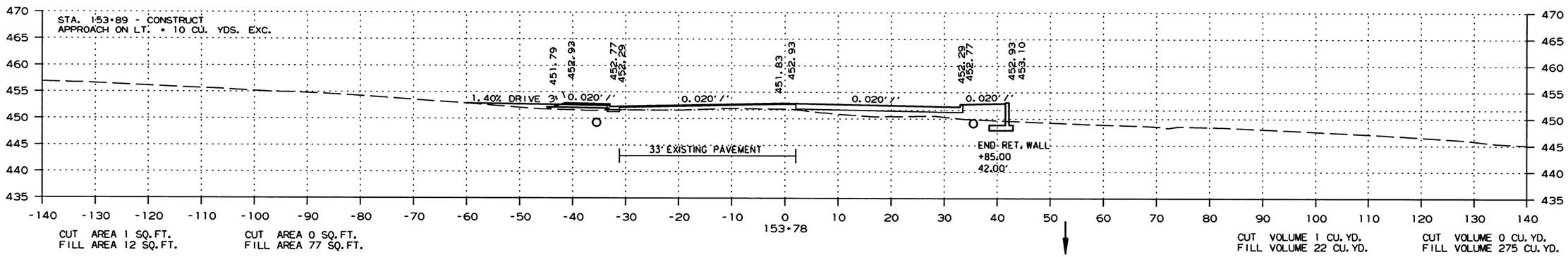
R060432.DGN

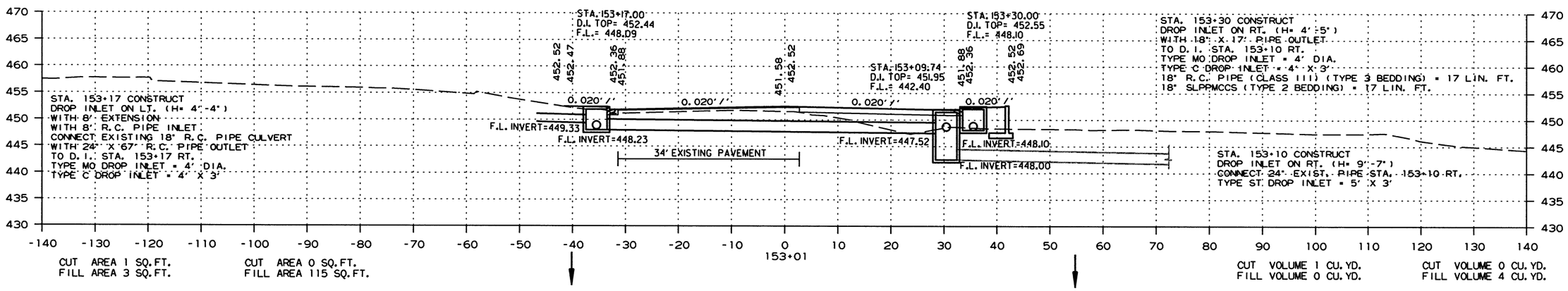
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	117	153

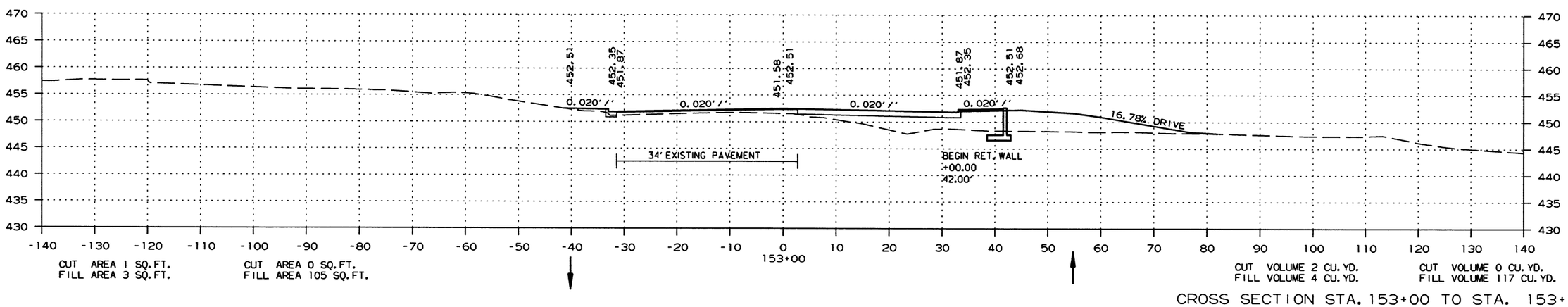
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 153+00 TO STA. 153+78

2/13/2017

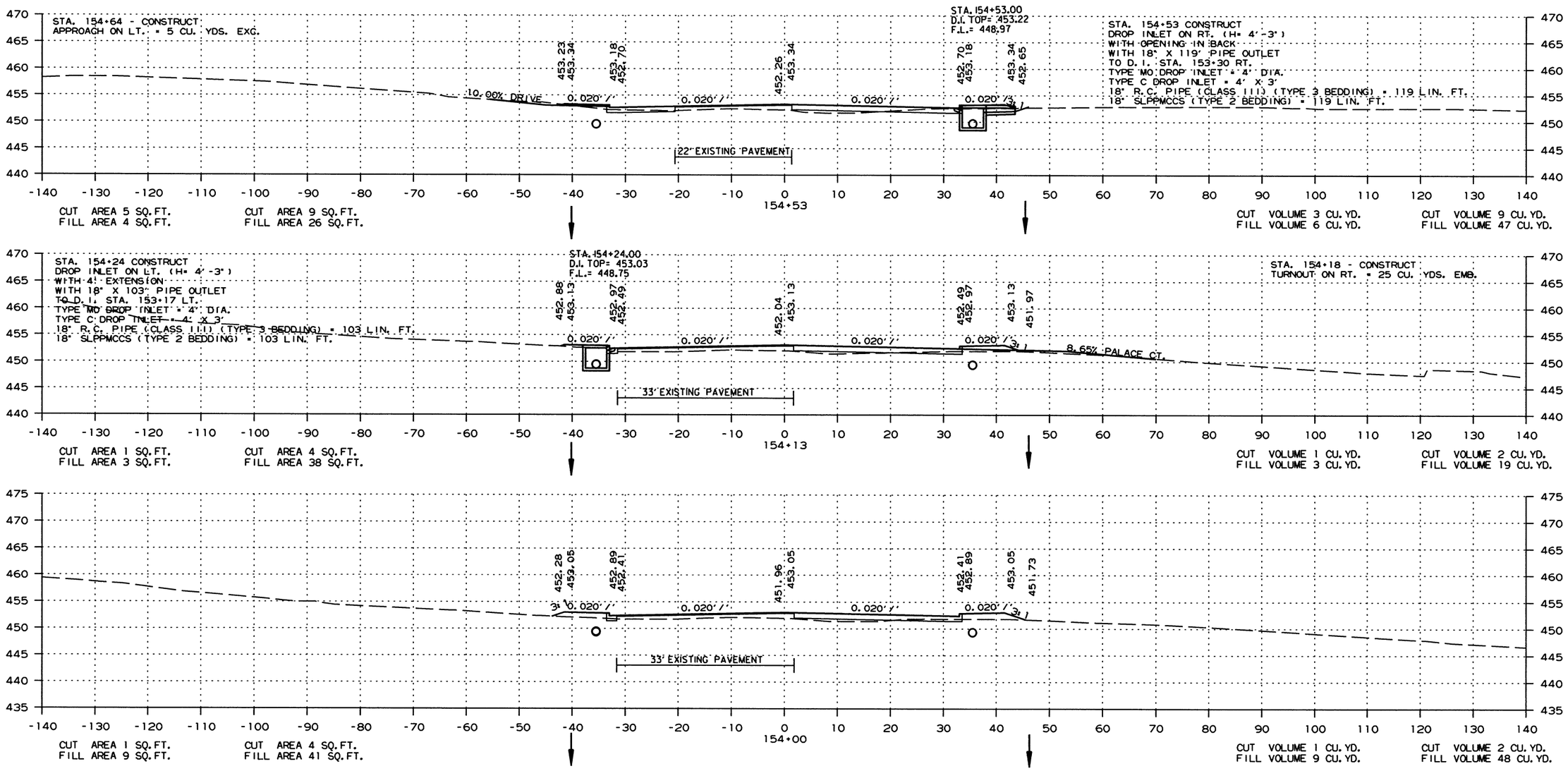
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	118	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 154+00 TO STA. 154+53

2/13/2017

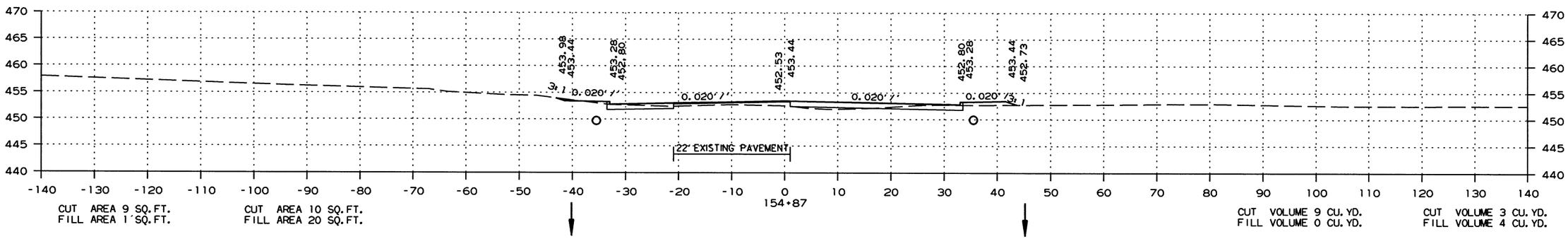
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	119	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2

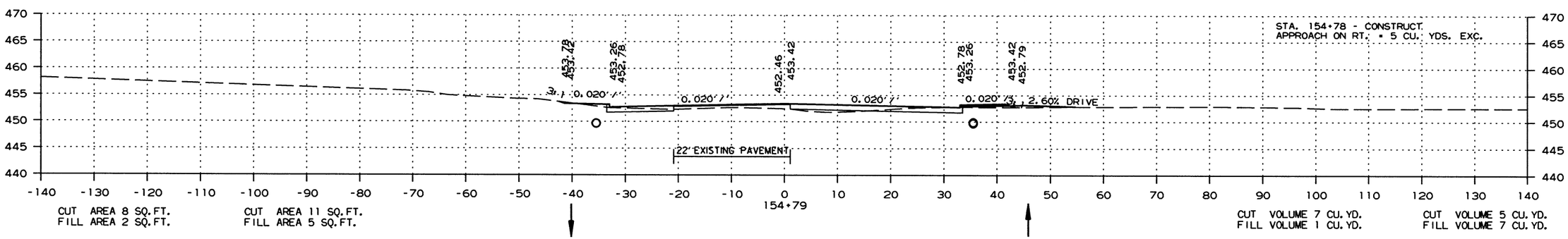


CUT AREA 9 SQ.FT.
FILL AREA 1 SQ.FT.

CUT AREA 10 SQ.FT.
FILL AREA 20 SQ.FT.

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

CUT VOLUME 3 CU.YD.
FILL VOLUME 4 CU.YD.

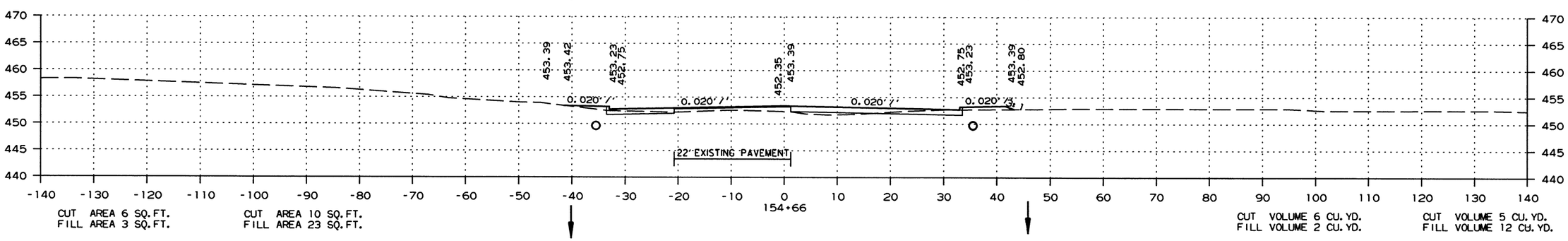


CUT AREA 8 SQ.FT.
FILL AREA 2 SQ.FT.

CUT AREA 11 SQ.FT.
FILL AREA 5 SQ.FT.

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

CUT VOLUME 5 CU.YD.
FILL VOLUME 7 CU.YD.



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

CUT AREA 10 SQ.FT.
FILL AREA 23 SQ.FT.

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

CUT VOLUME 5 CU.YD.
FILL VOLUME 12 CU.YD.

CROSS SECTION STA. 154+66 TO STA. 154+87

2/13/2017

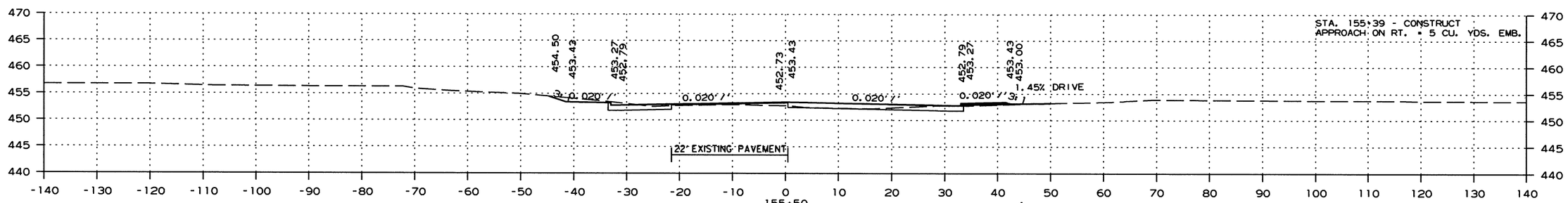
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	120	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2

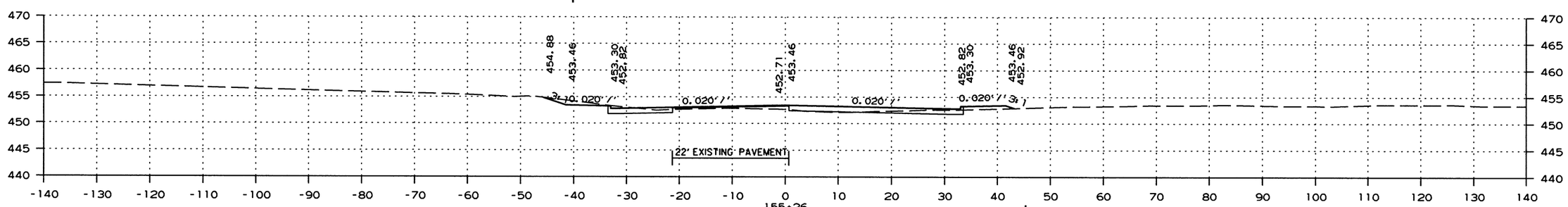


CUT AREA 18 SQ.FT.
FILL AREA 0 SQ.FT.

CUT AREA 12 SQ.FT.
FILL AREA 10 SQ.FT.

CUT VOLUME 18 CU.YD.
FILL VOLUME 0 CU.YD.

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

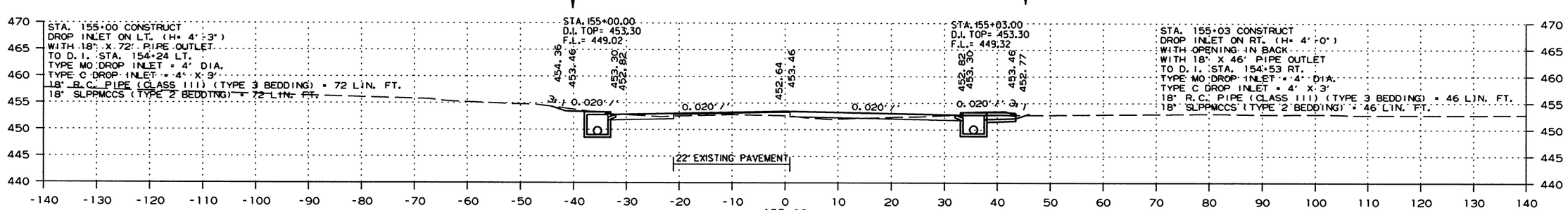


CUT AREA 18 SQ.FT.
FILL AREA 0 SQ.FT.

CUT AREA 10 SQ.FT.
FILL AREA 13 SQ.FT.

CUT VOLUME 15 CU.YD.
FILL VOLUME 0 CU.YD.

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



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

CUT AREA 9 SQ.FT.
FILL AREA 16 SQ.FT.

CUT VOLUME 11 CU.YD.
FILL VOLUME 0 CU.YD.

CUT VOLUME 5 CU.YD.
FILL VOLUME 9 CU.YD.

CROSS SECTION STA. 155+00 TO STA. 155+50

2/13/2017

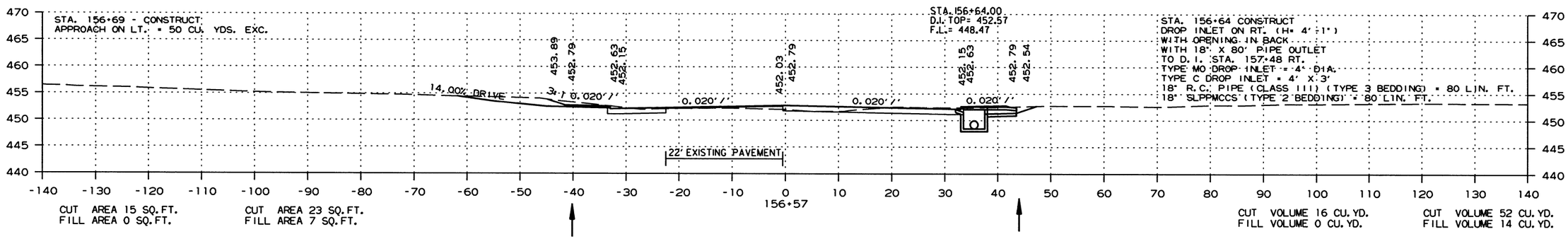
R060432.DGN

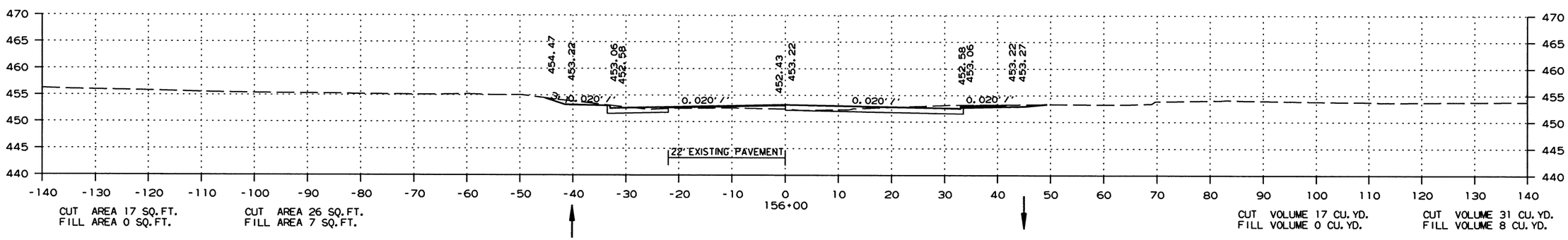
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	121	153

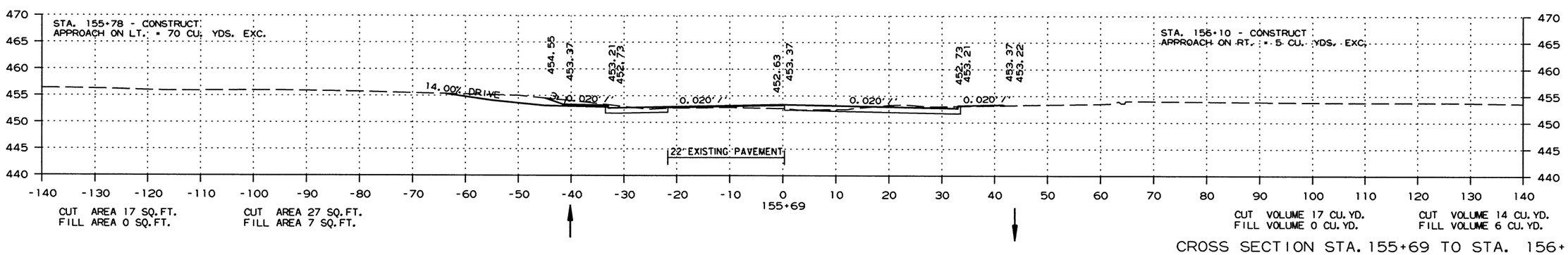
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 155+69 TO STA. 156+57

2/13/2017

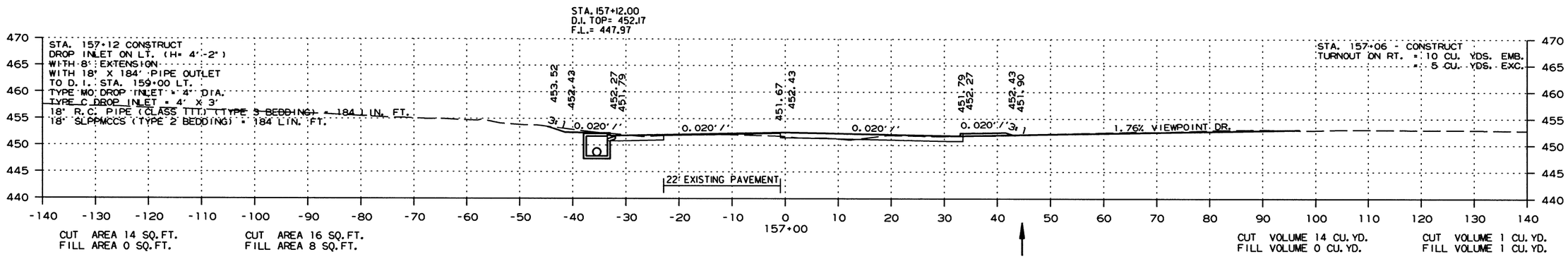
R060432.DGN

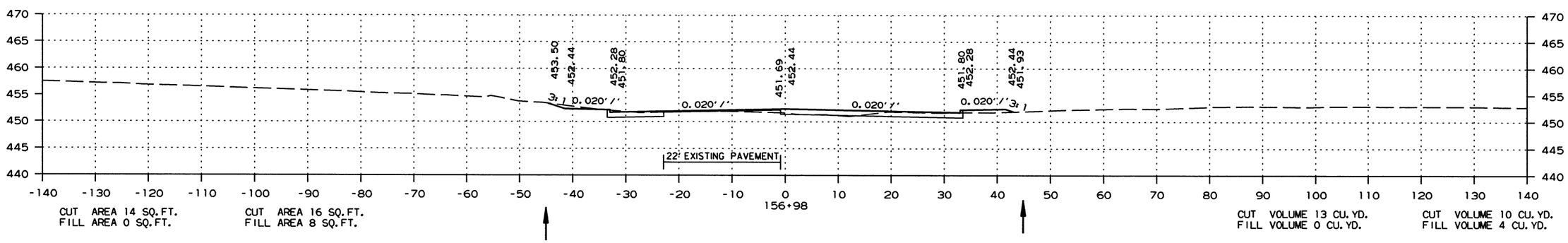
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	122	153

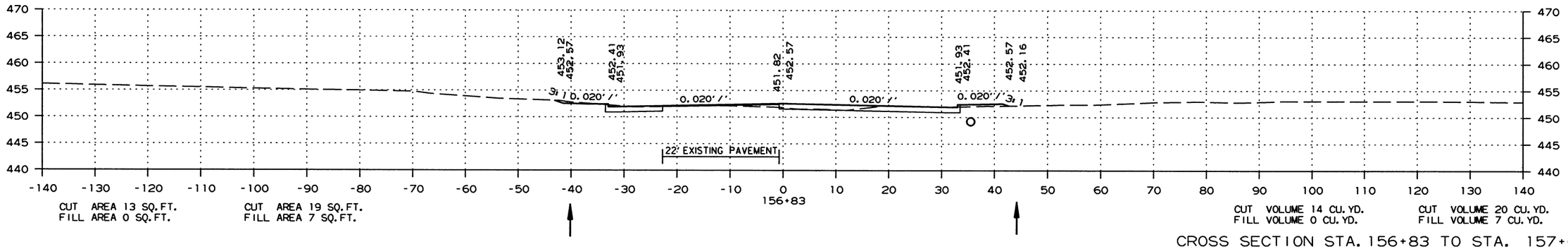
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 156+83 TO STA. 157+00

2/13/2017

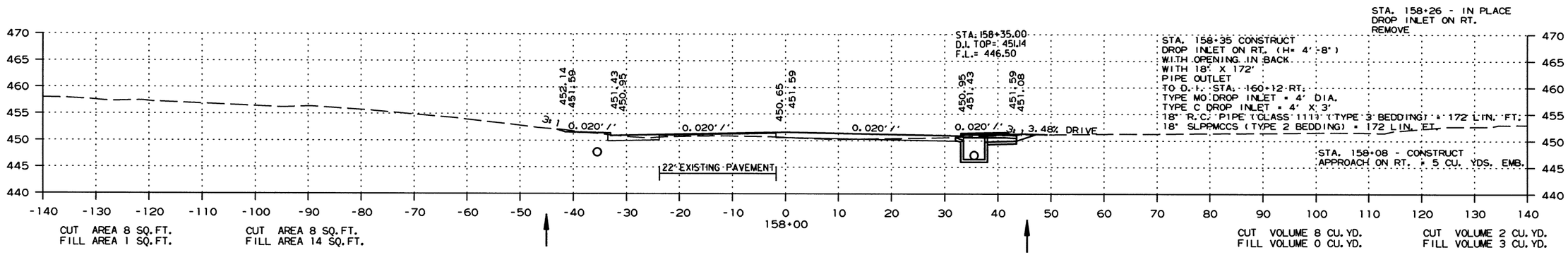
R060432.DGN

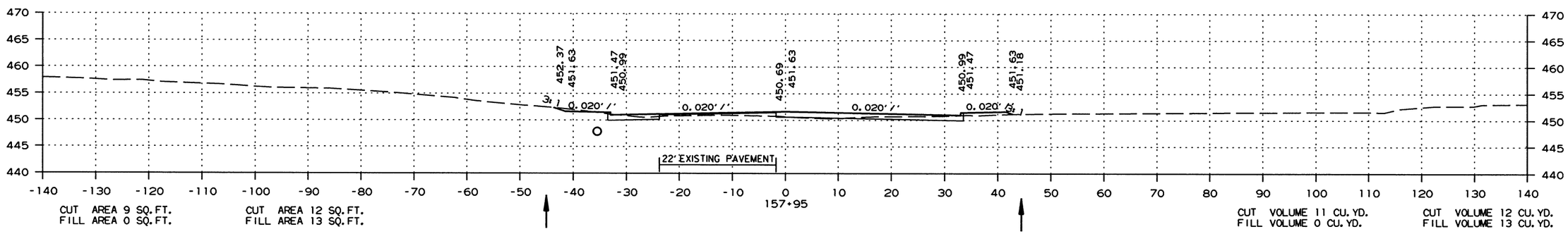
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	123	153

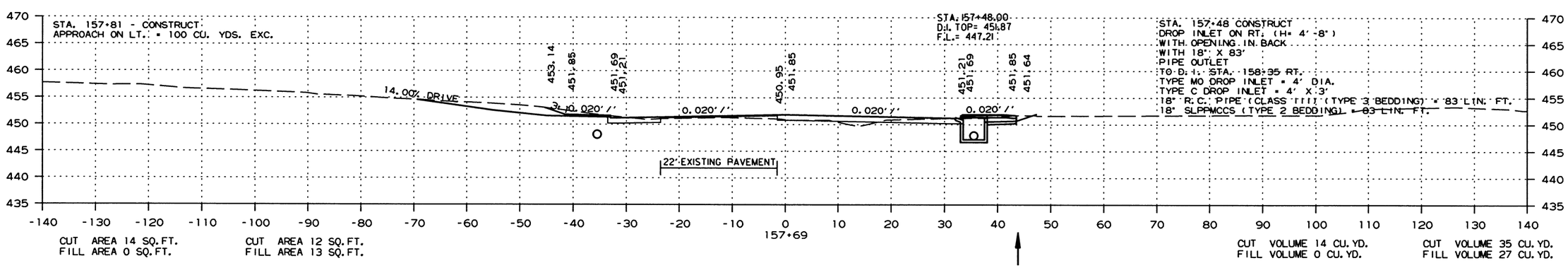
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 157+69 TO STA. 158+00

2/13/2017

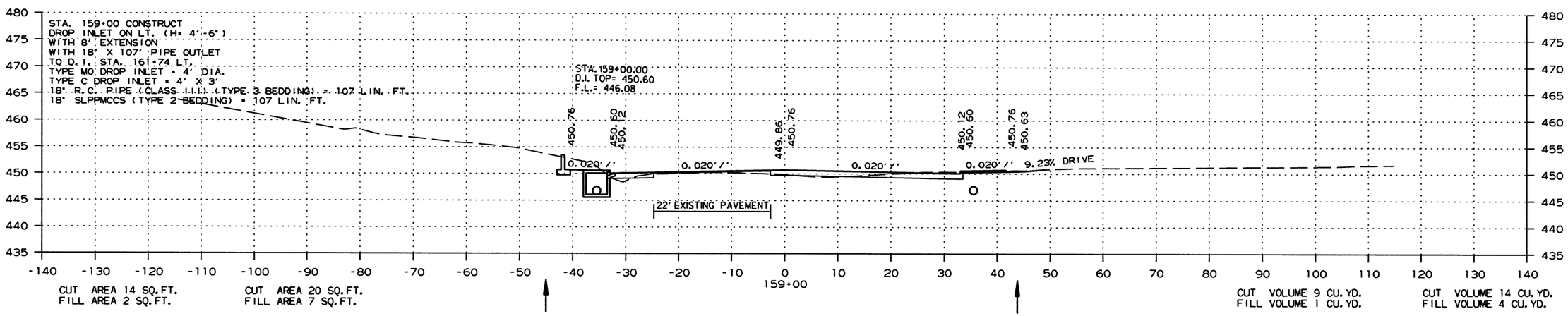
R060432.DGN

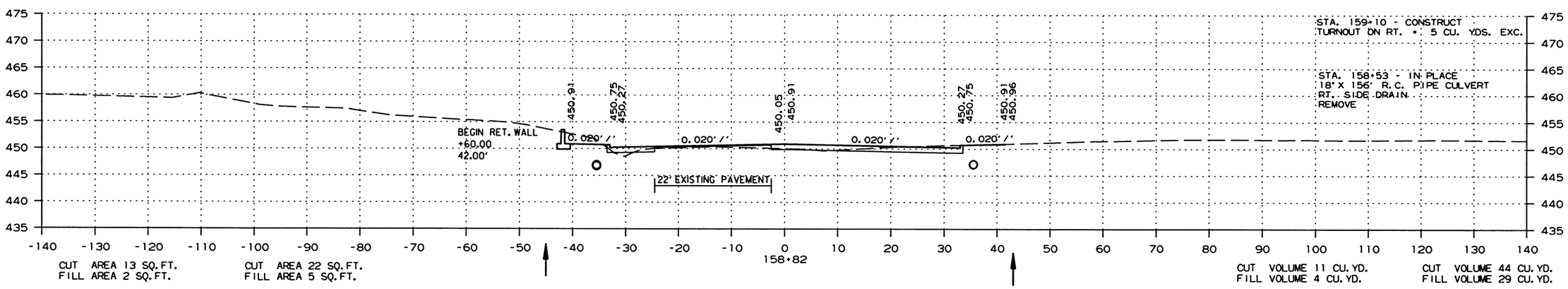
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	124	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 158+82 TO STA. 159+00

2/13/2017

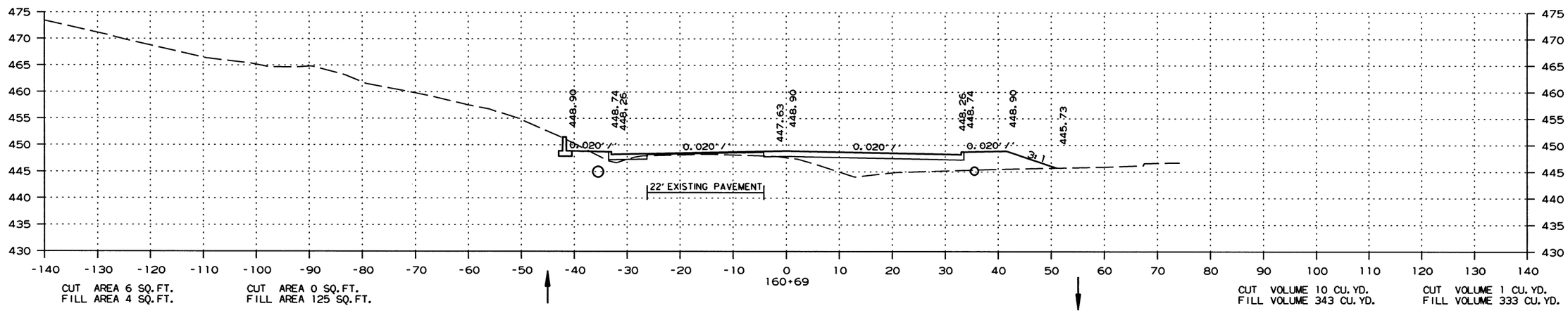
R060432.DGN

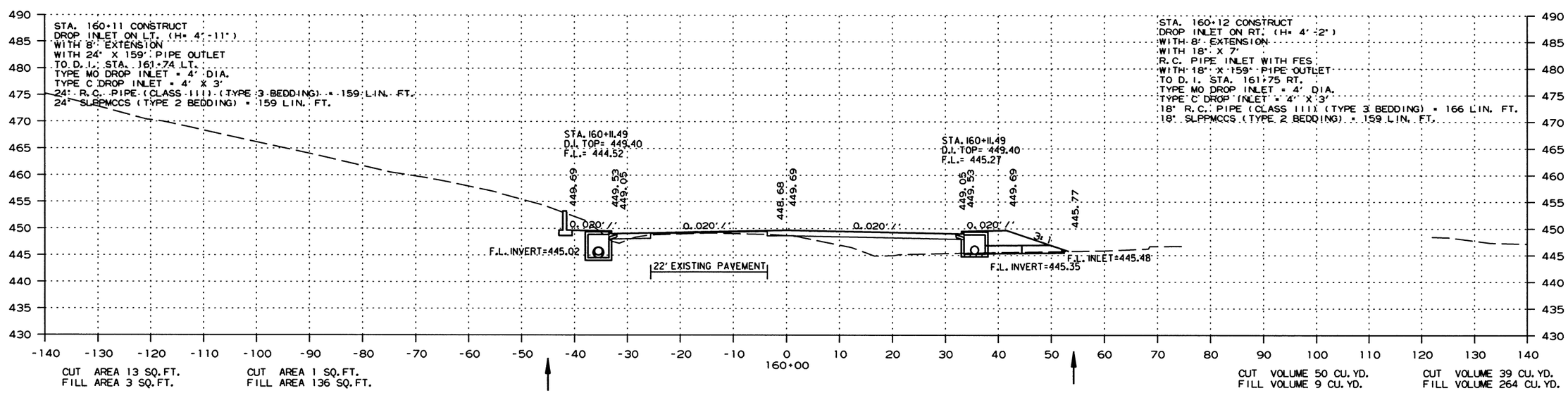
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	125	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 160+00 TO STA. 160+69

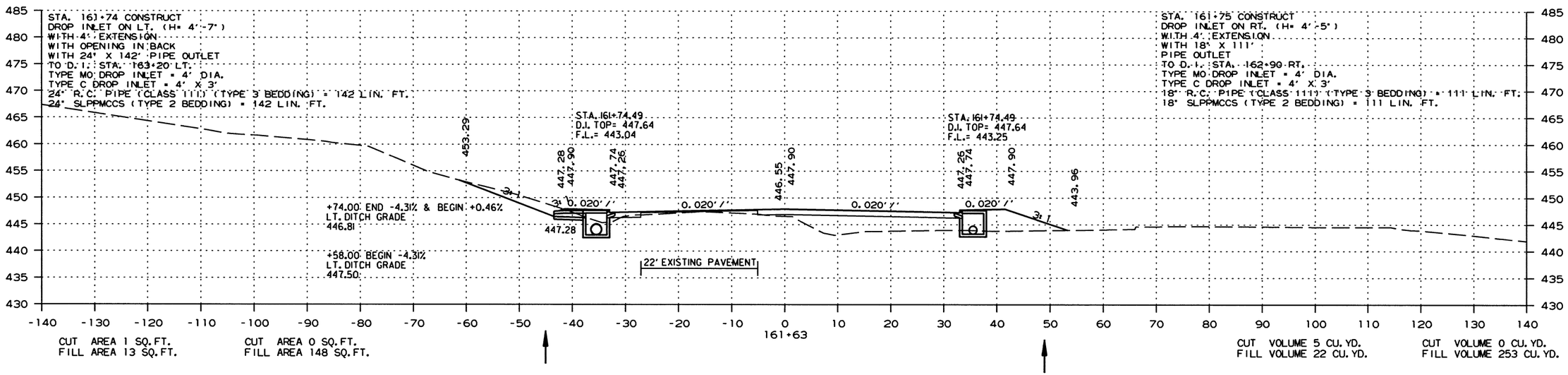
2/13/2017

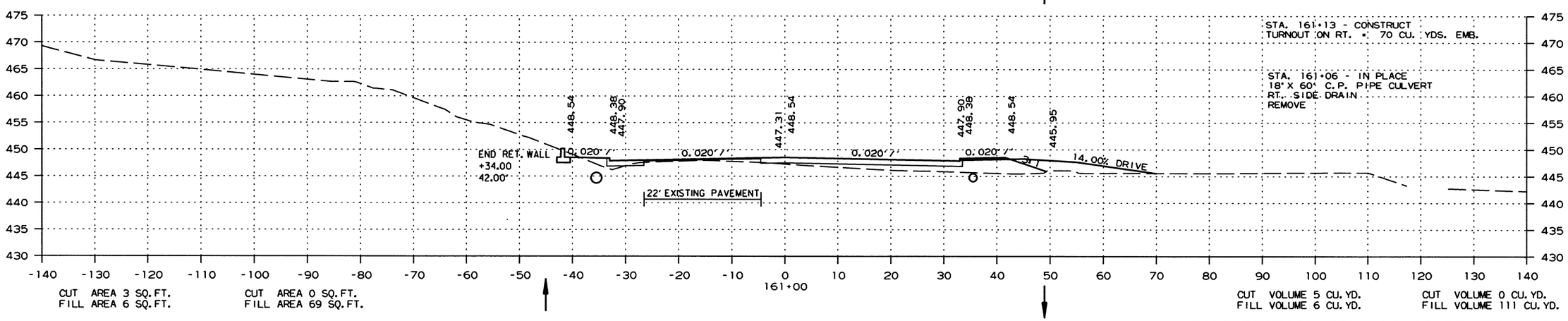
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	126	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2 STAGE 1 STAGE 2





CROSS SECTION STA. 161+00 TO STA. 161+63

2/13/2017

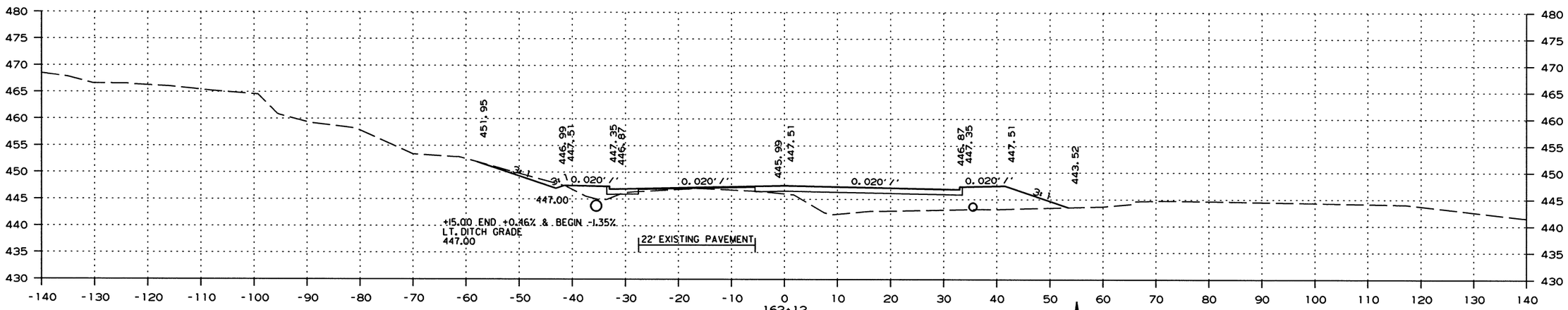
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	127	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2

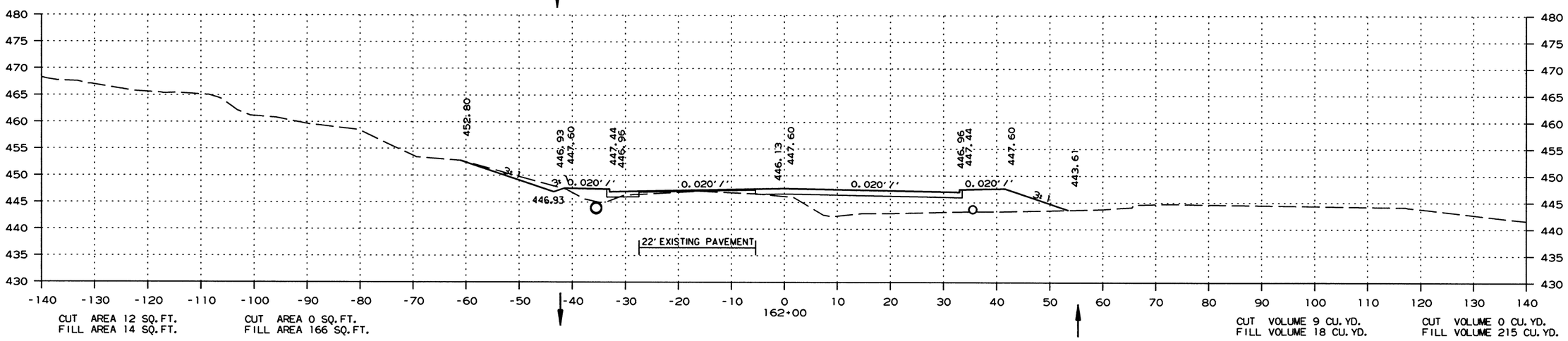


CUT AREA 9 SQ.FT.
FILL AREA 14 SQ.FT.

CUT AREA 0 SQ.FT.
FILL AREA 169 SQ.FT.

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

CUT VOLUME 0 CU.YD.
FILL VOLUME 74 CU.YD.



CUT AREA 12 SQ.FT.
FILL AREA 14 SQ.FT.

CUT AREA 0 SQ.FT.
FILL AREA 166 SQ.FT.

CUT VOLUME 9 CU.YD.
FILL VOLUME 18 CU.YD.

CUT VOLUME 0 CU.YD.
FILL VOLUME 215 CU.YD.

CROSS SECTION STA. 162+00 TO STA. 162+12

2/13/2017

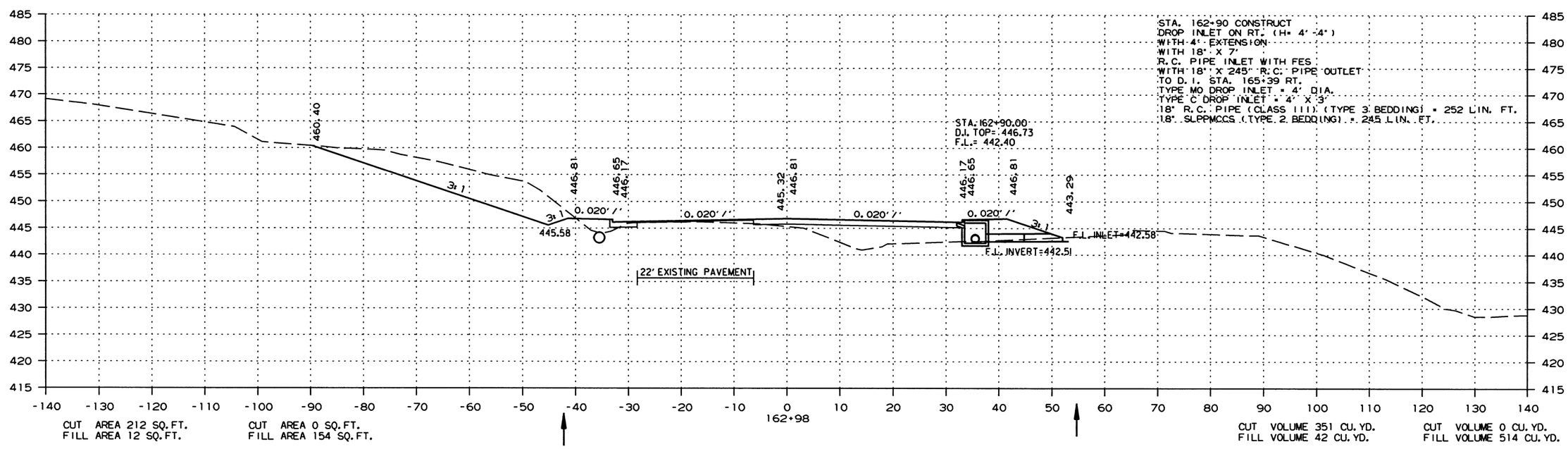
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	128	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CUT AREA 212 SQ.FT.
FILL AREA 12 SQ.FT.

CUT AREA 0 SQ.FT.
FILL AREA 154 SQ.FT.

CUT VOLUME 351 CU.YD.
FILL VOLUME 42 CU.YD.

CUT VOLUME 0 CU.YD.
FILL VOLUME 514 CU.YD.

CROSS SECTION STA. 162+98 TO STA. 162+98

2/13/2017

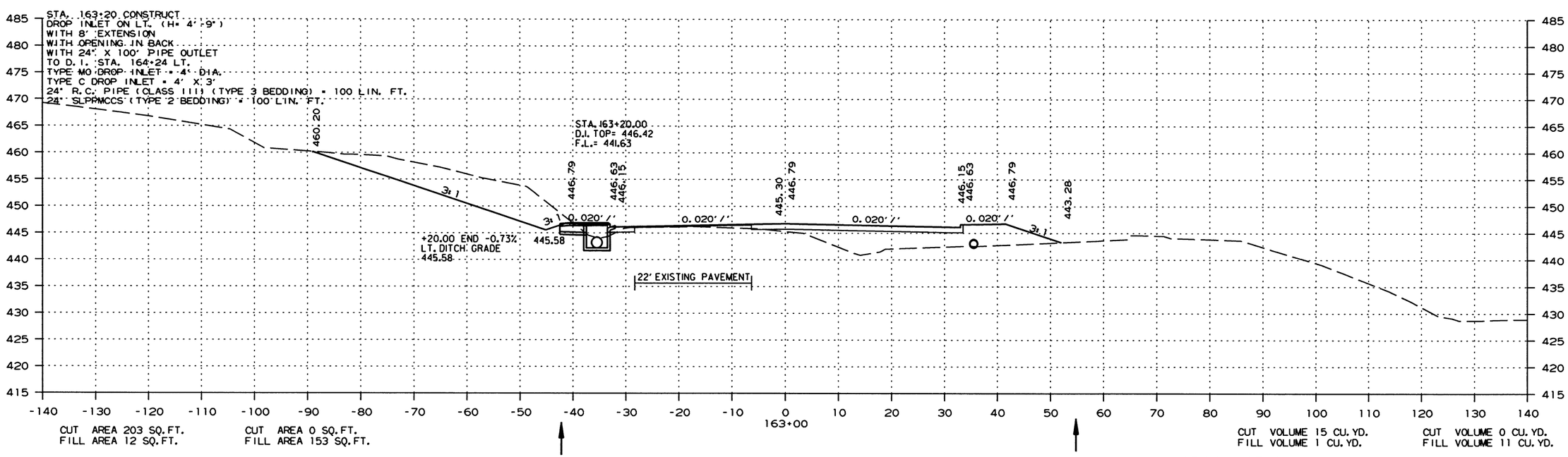
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	129	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CUT AREA 203 SQ.FT.
FILL AREA 12 SQ.FT.

CUT AREA 0 SQ.FT.
FILL AREA 153 SQ.FT.

CUT VOLUME 15 CU.YD.
FILL VOLUME 1 CU.YD.

CUT VOLUME 0 CU.YD.
FILL VOLUME 11 CU.YD.

CROSS SECTION STA. 163+00 TO STA. 163+00

2/13/2017

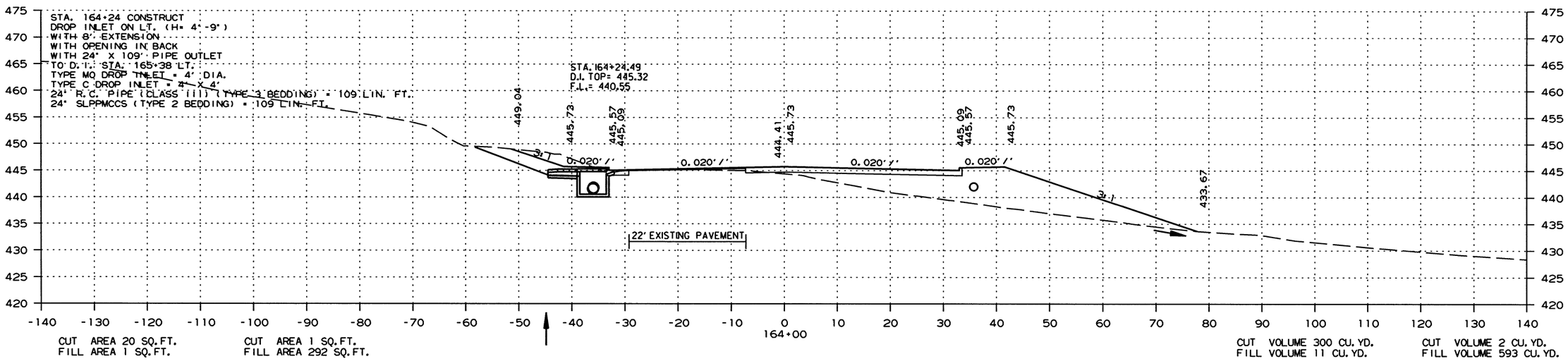
R060432.DGN

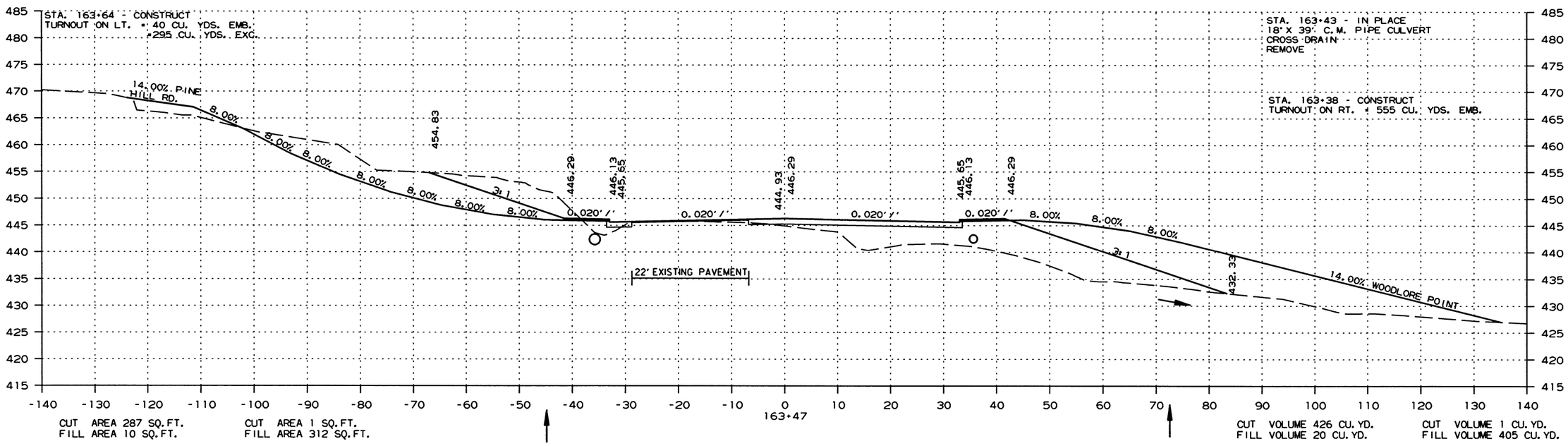
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	130	153

2 CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 163+47 TO STA. 164+00

2/13/2017

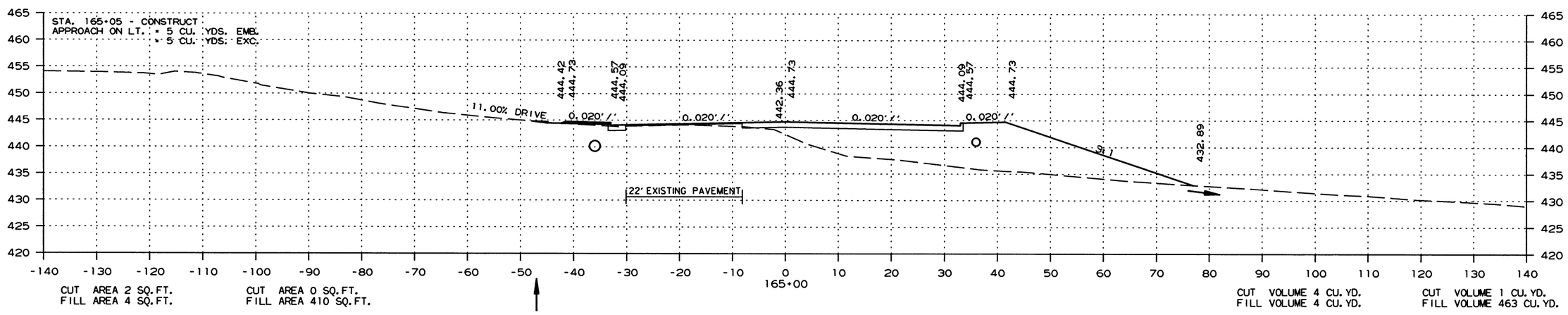
R060432.DGN

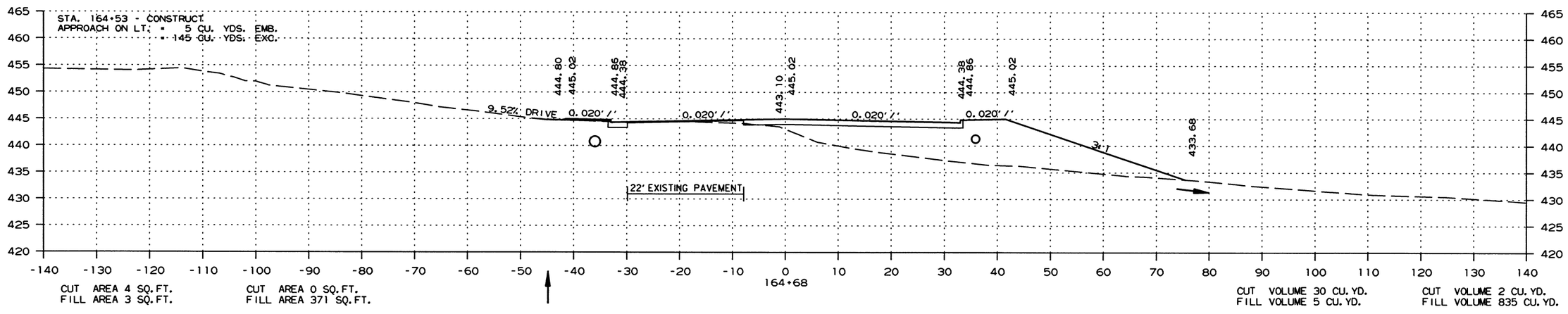
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	131	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 164+68 TO STA. 165+00

2/13/2017

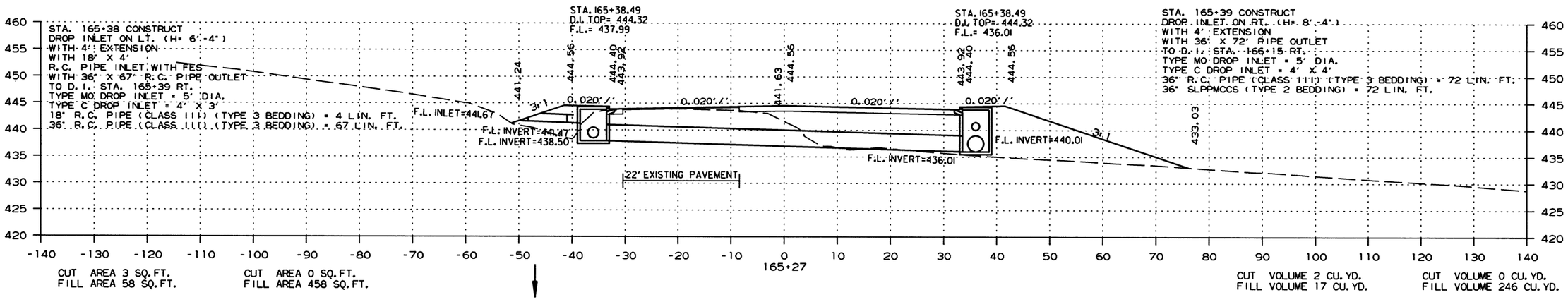
R060432.DGN

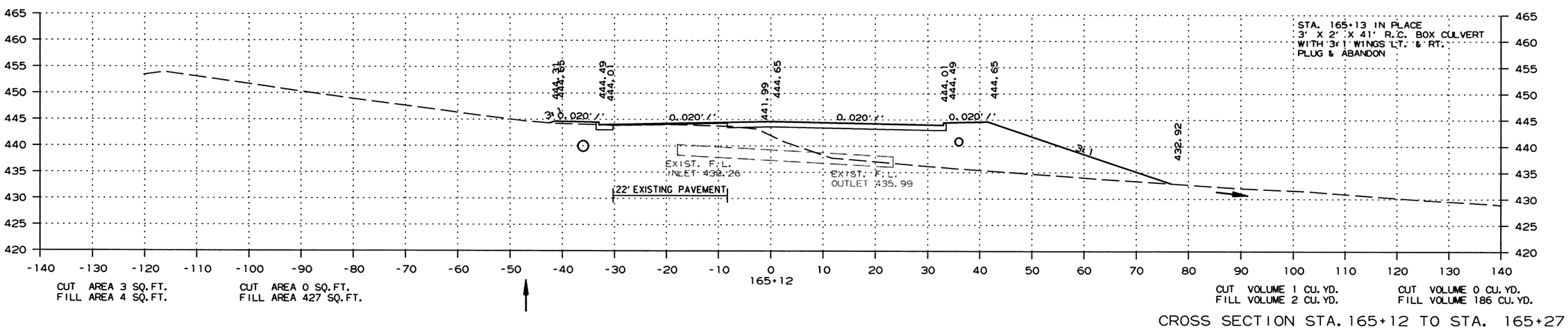
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	132	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 165+12 TO STA. 165+27

2/13/2017

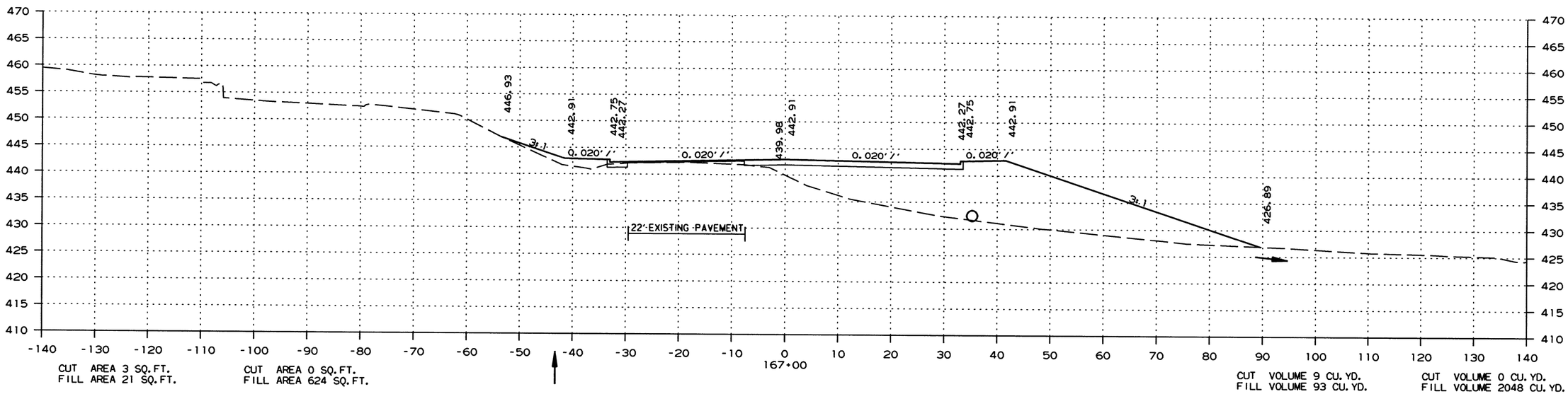
R060432.DGN

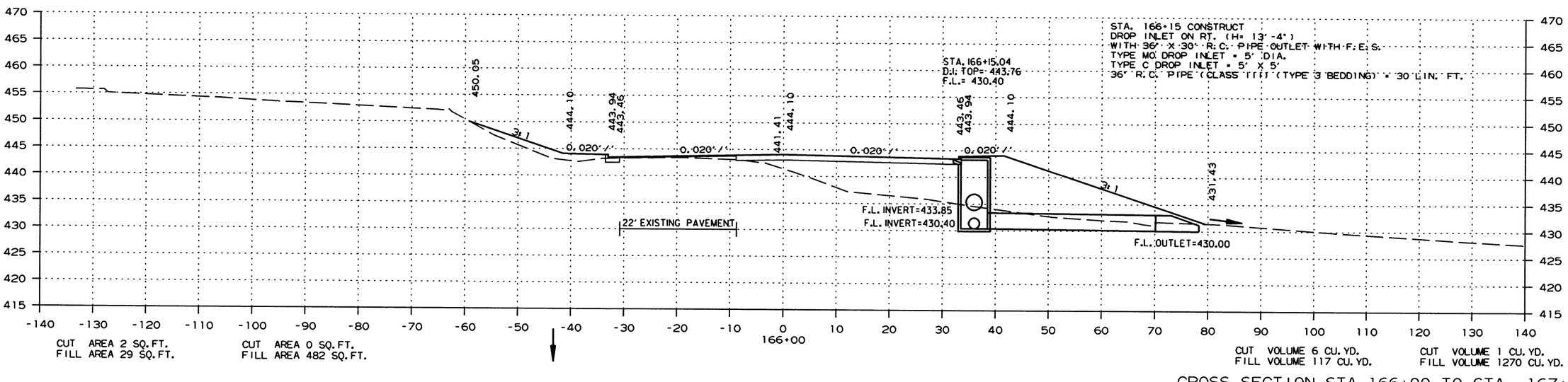
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	133	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 166+00 TO STA. 167+00

2/13/2017

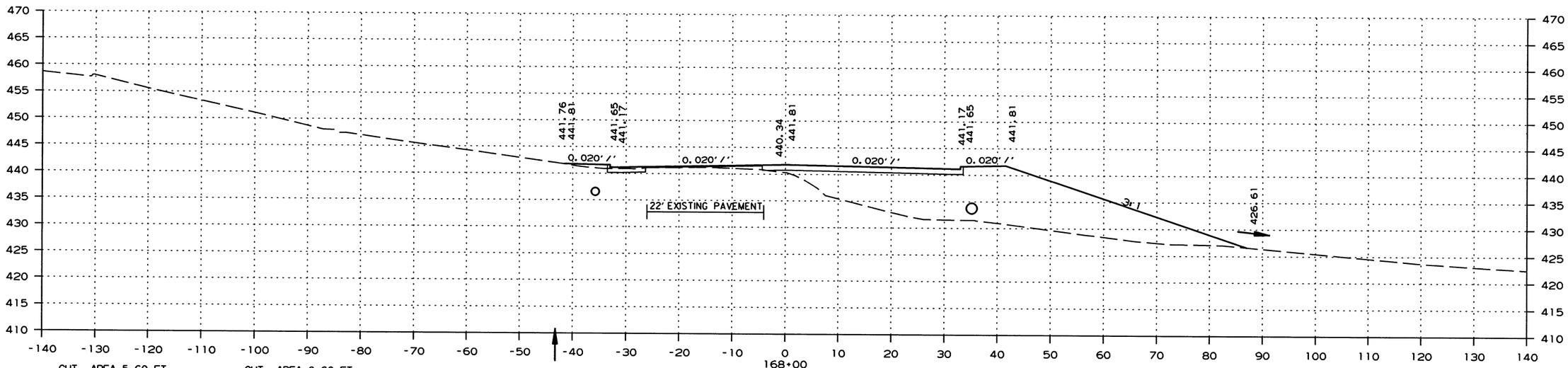
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	134	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2

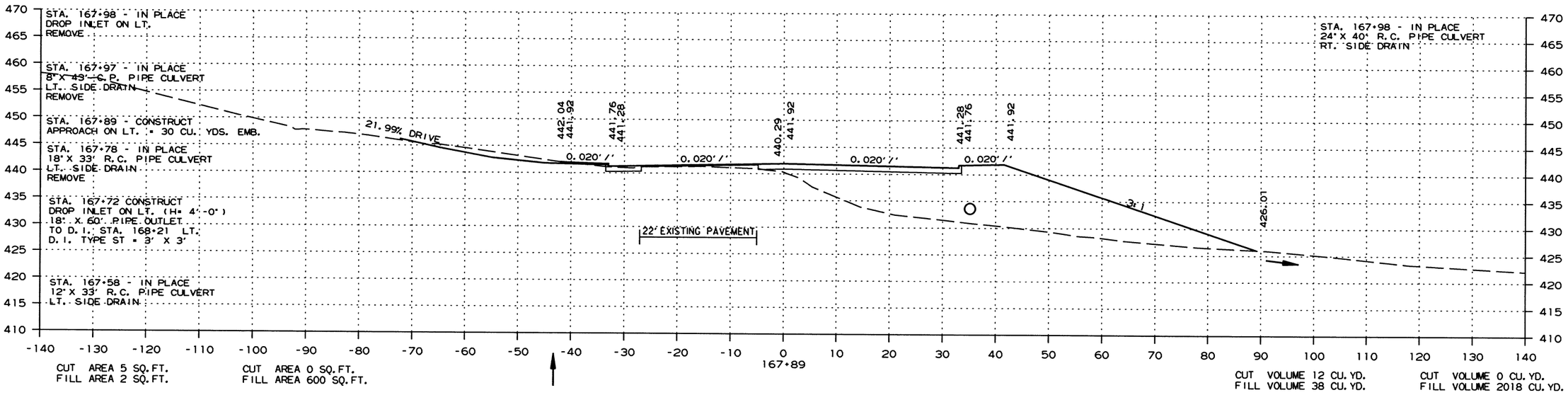


CUT AREA 5 SQ.FT.
FILL AREA 4 SQ.FT.

CUT AREA 0 SQ.FT.
FILL AREA 565 SQ.FT.

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

CUT VOLUME 0 CU.YD.
FILL VOLUME 237 CU.YD.



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

CUT AREA 0 SQ.FT.
FILL AREA 600 SQ.FT.

CUT VOLUME 12 CU.YD.
FILL VOLUME 38 CU.YD.

CUT VOLUME 0 CU.YD.
FILL VOLUME 2018 CU.YD.

CROSS SECTION STA. 167+89 TO STA. 168+00

2/13/2017

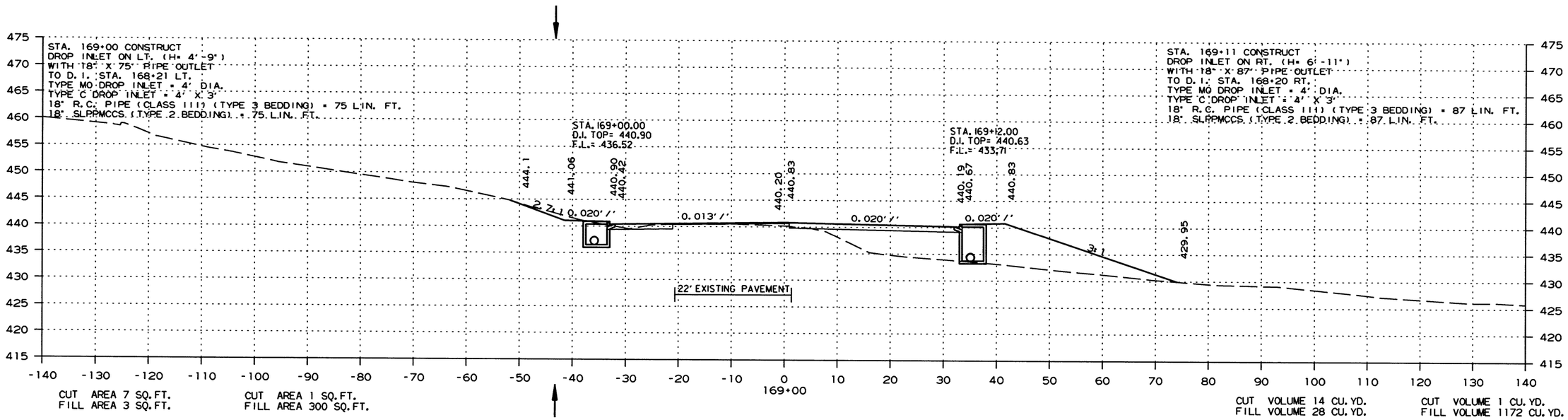
R060432.DGN

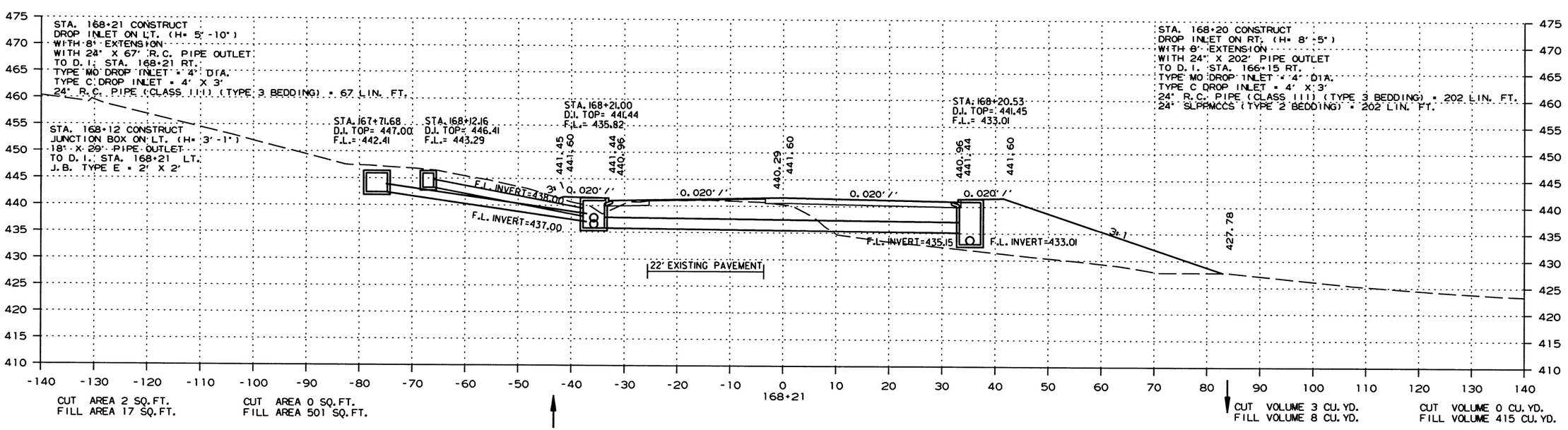
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	135	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 168+21 TO STA. 169+00

2/13/2017

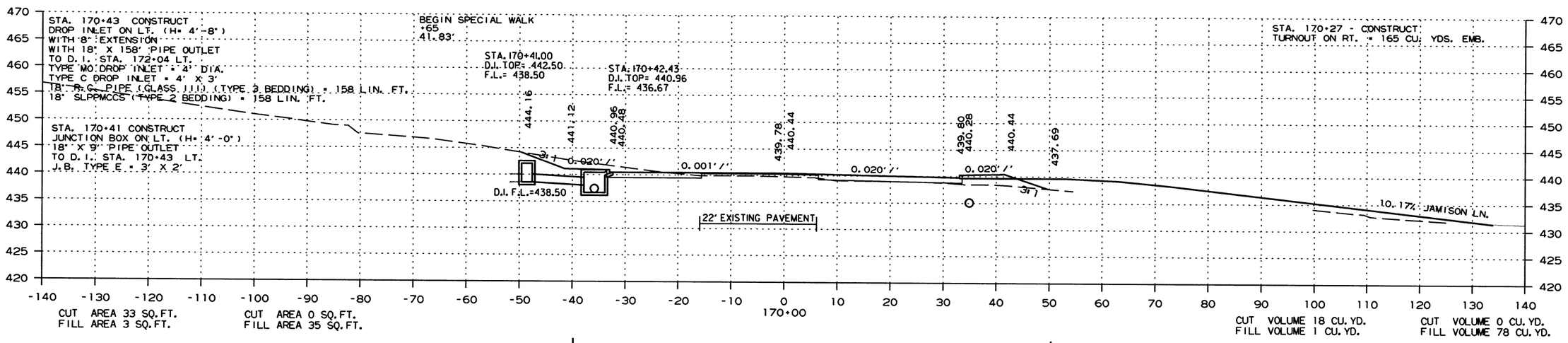
R060432.DGN

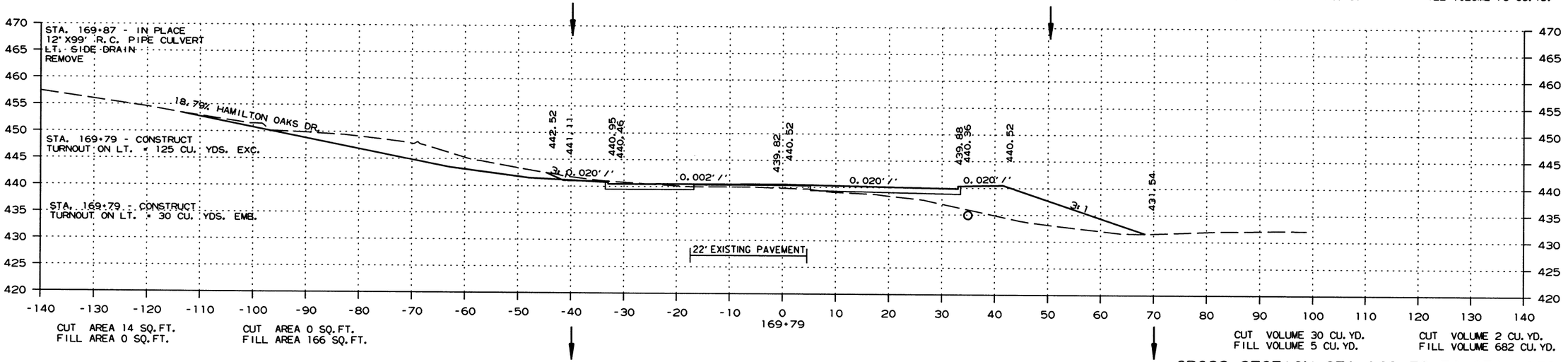
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	136	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 169+79 TO STA. 170+00

2/13/2017

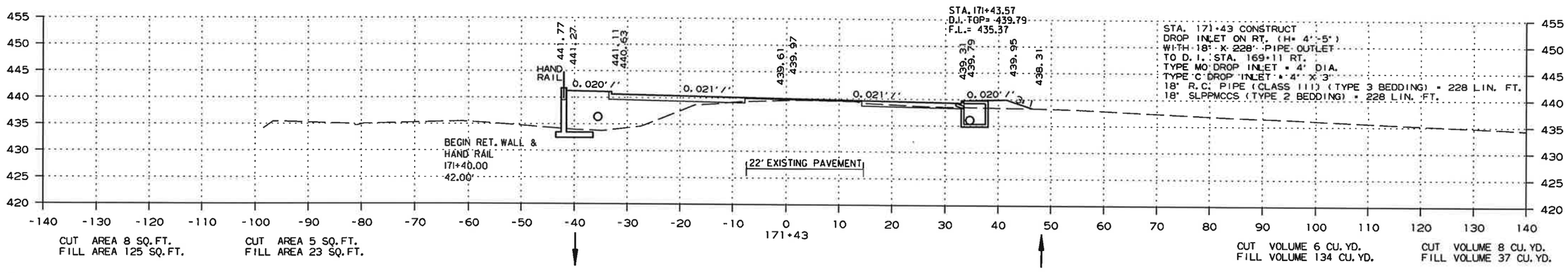
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	137	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 170+98 TO STA. 171+43

2/13/2017

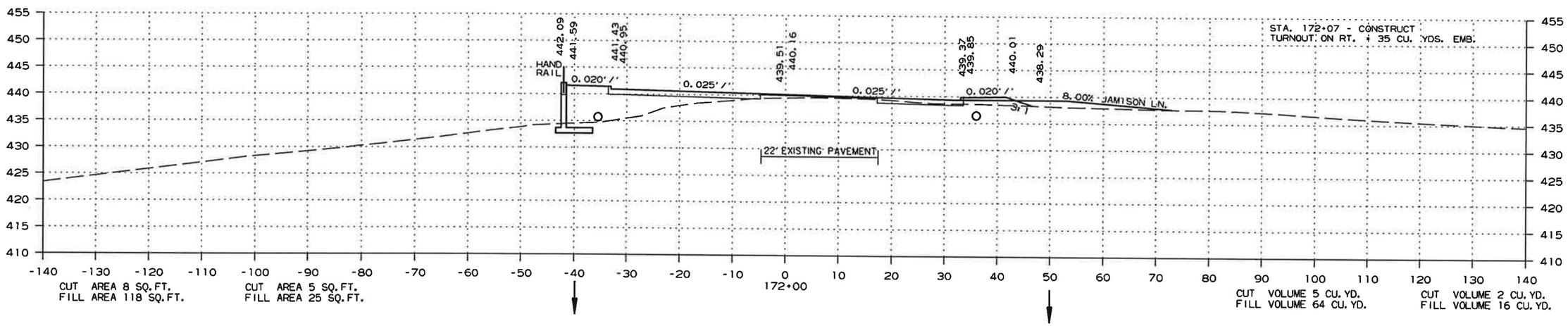
R060432.DGN

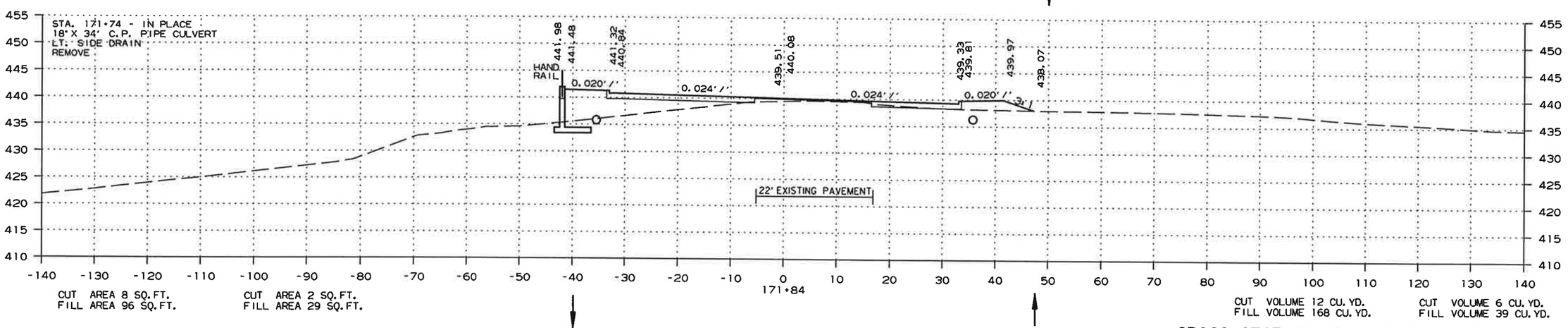
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	138	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 171+84 TO STA. 172+00

2/13/2017

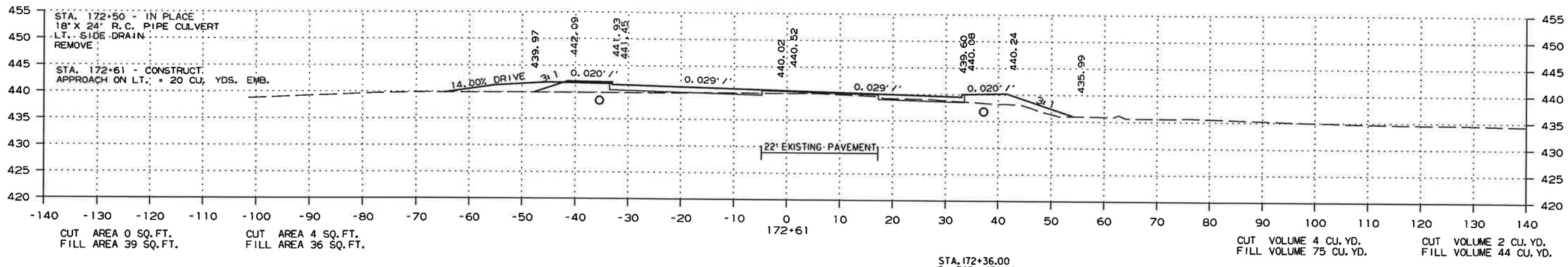
R060432.DGN

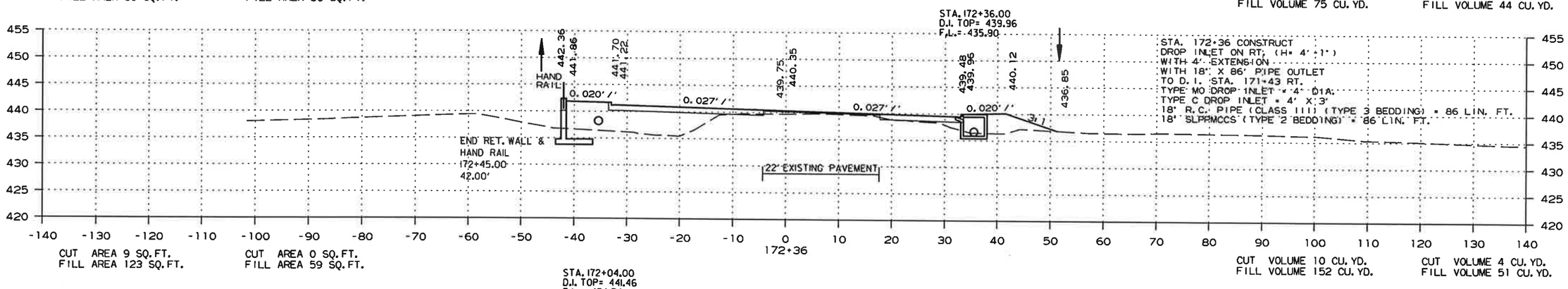
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	139	153

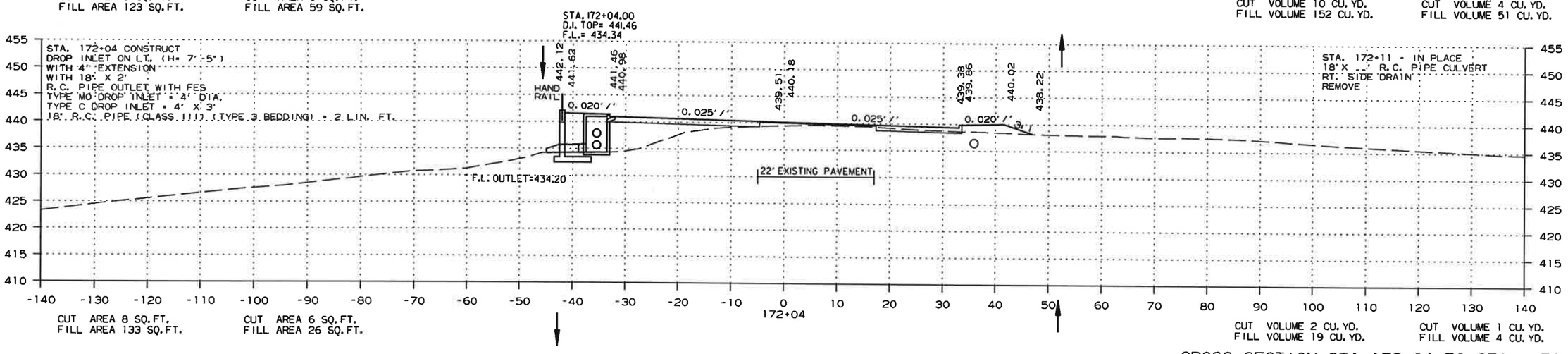
(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2







CROSS SECTION STA. 172+04 TO STA. 172+61

2/13/2017

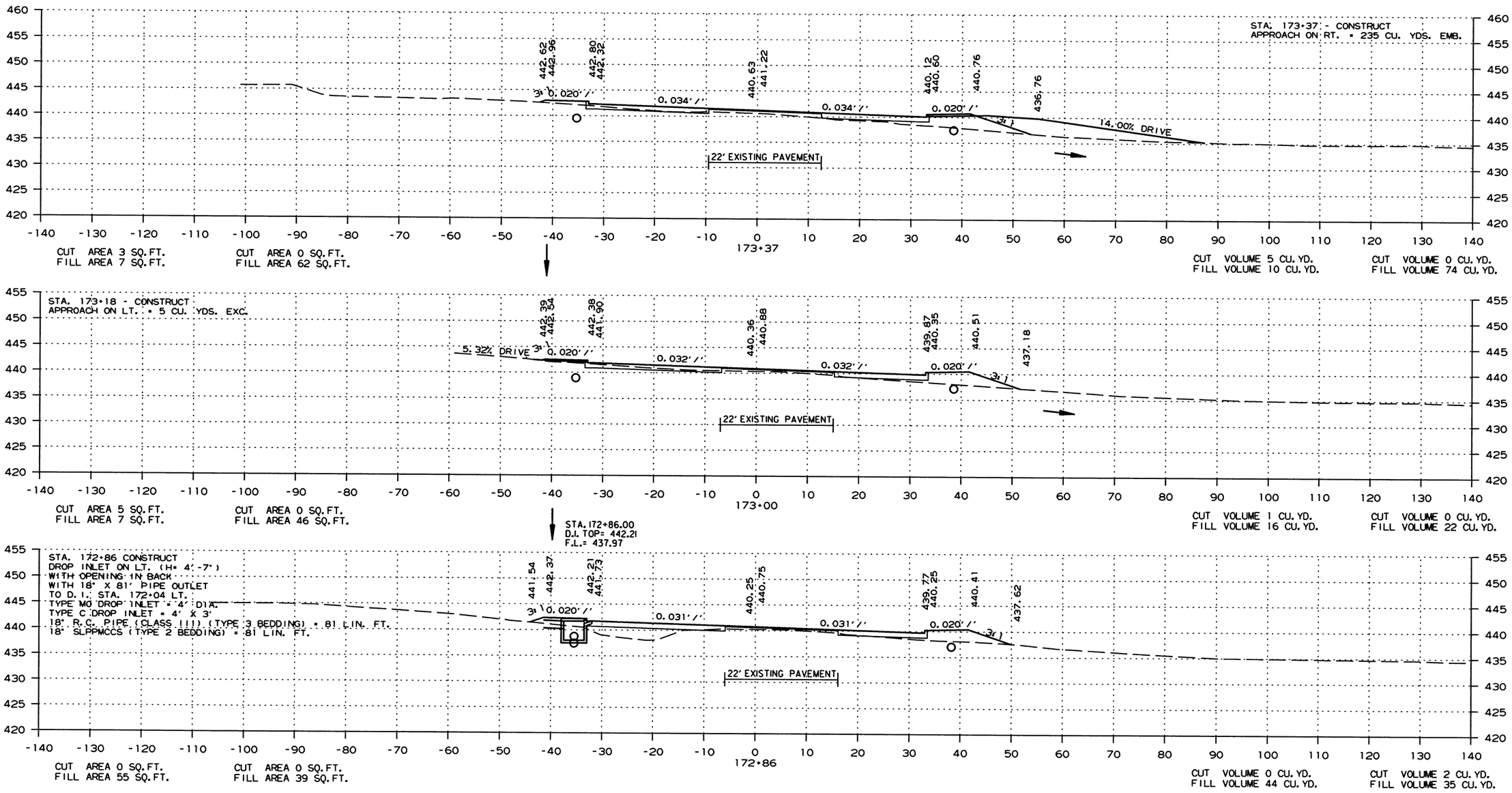
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	140	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 172+86 TO STA. 173+37

2/13/2017

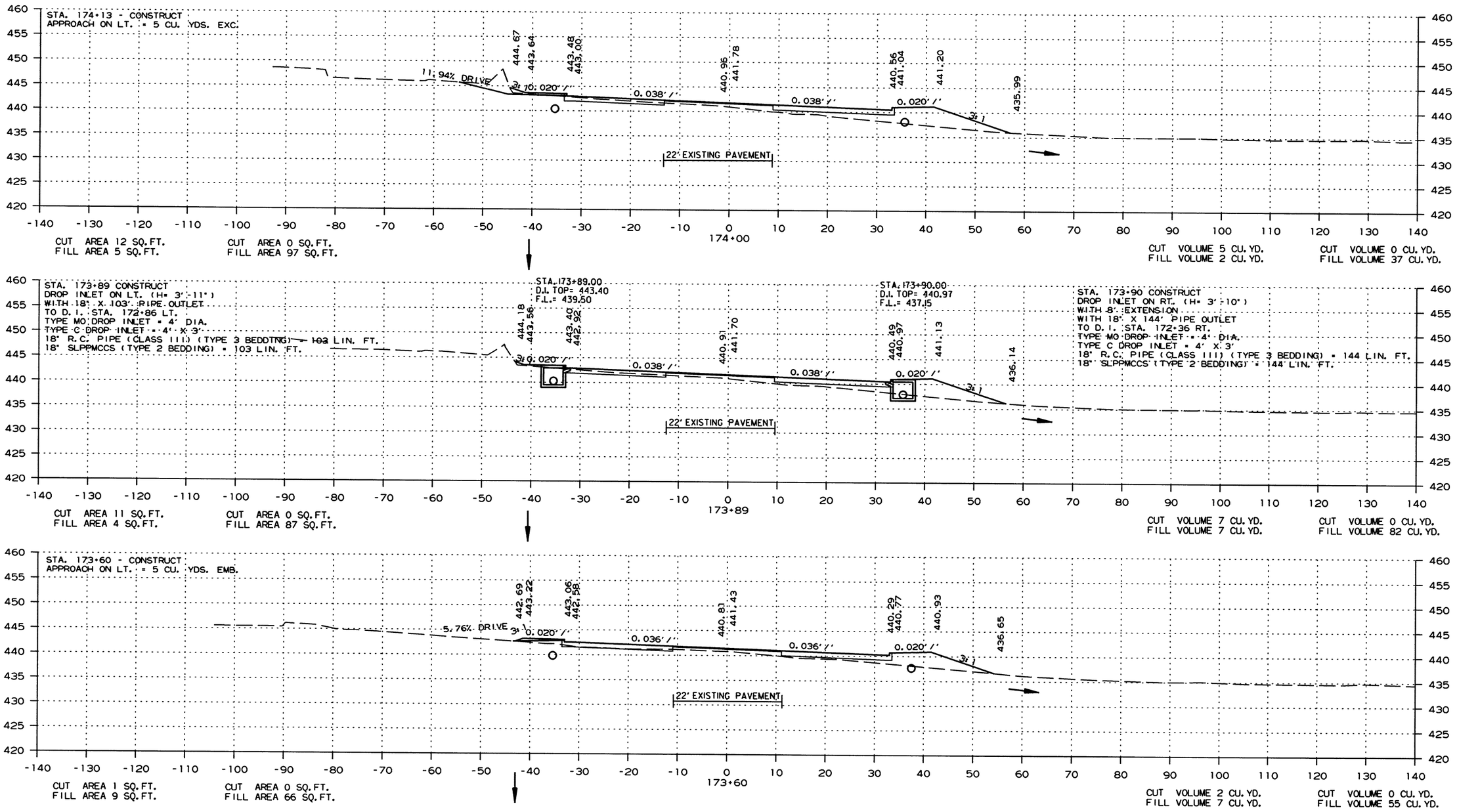
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	141	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 173+60 TO STA. 174+00

2/13/2017

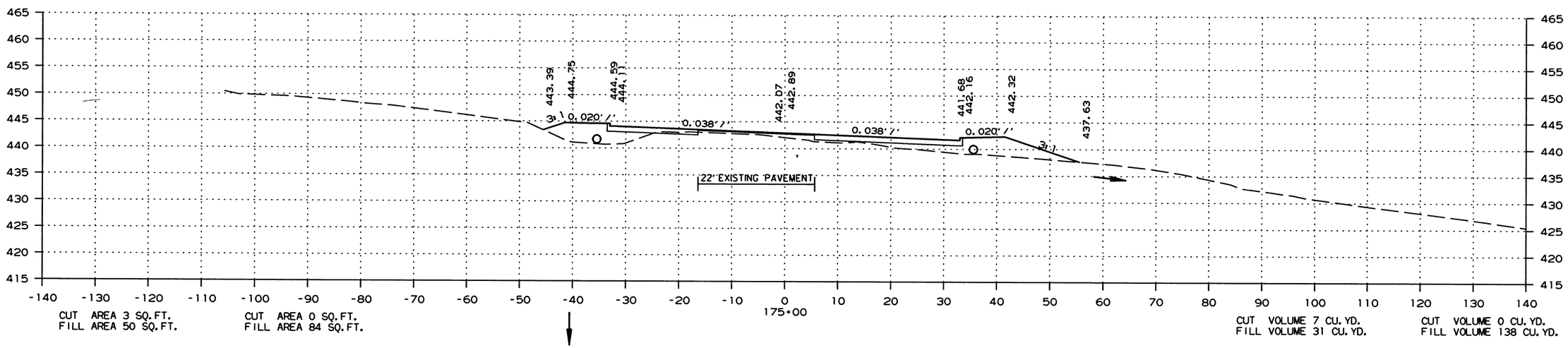
R060432.DGN

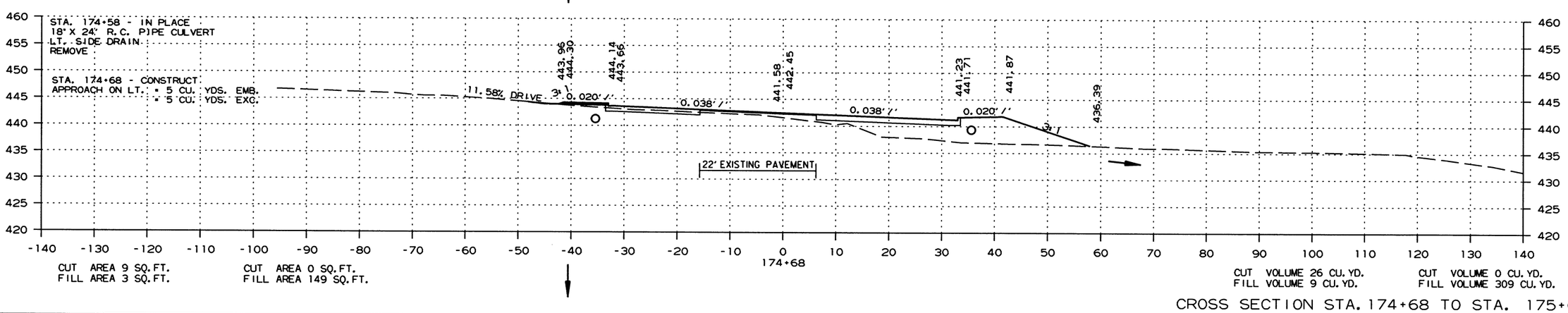
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	142	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 174+68 TO STA. 175+00

2/13/2017

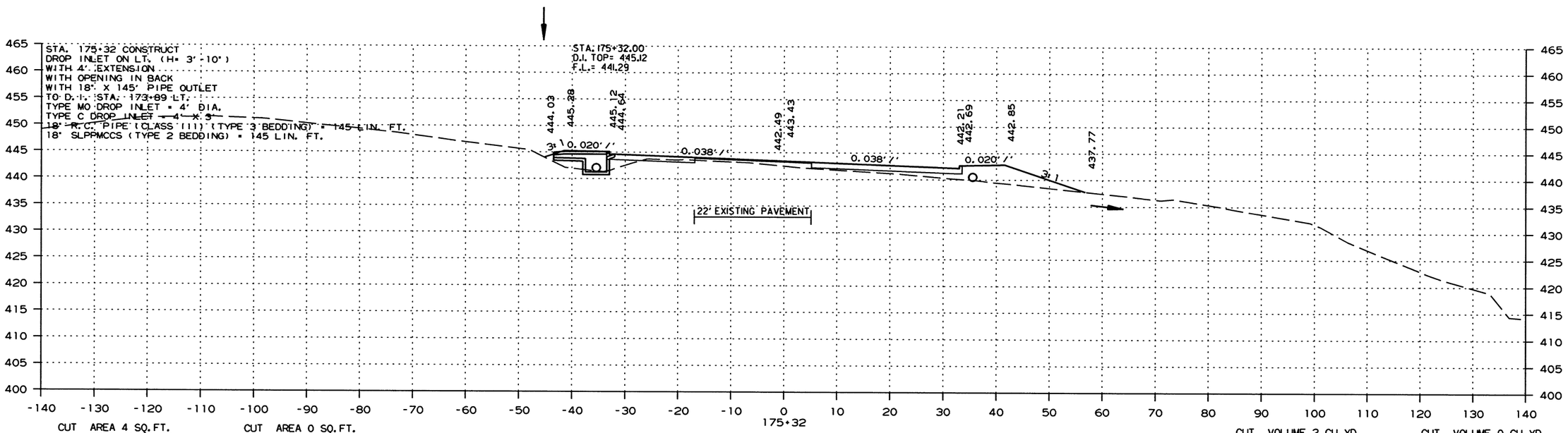
R060432.DGN

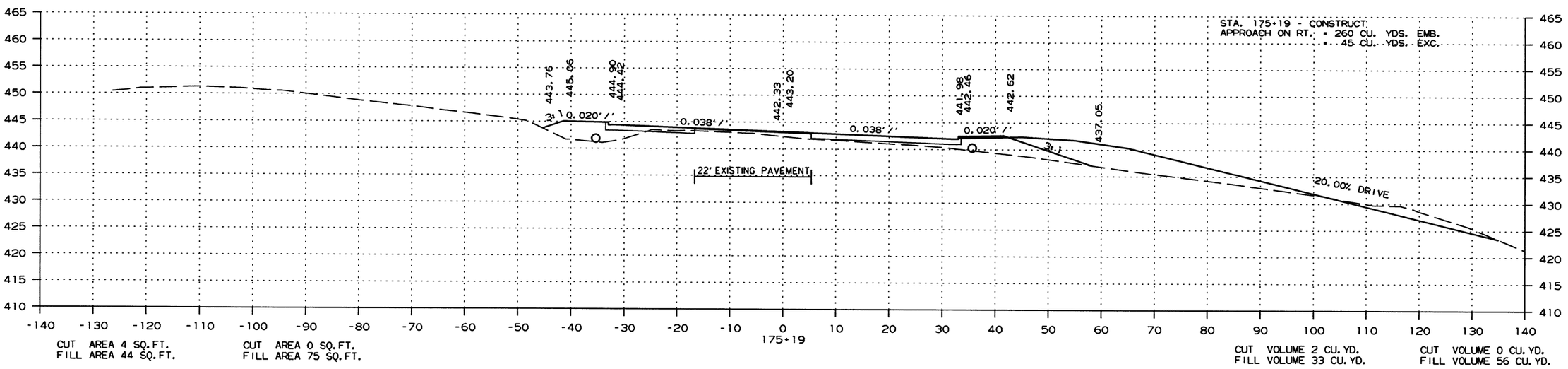
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	143	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 175+19 TO STA. 175+32

2/13/2017

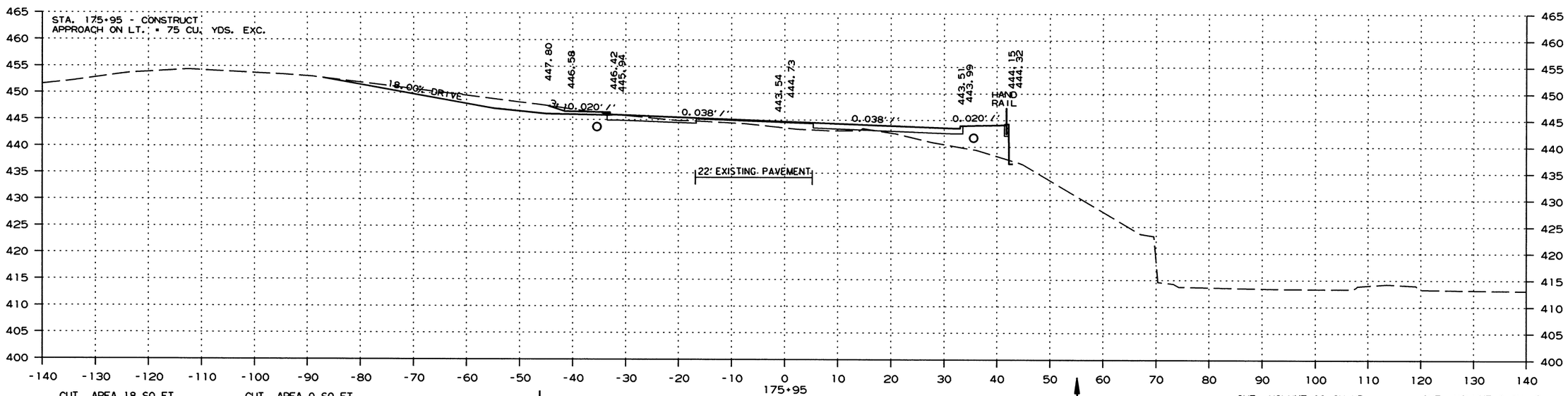
R060432.DGN

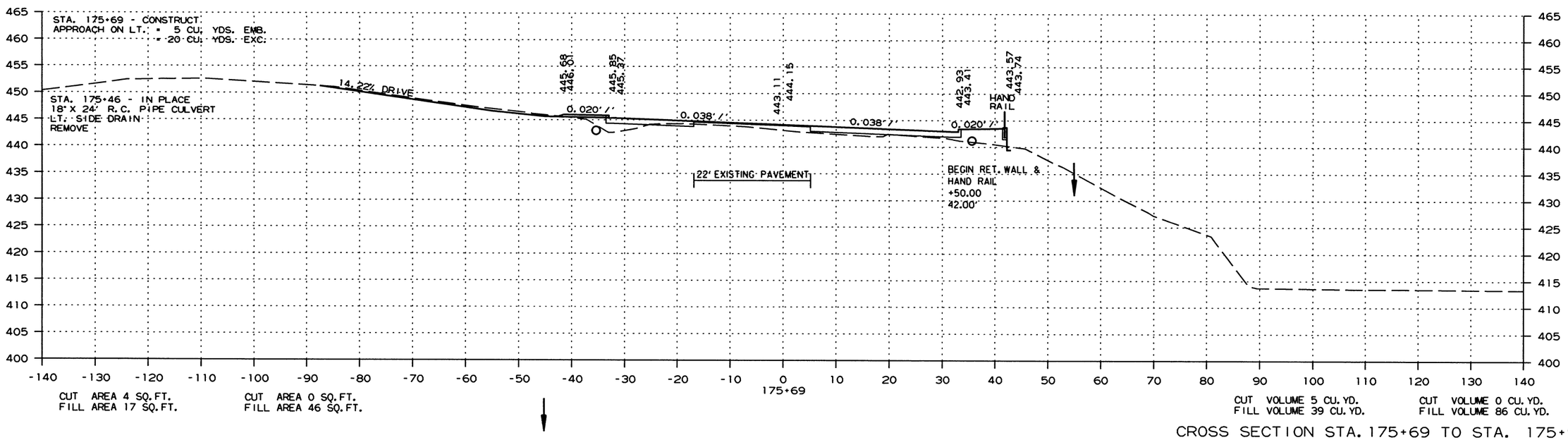
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	144	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 175+69 TO STA. 175+95

2/13/2017

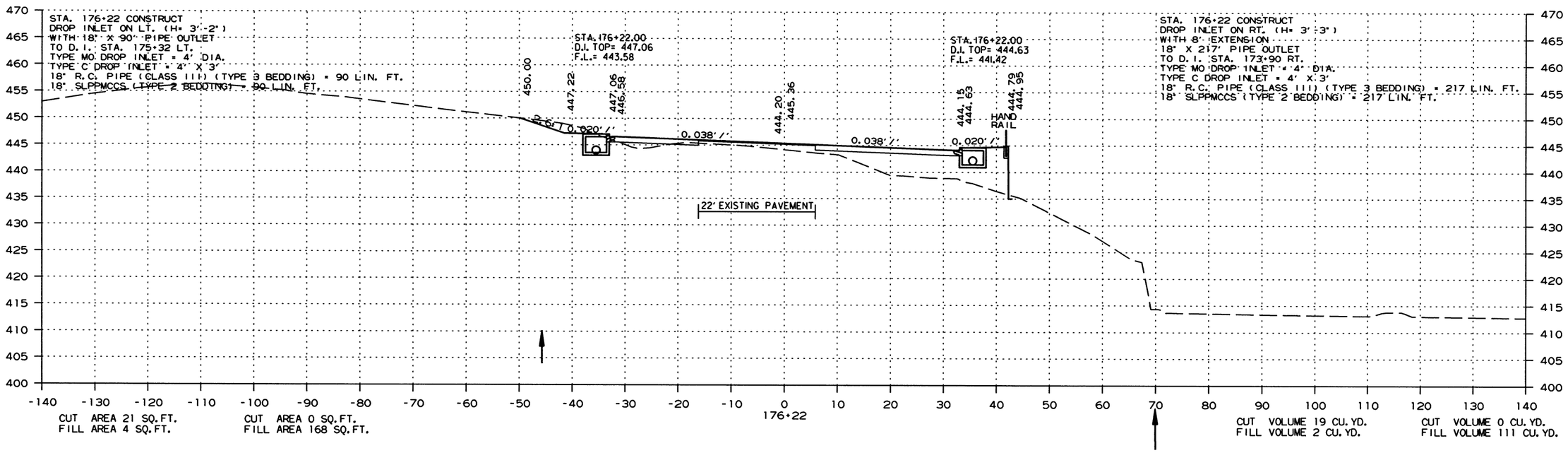
R060432.DGN

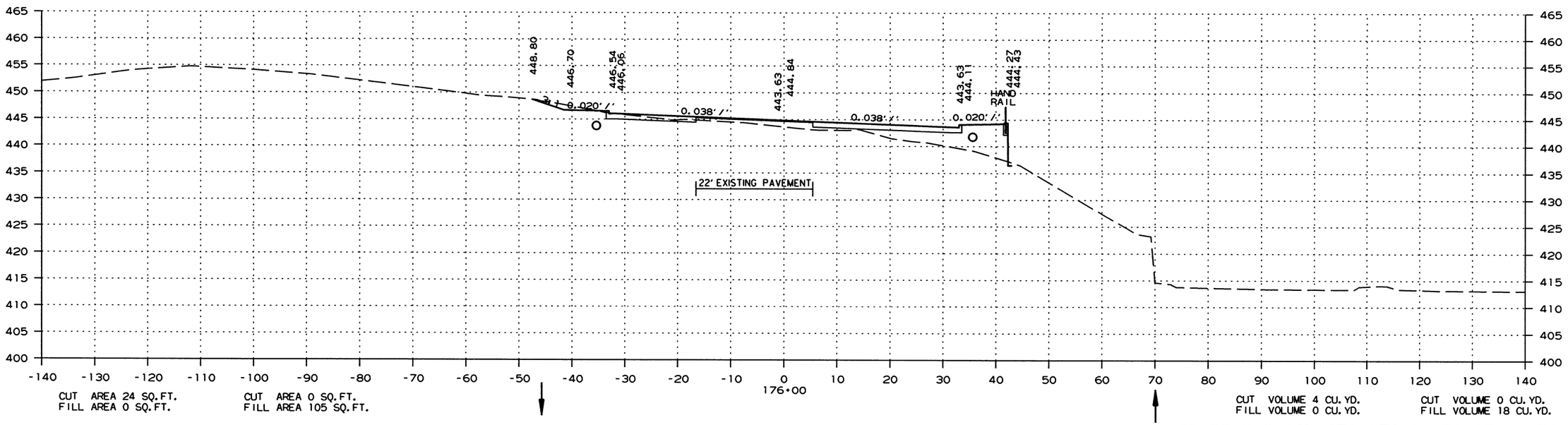
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	145	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2





CROSS SECTION STA. 176+00 TO STA. 176+22

2/13/2017

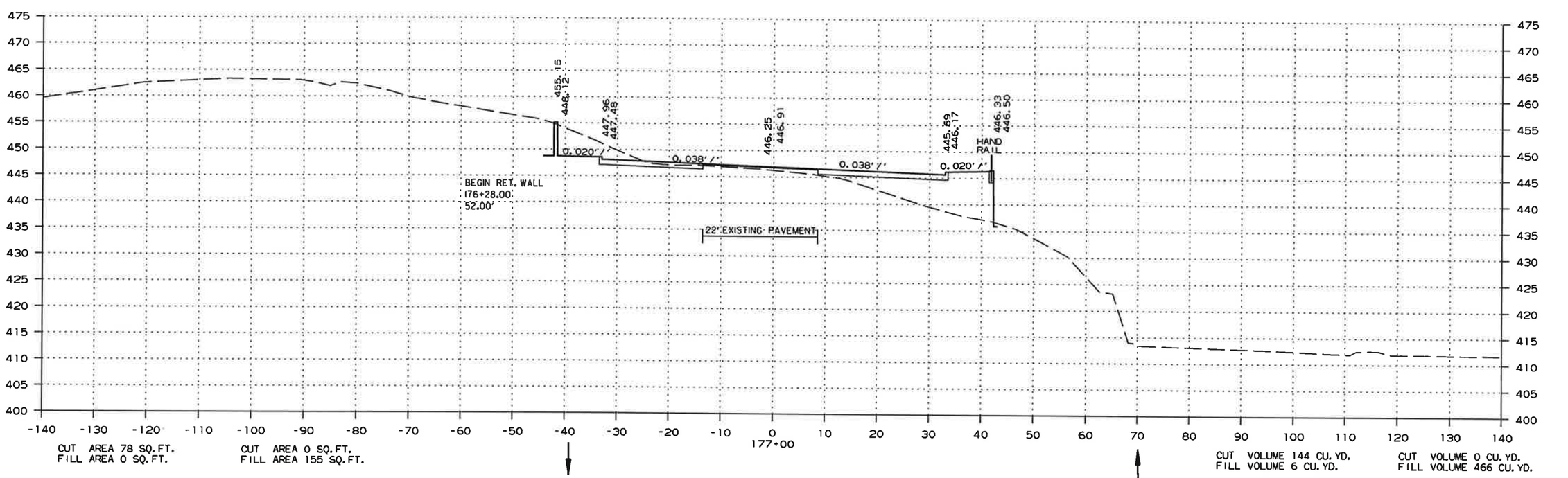
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	146	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2



CROSS SECTION STA. 177+00 TO STA. 177+00

2/13/2017

R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	147	153

(2) CROSS SECTIONS

STAGE 1 STAGE 2

STAGE 1 STAGE 2

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

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

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

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

STA. 178+95 END 100' TRANSITION

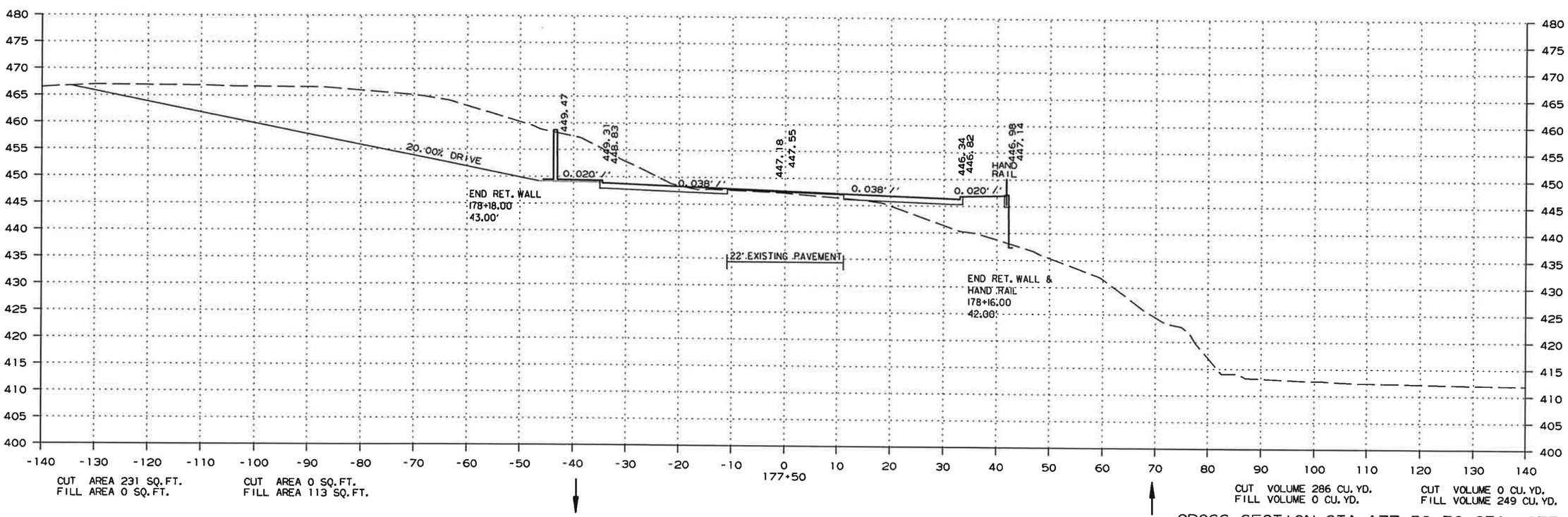
CUT AREA 0 SQ.FT.
FILL AREA 0 SQ.FT.

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

CUT VOLUME 192 CU.YD.
FILL VOLUME 0 CU.YD.

CUT VOLUME 0 CU.YD.
95

STA. 177+95.00 END JOB 060432
& BEGIN 100' TRANSITION



CUT AREA 231 SQ.FT.
FILL AREA 0 SQ.FT.

CUT AREA 0 SQ.FT.
FILL AREA 113 SQ.FT.

CUT VOLUME 286 CU.YD.
FILL VOLUME 0 CU.YD.

CUT VOLUME 0 CU.YD.
FILL VOLUME 249 CU.YD.

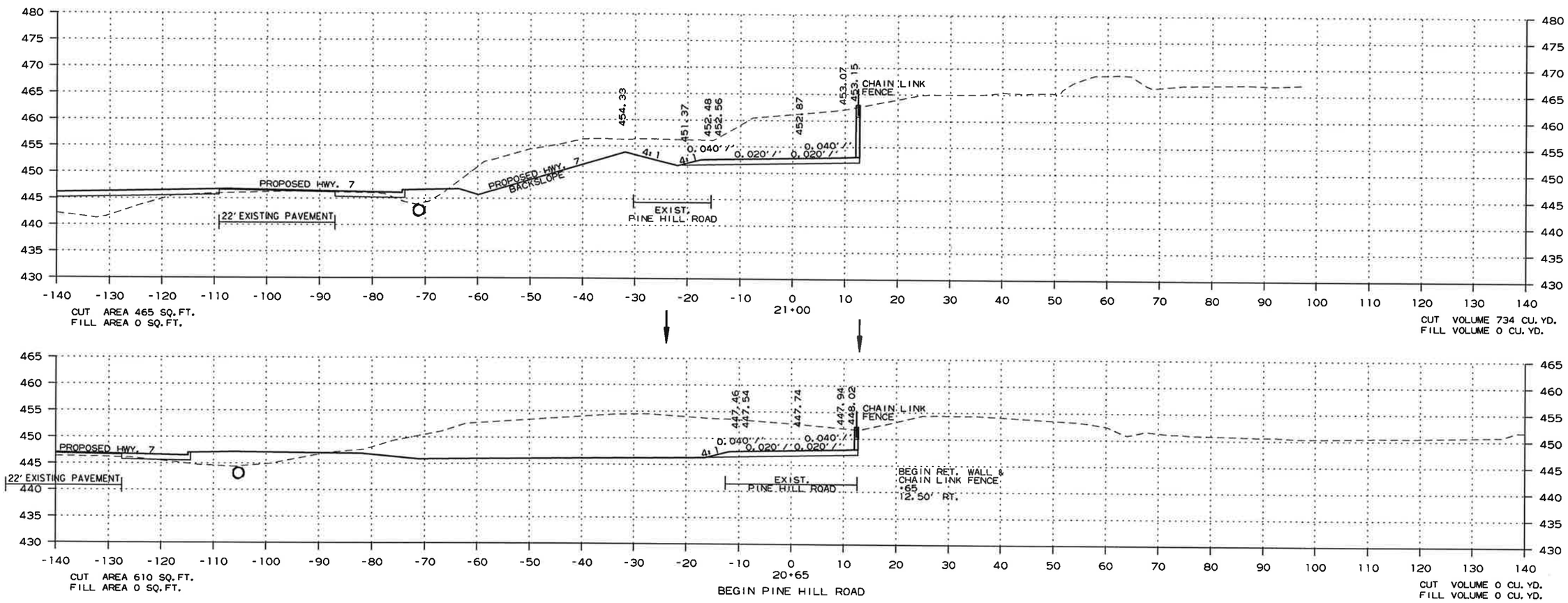
CROSS SECTION STA. 177+50 TO STA. 177+50

2/13/2017

R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	148	153

(2) CROSS SECTIONS



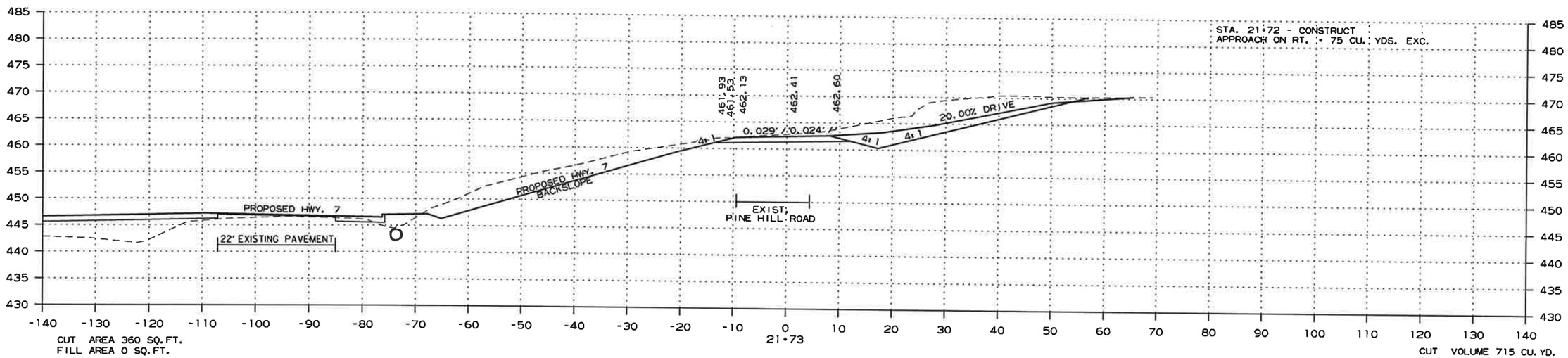
CROSS SECTION STA. 20+65 TO STA. 21+00

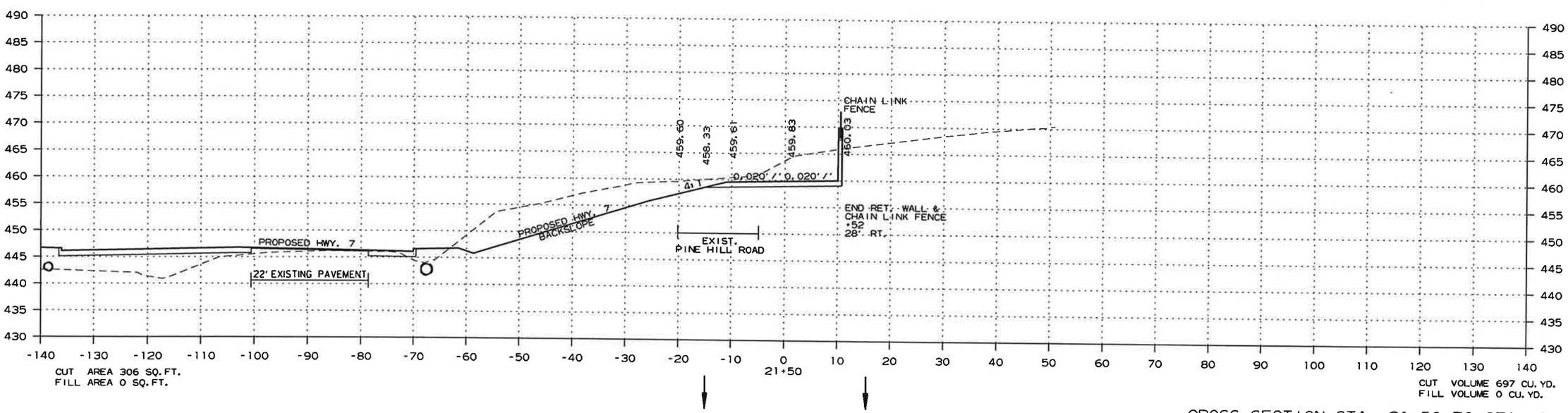
2/13/2017

R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
3-17-17				6	ARK.			
				JOB NO.		060432	149	153

(2) CROSS SECTIONS





CROSS SECTION STA. 21+50 TO STA. 21+73

2/13/2017

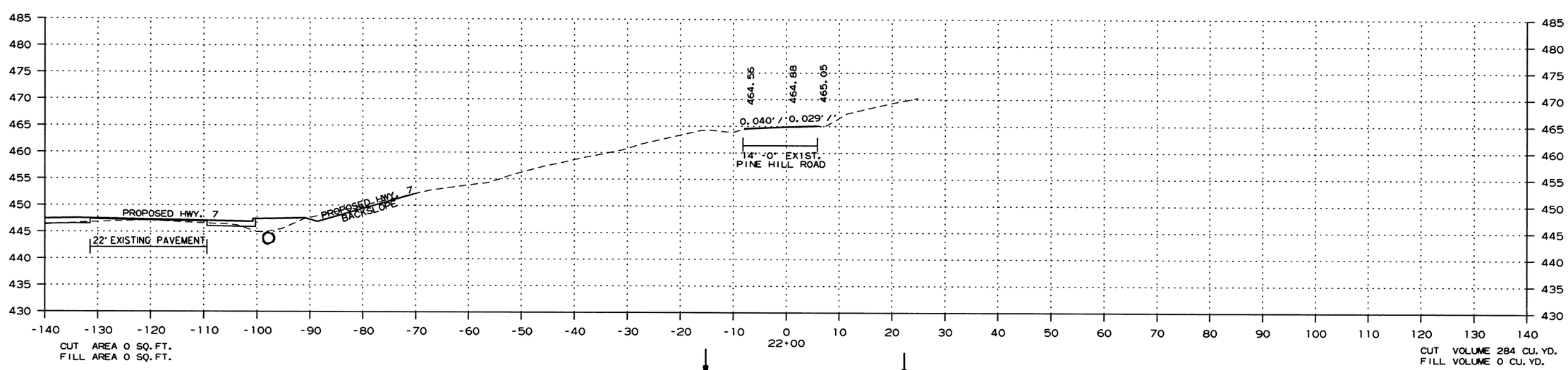
R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	150	153

(2) CROSS SECTIONS

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

CUT VOLUME 180 CU. YD.
FILL VOLUME 0 CU. YD.



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

CUT VOLUME 284 CU. YD.
FILL VOLUME 0 CU. YD.

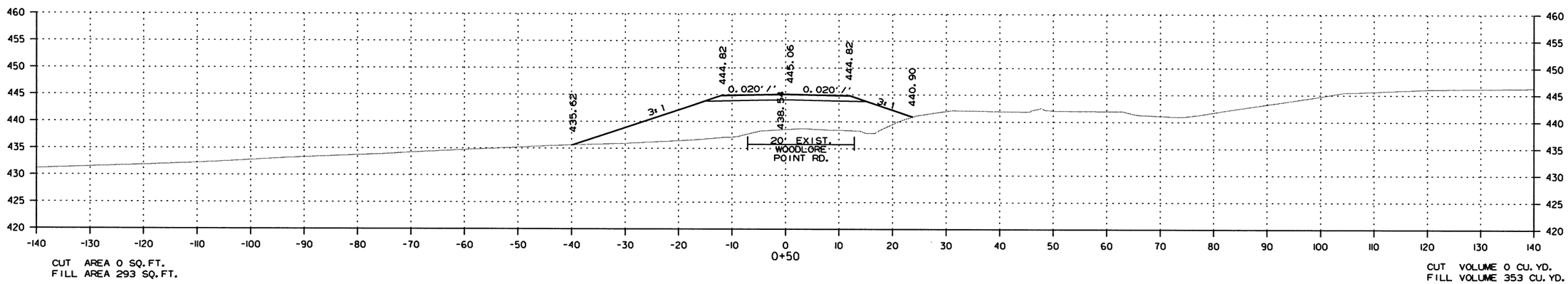
CROSS SECTION STA. 22+00 TO STA. 22+00

2/13/2017

R060432.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	151	153

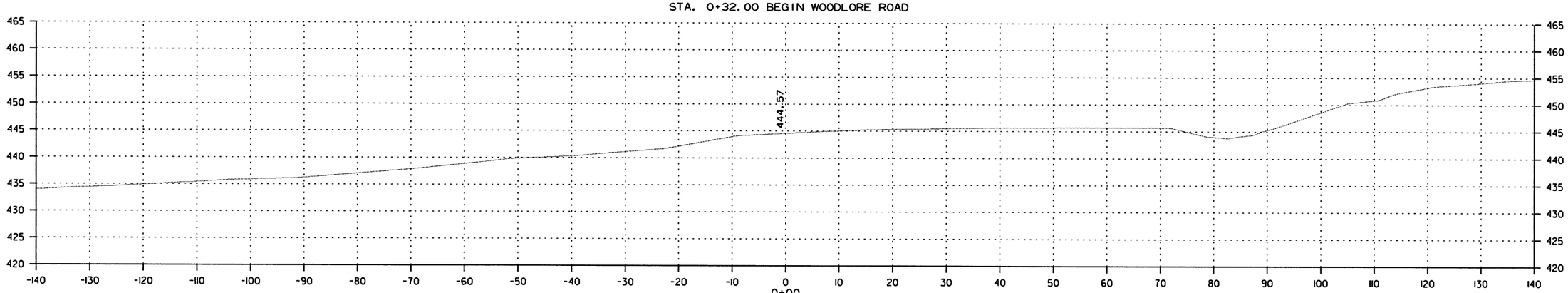
(2) CROSS SECTIONS



CUT AREA 0 SQ. FT.
FILL AREA 293 SQ. FT.

CUT VOLUME 0 CU. YD.
FILL VOLUME 353 CU. YD.

STA. 0+32.00 BEGIN WOODLORE ROAD



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

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

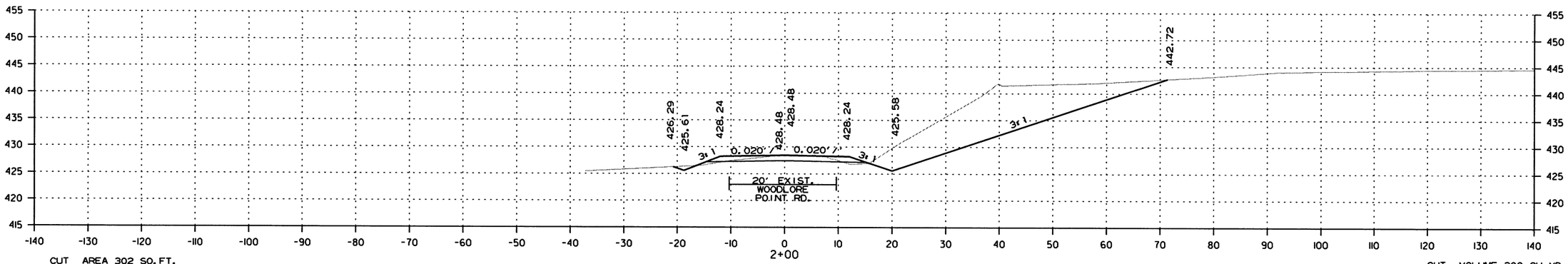
CROSS SECTION STA. 0+00 TO STA. 0+50

2/13/2017

R060432.DGN

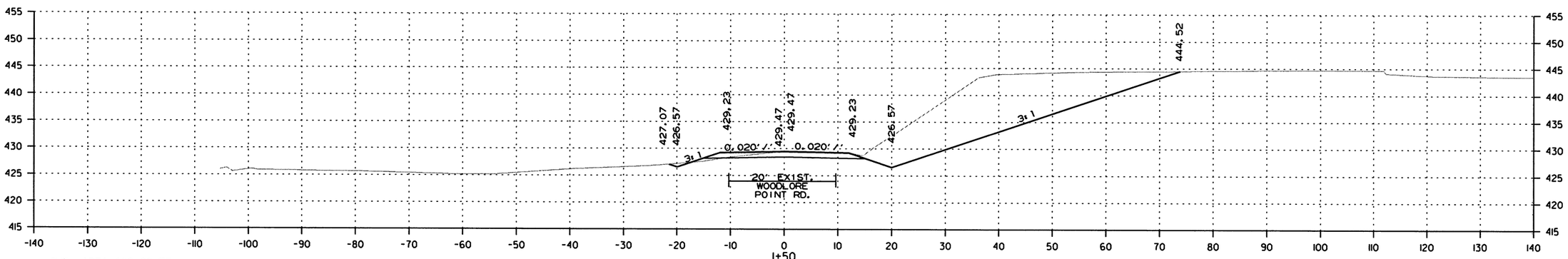
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		060432	152	153

(2) CROSS SECTIONS



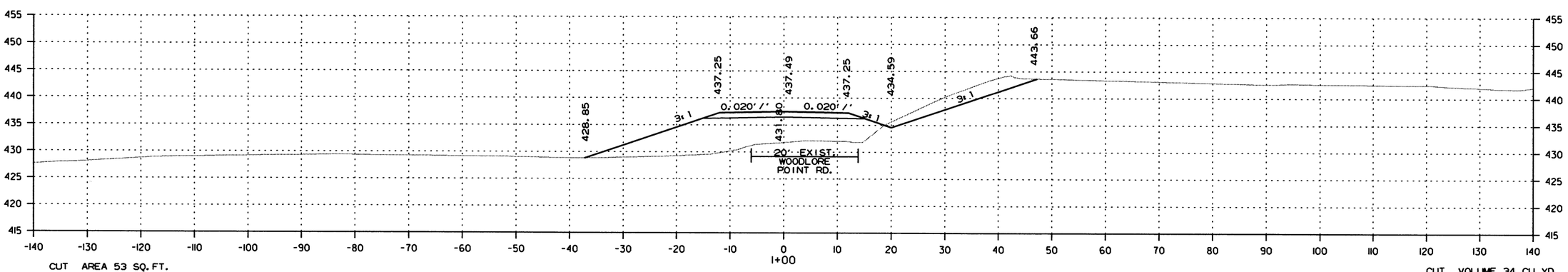
CUT AREA 302 SQ. FT.
FILL AREA 3 SQ. FT.

CUT VOLUME 300 CU. YD.
FILL VOLUME 2 CU. YD.



CUT AREA 402 SQ. FT.
FILL AREA 2 SQ. FT.

CUT VOLUME 421 CU. YD.
FILL VOLUME 217 CU. YD.



CUT AREA 53 SQ. FT.
FILL AREA 233 SQ. FT.

CUT VOLUME 34 CU. YD.
FILL VOLUME 341 CU. YD.

CROSS SECTION STA. 1+00 TO STA. 2+00

2/13/2017

R060432.DGN

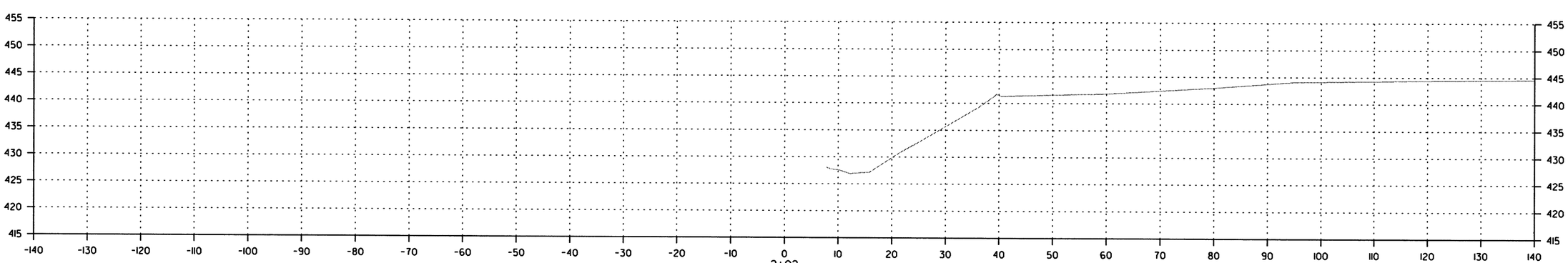
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		060432	153	153

(2) CROSS SECTIONS

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

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



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

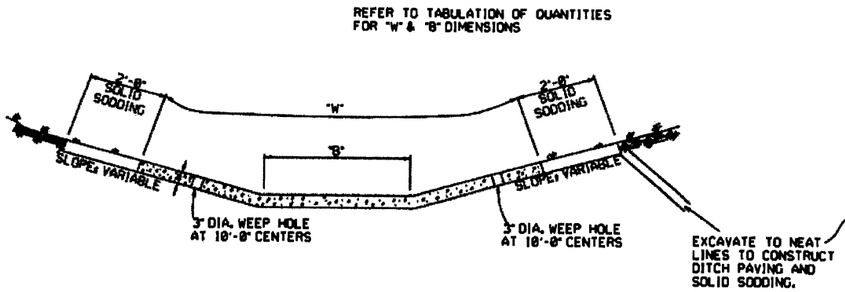
STA. 2+02.11 END WOODLORE ROAD

CUT VOLUME 151 CU. YD.
FILL VOLUME 1 CU. YD.

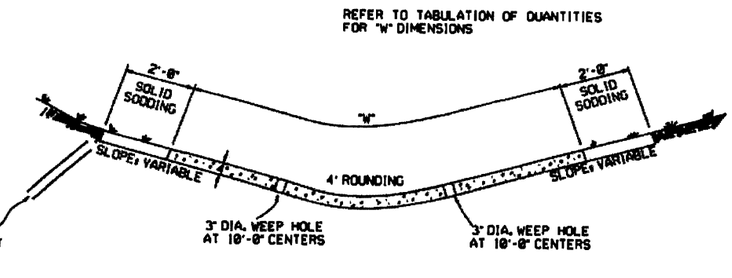
CROSS SECTION STA. 2+02 TO STA. 2+02

2/13/2017

R060432.DGN

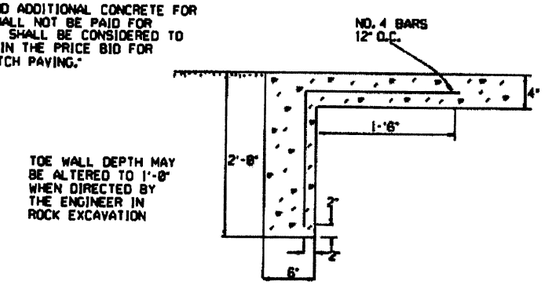


TYPE A

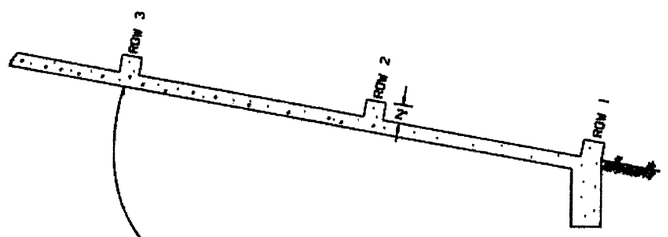


TYPE B

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."

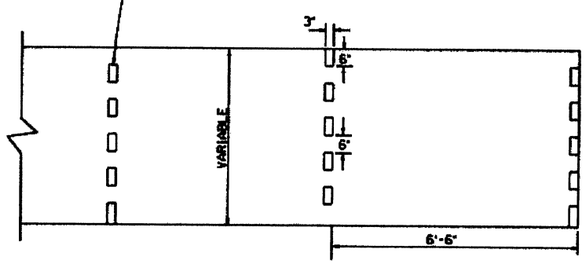


TOE WALL DETAIL FOR
CONCRETE DITCH PAVING



NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED

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



ENERGY DISSIPATORS
(NO SCALE)

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE POURED MONOLITHICALLY.

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

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

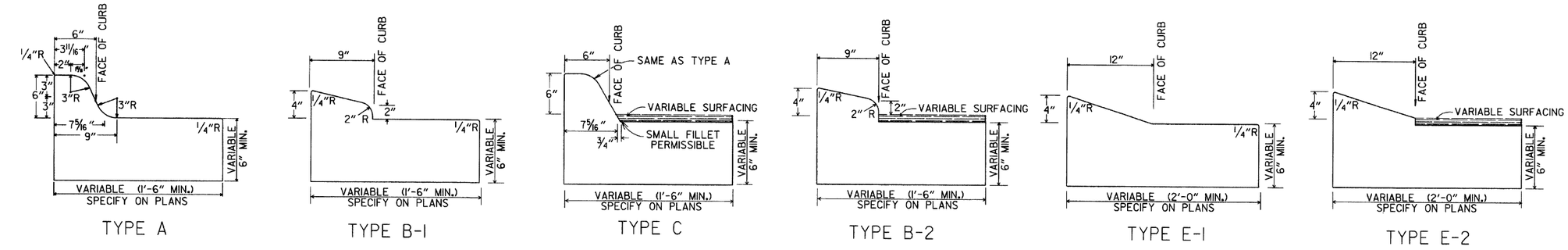
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

DATE	REVISION	DATE FILM'D
12-8-16	CORRECTED ENERGY DISSIPATOR DRAWING AND NOTE	
11-17-11	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	883-7-18-88
4-3-87	REVISED ENERGY DISSIPATOR	871-4-3-87
1-9-87	MODIFIED NOTE ON ENERGY DISS.	832-1-9-87
1-2-86	ADDED NOTE TO ENERGY DISS.	799-1-2-86
1-1-84	ENERGY DISSIPATOR DETAILS ADDED	508-1-1-84
1-1-84	EXCAVATION DETAILS ADDED TYPES A & B	
10-2-72	REVISED AND REDRAWN	508-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

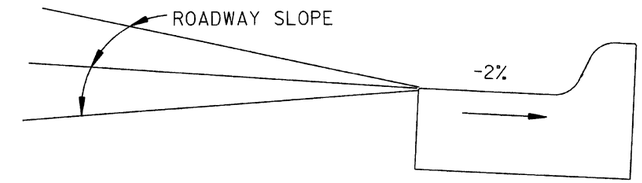
CONCRETE DITCH PAVING

STANDARD DRAWING CDP-1



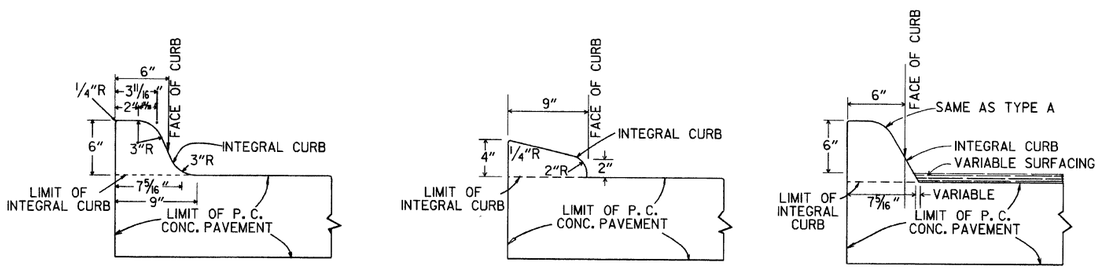
TYPE A | TYPE B-1 | TYPE C | TYPE B-2 | TYPE E-1 | TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER



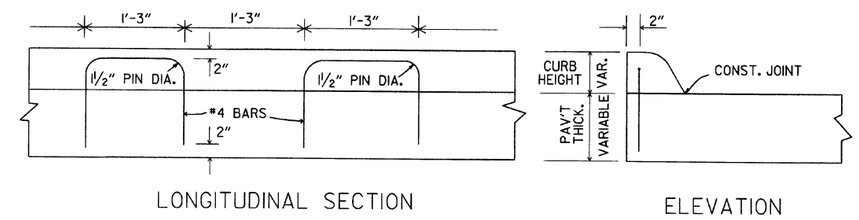
DETAIL OF GUTTER SLOPE

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



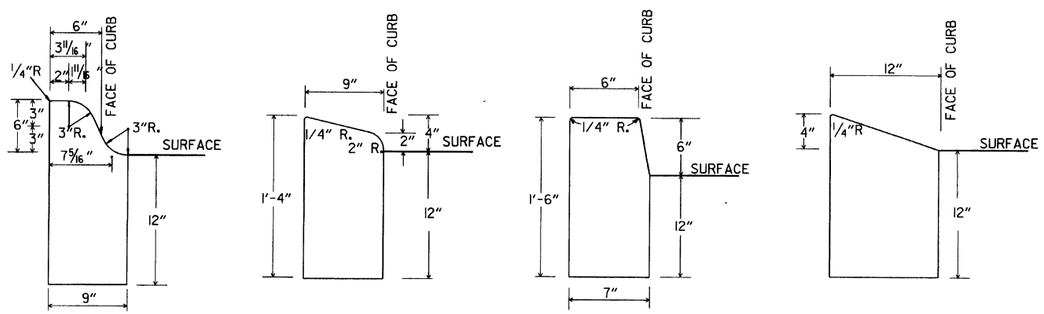
TYPE A | TYPE B | TYPE C

INTEGRAL CURB



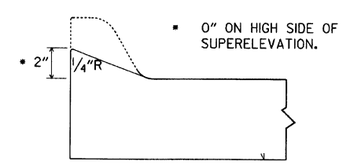
LONGITUDINAL SECTION | ELEVATION

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.

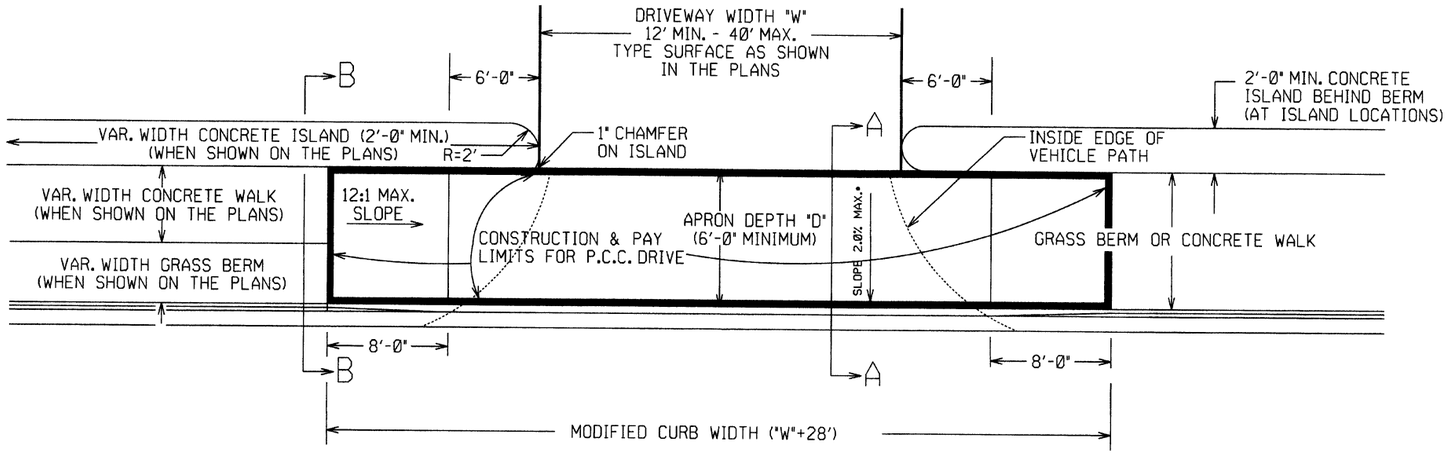
DETAILS OF MODIFIED CURB

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

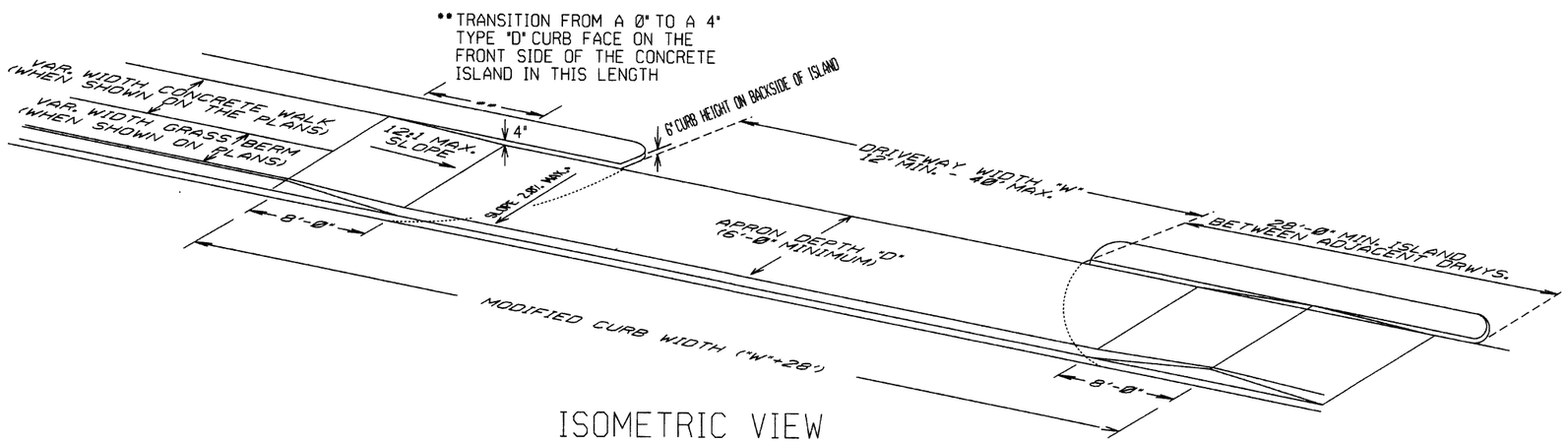
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

STANDARD DRAWING CG-1

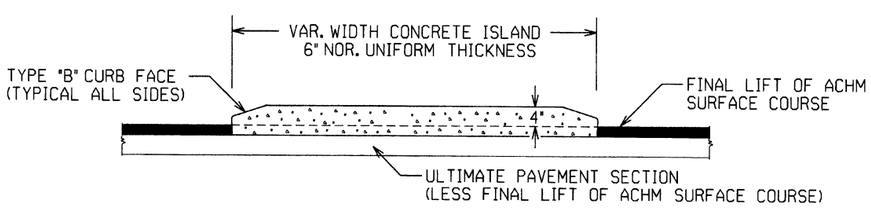


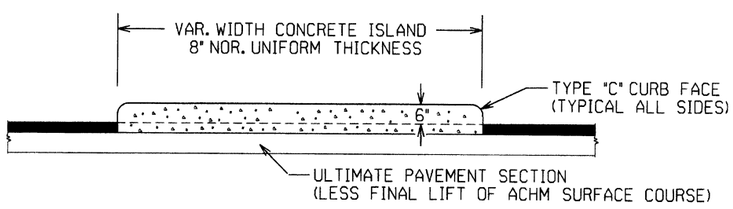
PLAN VIEW



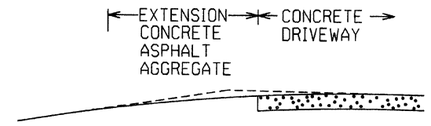
ISOMETRIC VIEW

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".





CURBED ISLANDS FOR CHANNELIZATION



EXTENSION TYPICAL SECTIONS

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

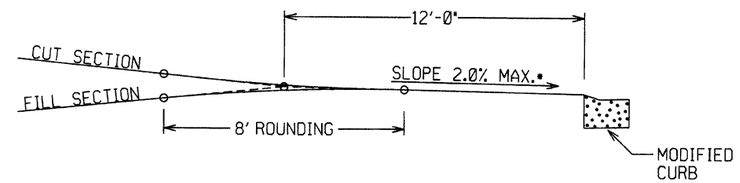
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE.(1") OR
4" ACHM BASE COURSE (1-1/2")

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

4: AGGREGATE - 6" AGGREGATE BASE COURSE

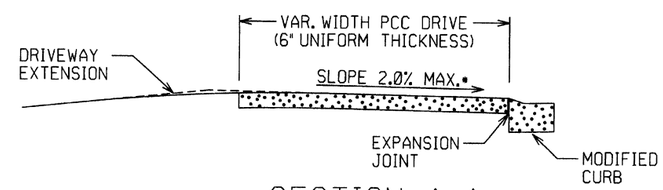
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

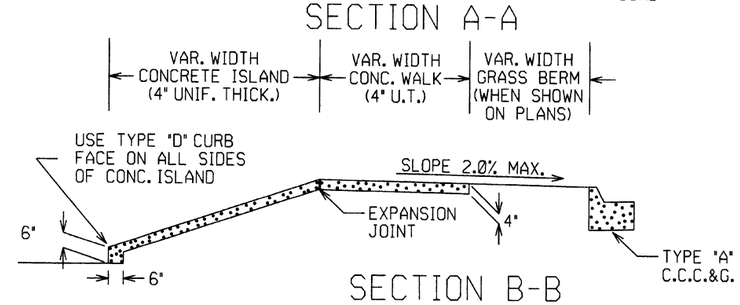


DRIVEWAY VERTICAL ALIGNMENT DETAILS

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



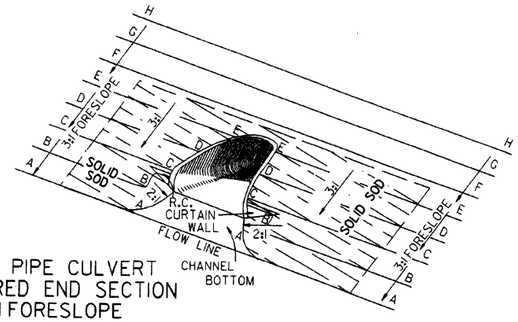
SECTION A-A



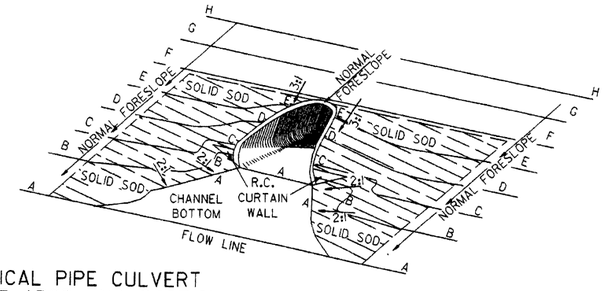
SECTION B-B
CURBED ISLAND BEHIND WALK

DATE REV	DATE FILMED	DESCRIPTION
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

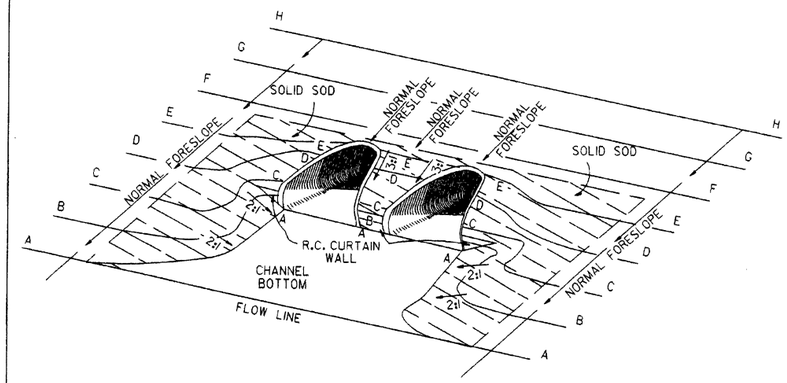
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DRIVEWAYS & ISLANDS
STANDARD DRAWING DR-1



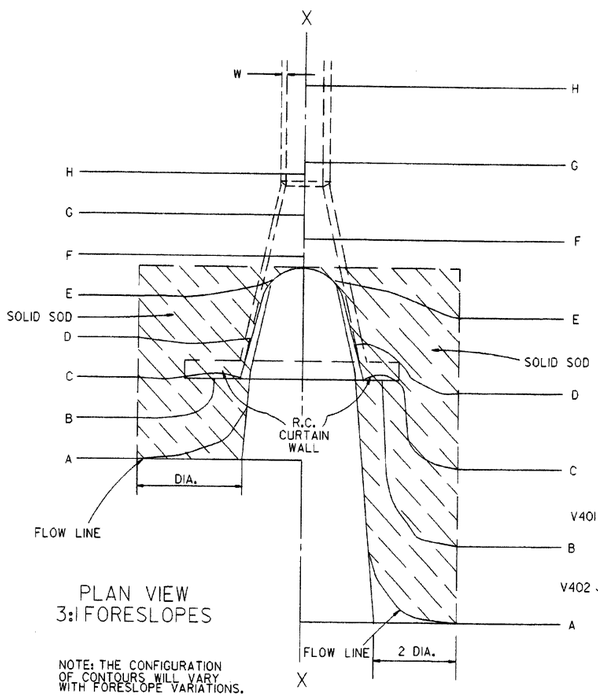
TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



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

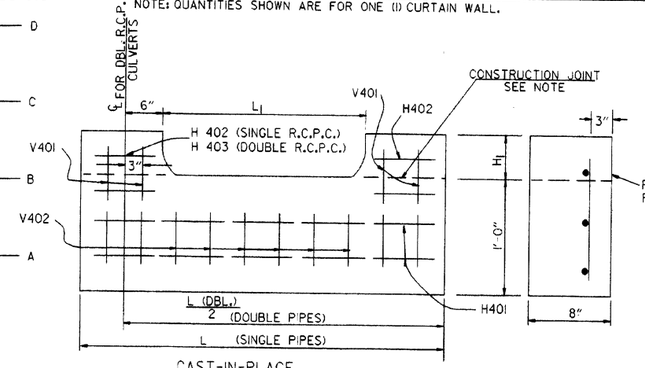
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC.	SINGLE R.C.P.C. REINF. STEEL	DOUBLE R.C.P.C. CONC.	DOUBLE R.C.P.C. REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0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

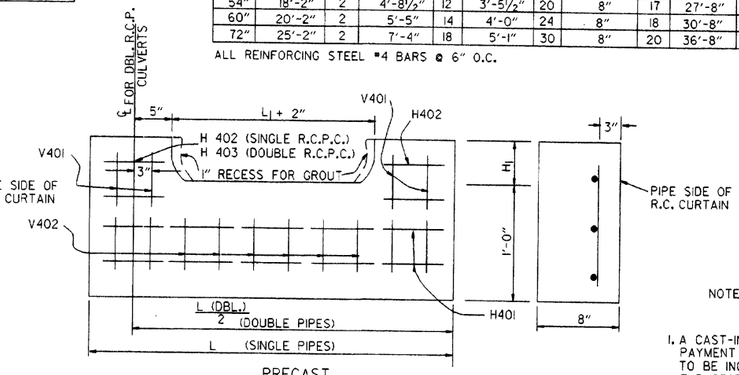
PIPE DIA.	SINGLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	V401 L	V401 NO.	V402 L	V402 NO.	DOUBLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	H403 L	H403 NO.	V401 L	V401 NO.	V402 L	V402 NO.
18"	7'-8"	2	1'-11½"	4	1'-7½"	8	8"	8	12'-2"	2	1'-11½"	4	8"	2	1'-7½"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8½"	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

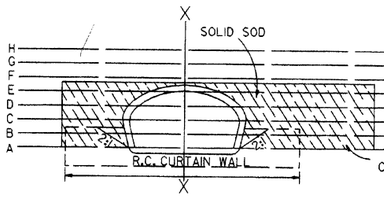
SOLID SODDING

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

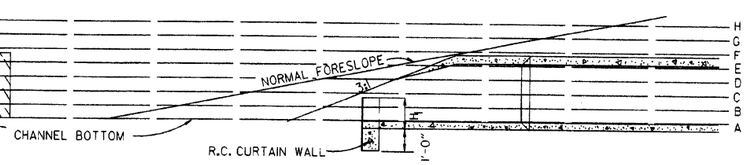
NOTE: QUANTITIES SHOWN ABOVE ARE FOR ONE (1) END OF F.E.S.

GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE; FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3 × 3 W/10 × W10 MAY BE USED IN LIEU OF REINFORCING BARS.



END VIEW



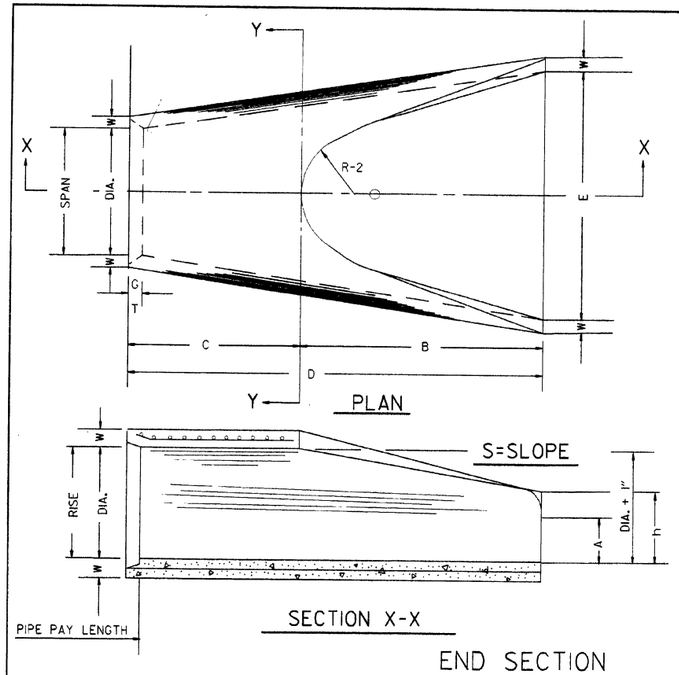
SECTIONAL VIEW "X-X"

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

ARKANSAS STATE HIGHWAY COMMISSION

FLARED END SECTION

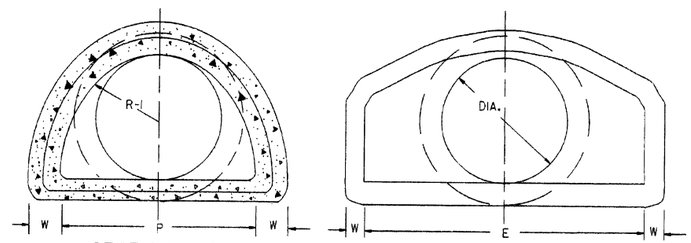
STANDARD DRAWING FES-1



END SECTION
FOR REINFORCED CONCRETE PIPE CULVERTS

TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2 1/2"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15 1/2"	12"	2"	1000	1'-0 1/2"
24"	3"	9 1/2"	3'-7 1/2"	2'-6"	6'-11 1/2"	4'-0"	3:1	25"	33 3/16"	16 11/16"	14"	2 1/2"	1600	1'-11 1/2"
30"	3 1/2"	1'-0"	4'-6"	1'-7 3/4"	6'-1 3/4"	5'-0"	3:1	31"	37"	18 1/2"	15"	3 1/4"	1940	1'-4 5/8"
36"	4"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	6'-0"	3:1	37"	47 13/16"	24 5/16"	20"	3 1/2"	4100	1'-8"
42"	4 1/2"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53 7/8"	27 1/2"	22"	3 1/2"	5380	2'-2 1/2"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56 1/2"	28 1/2"	22"	3 1/2"	6550	2'-6"
54"	5 1/2"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65 1/2"	33 1/8"	24"	4"	8750	2'-10 1/2"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72 1/2"	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 5/16"	24"	5"	13250	4'-6"

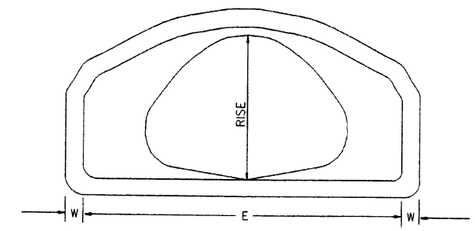


NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

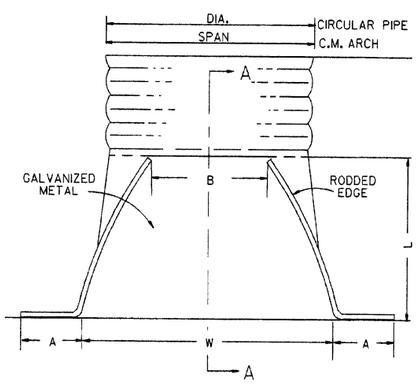
ARCH PIPE

EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1 1/2"	2 1/2:1
18	22	22	13 1/2	14	2 1/2"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32 1/8"	13"	2 1/2"	2 1/2:1
21	26	26	15 1/2	16	2 3/4"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34 1/8"	14"	2 1/2"	2 1/2:1
24	28 1/2	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 11/16"	15"	2 1/2"	2 1/2:1
30	36 1/4	36	22 1/2	23	3 1/2"	10"	3'-1"	3'-0 1/2"	6'-1 1/2"	6'-0"	47 13/16"	20"	3"	2 1/2:1
36	43 3/4	44	26 5/8	27	4"	10 1/2"	4'-0"	2'-1 1/2"	6'-1 1/2"	6'-6"	54 5/16"	22"	3 1/2"	2 1/2:1
42	51 1/8	51	31 5/16	31	4 1/2"	11 1/2"	4'-7"	1-10 1/4"	6'-5 1/4"	7'-2"	59 1/2"	23"	3 3/4"	2 1/2:1
48	58 1/2	59	36	36	5"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	7'-10"	70 5/16"	24"	4 1/4"	2 1/2:1
54	65	65	40	40	5 1/2"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/16"	24"	4 3/4"	2 1/4:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 13/16"	24"	5"	2 1/4:1

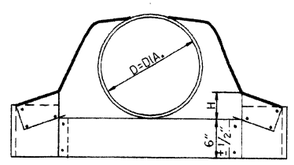
• THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.



END VIEW
CONCRETE ARCH PIPE



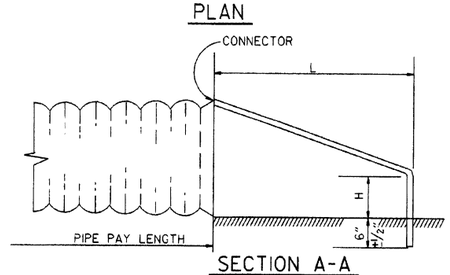
PLAN



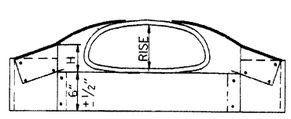
CIRCULAR PIPE

CIRCULAR PIPE

D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1 1/2" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2 1/2:1
15	16	7	8	6	26	30	2 1/2:1
18	16	8	10	6	31	36	2 1/2:1
21	16	9	12	6	36	42	2 1/2:1
24	16	10	13	6	41	48	2 1/2:1
30	14	12	16	8	51	60	2 1/2:1
36	14	14	19	9	60	72	2 1/2:1
42	12	16	22	11	69	84	2 1/2:1
48	12	18	27	12	78	90	2 1/2:1
54	12	18	30	12	84	102	2:1
60	12	18	33	12	87	114	1 3/4:1
66	12	18	36	12	87	120	1 1/2:1
72	12	18	39	12	87	126	1 1/3:1



SECTION A-A



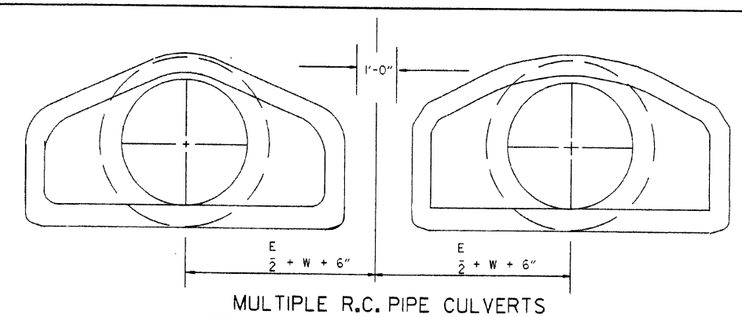
C.M. ARCH PIPE

C.M. ARCH PIPE

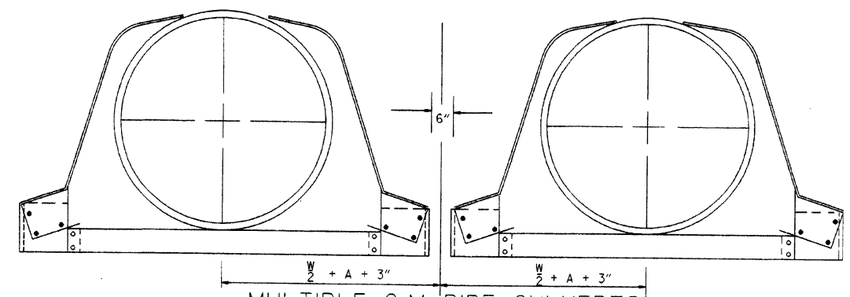
EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1 1/2" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2 1/2:1	16
18"	21	15	7	10	6	23	36	2 1/2:1	16
21"	24	18	8	12	6	28	42	2 1/2:1	16
24"	28	20	9	14	6	32	48	2 1/2:1	16
30"	35	24	10	16	6	39	60	2 1/2:1	14
36"	42	29	12	18	8	46	75	2 1/2:1	14
42"	49	33	13	21	9	53	85	2 1/2:1	12
48"	57	38	18	26	12	63	90	2 1/2:1	12
54"	64	43	18	30	12	70	102	2 1/4:1	12
60"	71	47	18	33	12	77	114	2 1/4:1	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

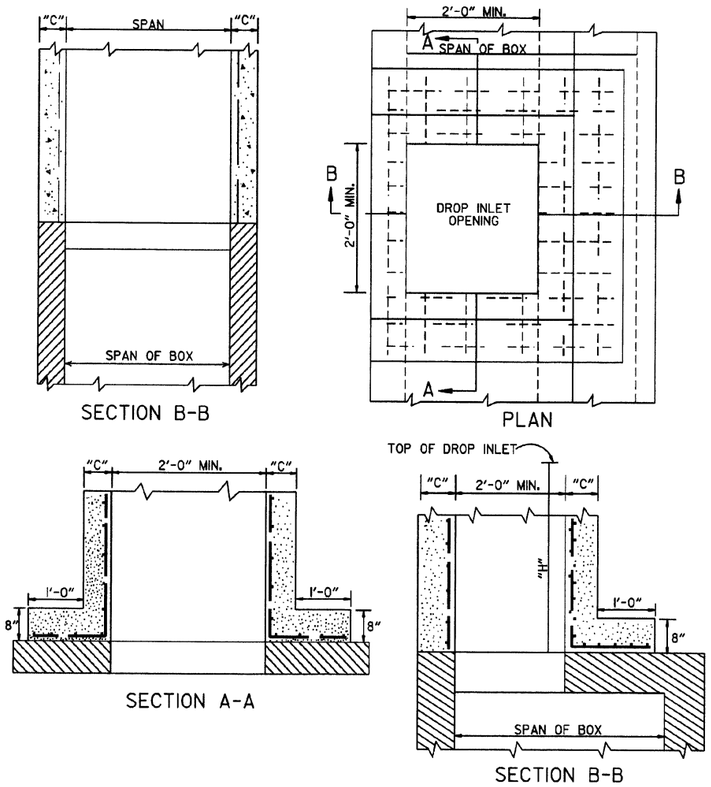
DATE	REVISION	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	10-18-96
5-15-80	REVISED DISTANCE BETWEEN MULTIPLE R.C.P. F.E.S.	664-5-15-80
7-14-78	C.M. ARCH SIZES TO CONFORM WITH AASHTO SIZES	752-7-14-78
8-22-75	ADDED MULTIPLE PIPE CULVERTS	517-8-22-75
12-5-74	REMOVED NOTE RE REINF. FOR R.C. F.E.S.	500-12-5-74
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 COMMISION

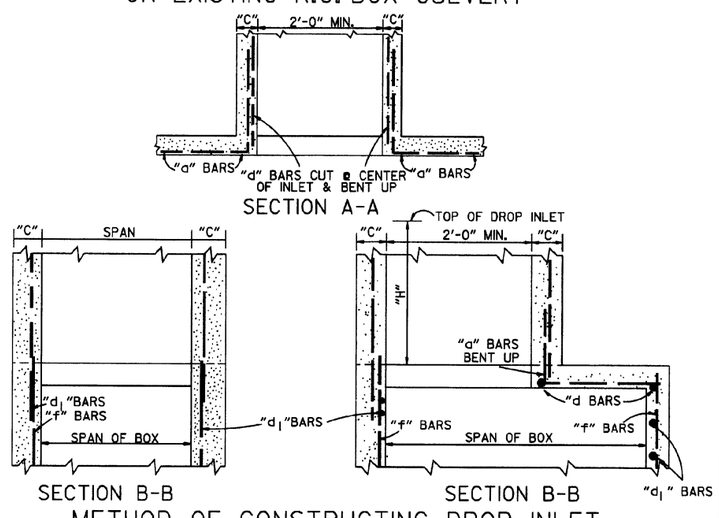
FLARED END SECTION

STANDARD DRAWING FES-2

stdfes2.dgn

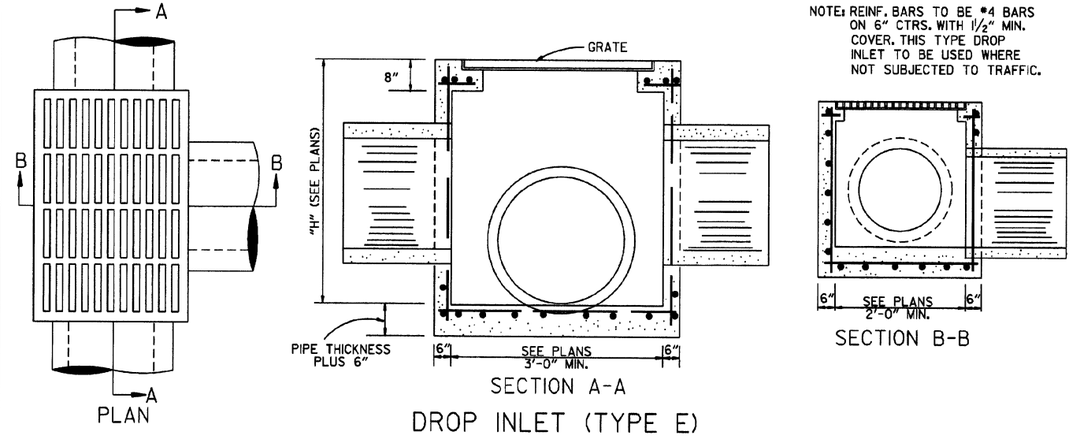


METHOD OF CONSTRUCTING DROP INLET
ON EXISTING R.C. BOX CULVERT

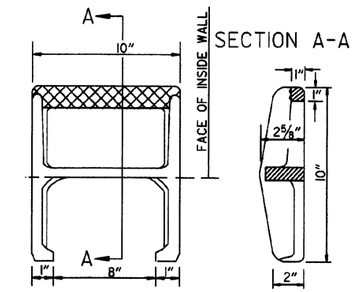


METHOD OF CONSTRUCTING DROP INLET
ON NEW R.C. BOX CULVERT

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



DROP INLET (TYPE E)

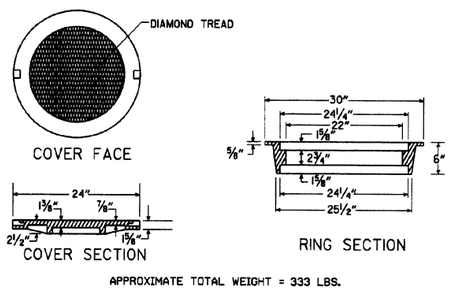


APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

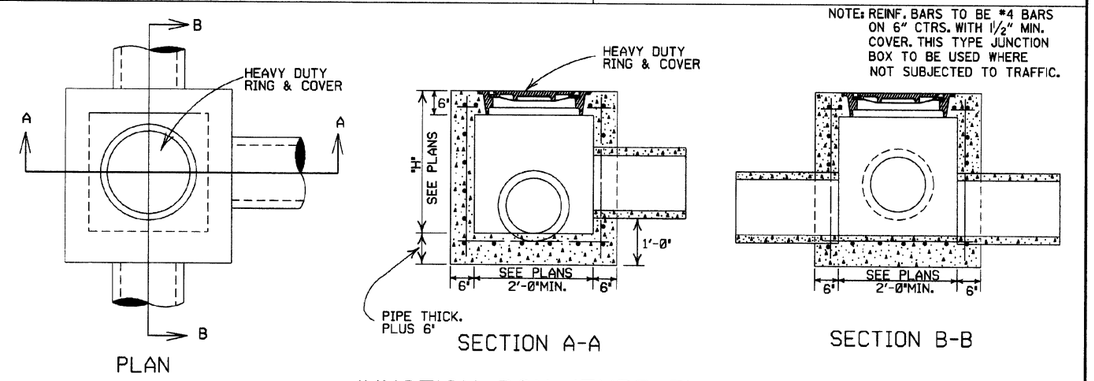
NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF
STEP FOR DROP INLET

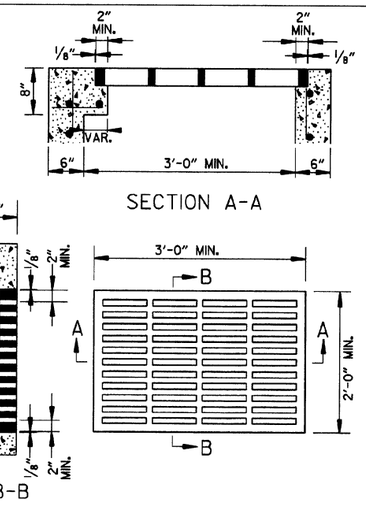


APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER

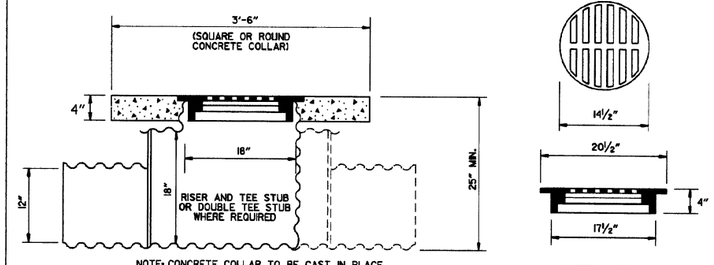


JUNCTION BOX (TYPE E)



APPROXIMATE MINIMUM WATERWAY OPENING = 260 SQ. IN.

GRATE FOR TYPE E DROP INLET



DETAIL OF YARD DRAIN

GENERAL NOTES:

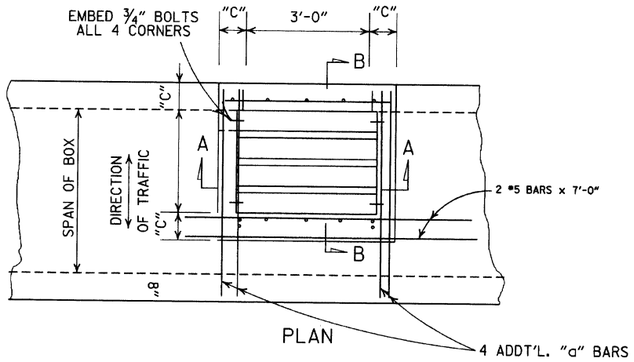
1. ALL EXPOSED CORNERS SHALL BE ¾" CHAMFERED.
2. STEPS SHALL BE INSTALLED ON 16" CENTERS ON ALL INLETS 4'-0" HIGH OR OVER, OR AS APPROVED BY THE ENGINEER.
3. EXPANSION JOINT MATERIAL SHALL BE ¾" PREFORMED FIBER.
4. GRATE OR GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS 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	

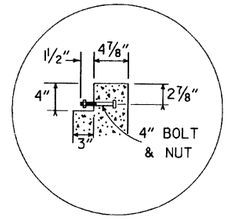
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS
& JUNCTION BOXES

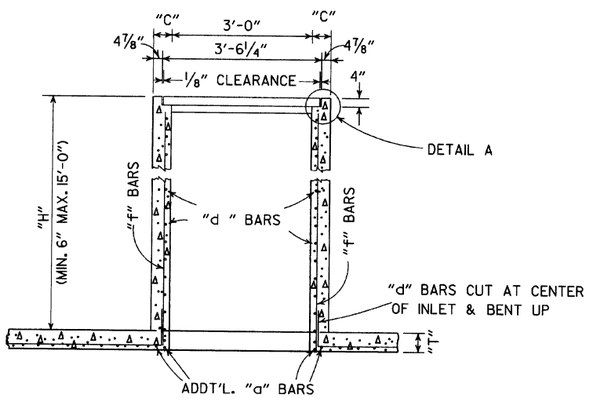
STANDARD DRAWING FPC-9



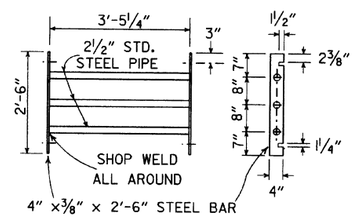
PLAN



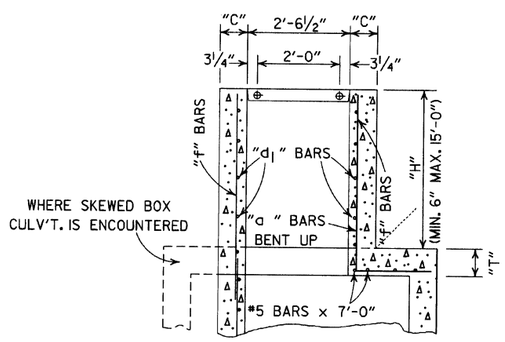
DETAIL A



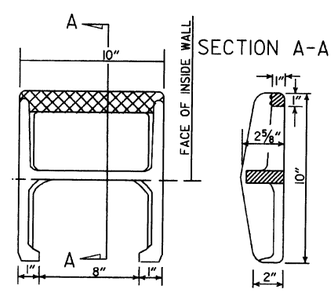
SECTION A-A



GRATE DETAIL



SECTION B-B



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

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

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

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

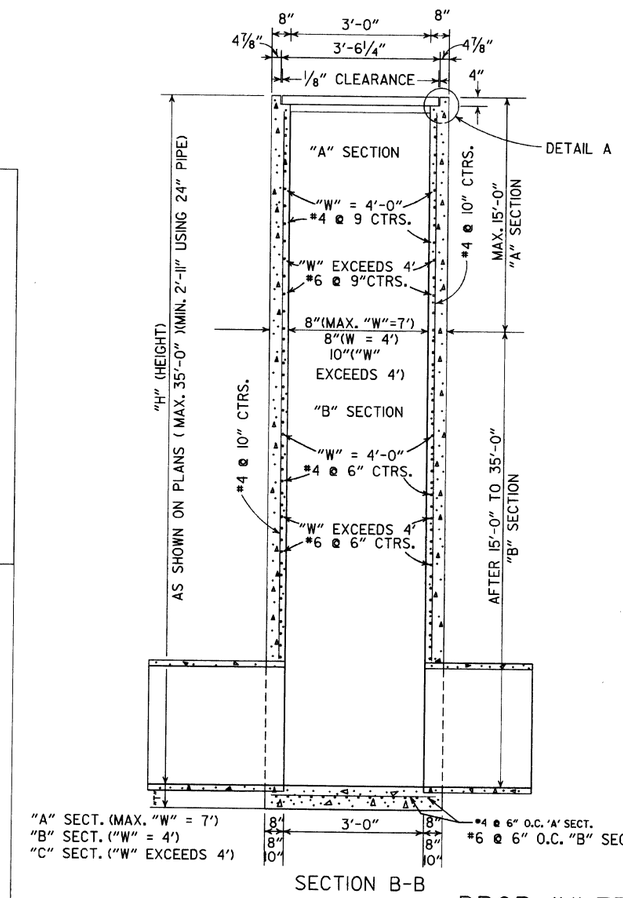
GENERAL NOTES:

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

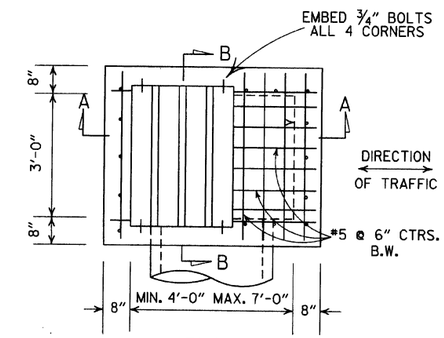
TABLE OF "W" DIMENSIONS

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

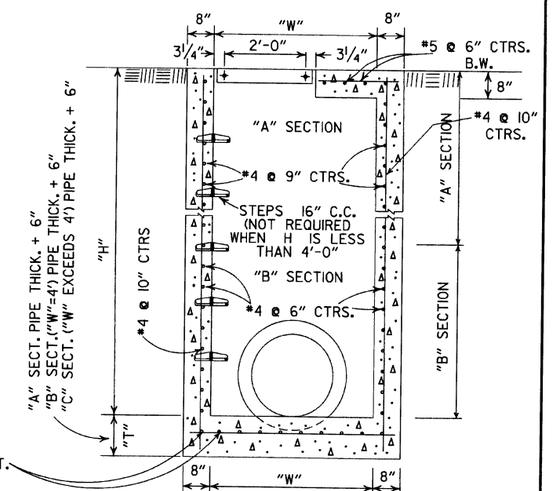
NOTE: DIMENSIONS SHOWN ABOVE ARE FOR PIPES INTERSECTING DROP INLET ON ONE SIDE ONLY. FOR SKEWED PIPES INTERSECTING BOTH SIDES OF DROP INLET, "W" WILL NEED TO BE INCREASED OR AXIS OF INTERSECTING PIPES WILL NEED TO BE SHIFTED.



SECTION B-B



PLAN



SECTION A-A

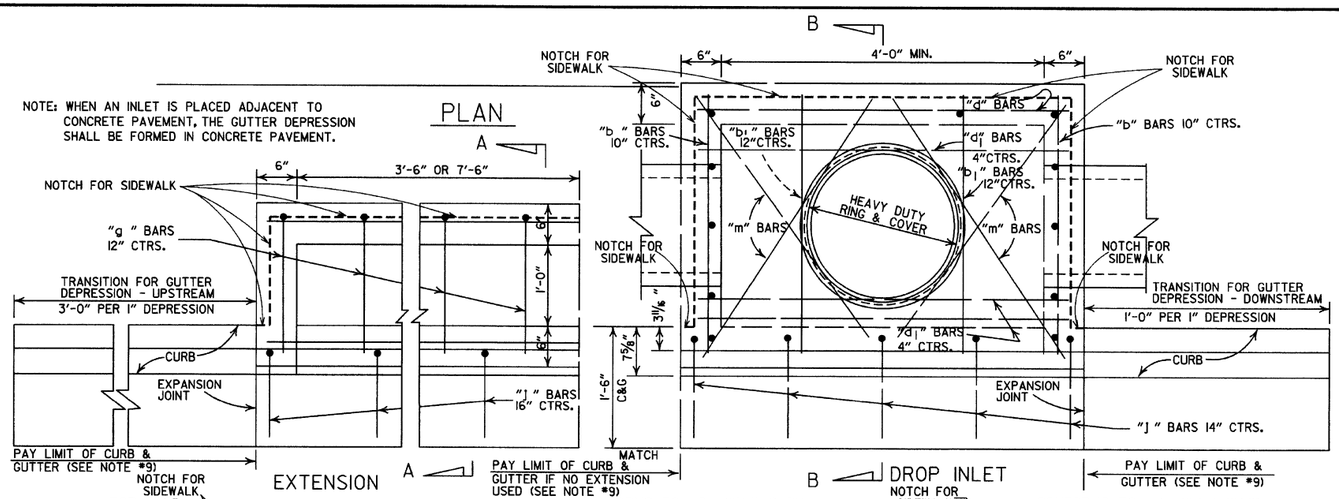
DROP INLET(TYPE RM)

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

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS

STANDARD DRAWING FPC-9D



EXTENSION

DROP INLET

4'-0" LENGTH DROP INLET

PIPE SIZE	MIN. WIDTH	HEIGHT 5'-0" CLASS A CONC. CU. YDS.	HEIGHT 5'-0" REINF. STEEL POUNDS	PLUS OR MINUS PER LIN. FT. OF HEIGHT CLASS A CONC. CU. YDS.	PLUS OR MINUS PER LIN. FT. OF HEIGHT REINF. STEEL 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

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

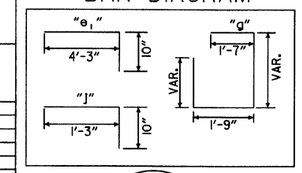
DROP INLET EXTENSION

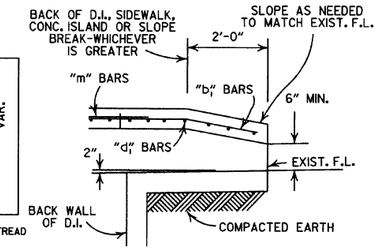
4'-0" CLASS A CONC. CU. YDS.	4'-0" REINF. STEEL POUNDS	8'-0" CLASS A CONC. CU. YDS.	8'-0" REINF. STEEL POUNDS
0.58	38	0.87	72
DEDUCT FROM QUANTITY COMPUTED FOR EACH EXTENSION ADDED.			
0.04	3		

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

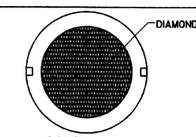
BAR DIAGRAM

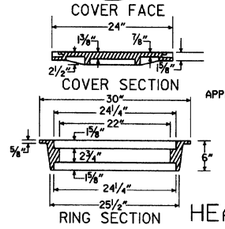




BACK OPENING

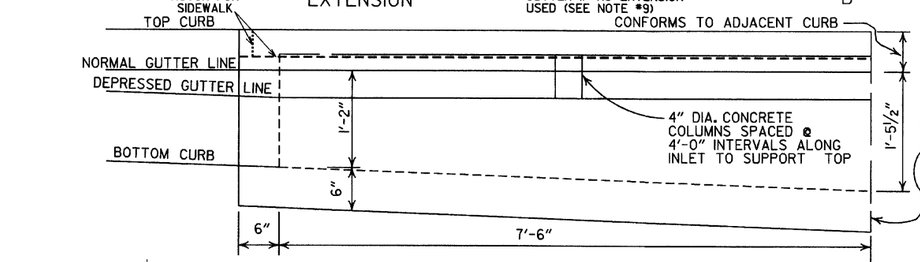
WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE C).

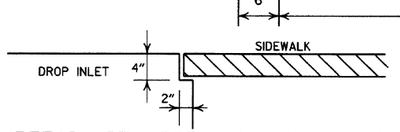




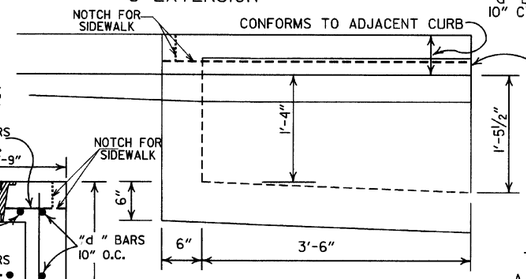
APPROXIMATE TOTAL WEIGHT = 333 LBS.

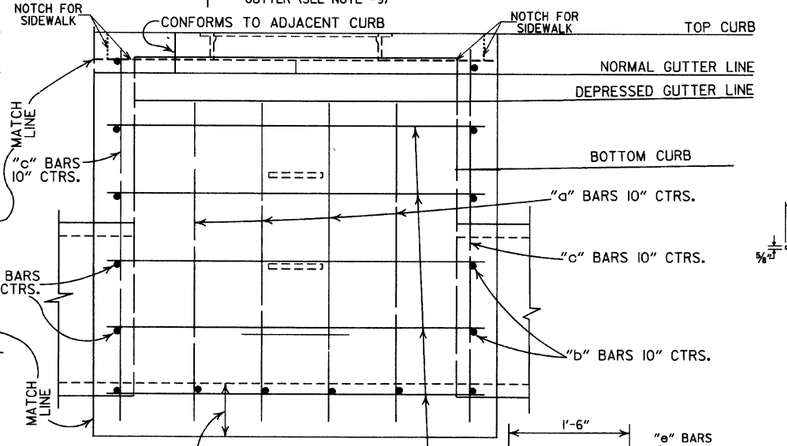
HEAVY DUTY RING & COVER



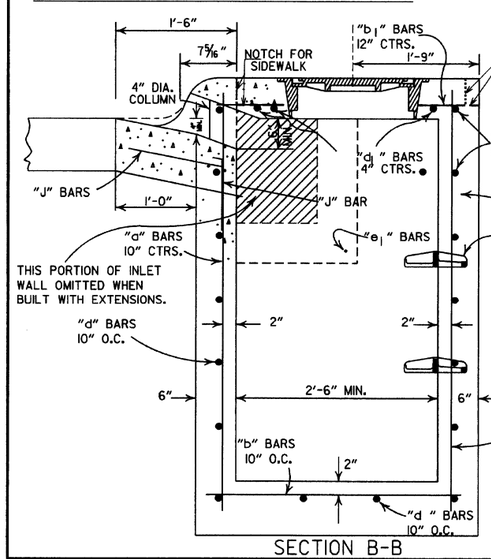


DETAIL OF NOTCH FOR SIDEWALKS





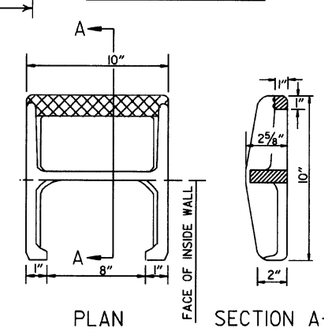
ELEVATION



SECTION B-B

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".

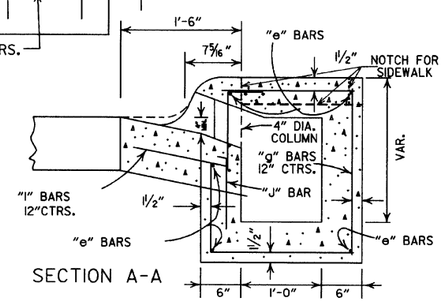


PLAN SECTION A-A

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.



SECTION A-A

GENERAL NOTES:

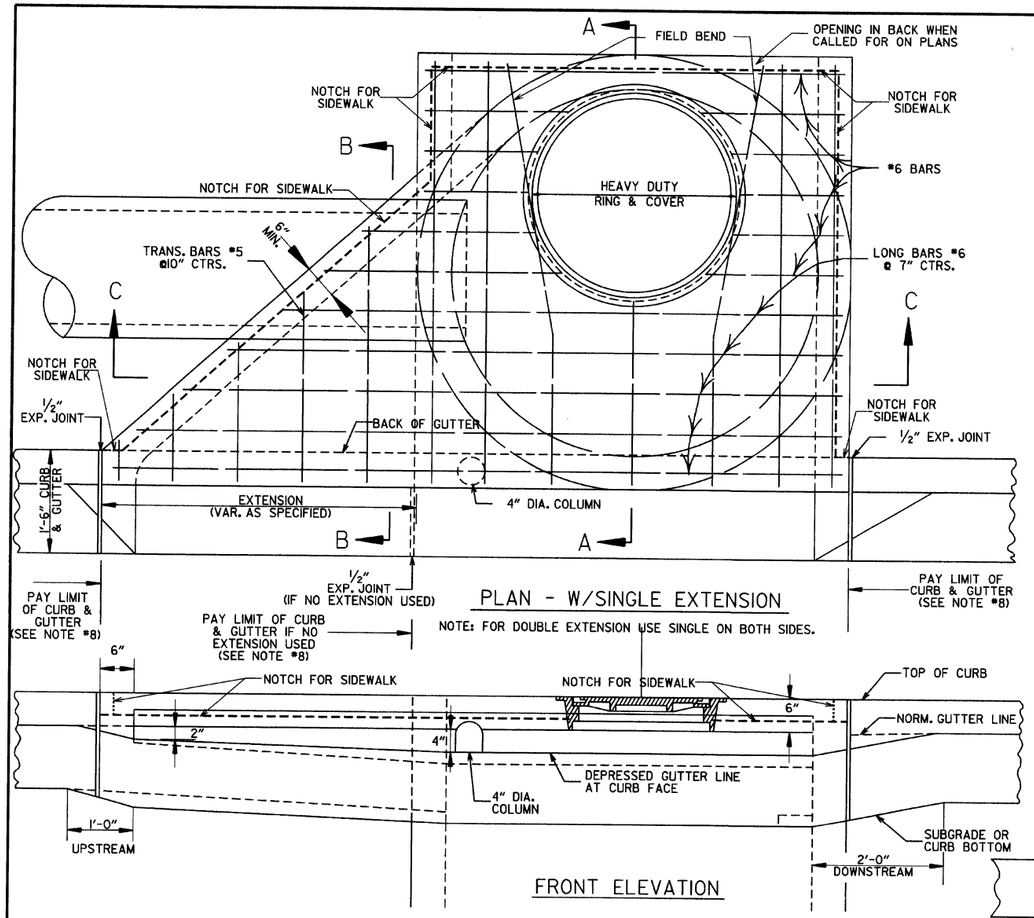
1. ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OF AS APPROVED BY THE ENGINEER.
3. ALL REINF. BARS SHALL BE #4 AND HAVE 1 1/2" COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. THIS DROP INLET 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 (F.P.C.-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"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.

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)

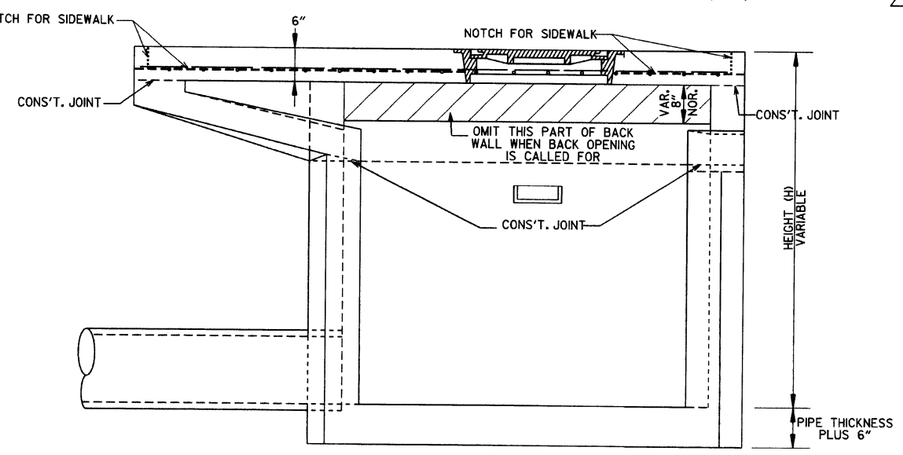
STANDARD DRAWING FPC-9E



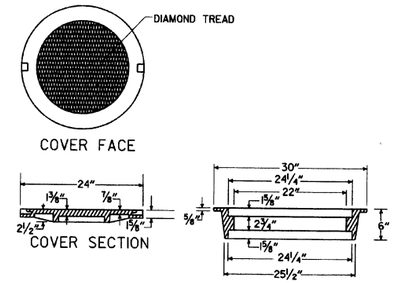
PLAN - W/SINGLE EXTENSION

NOTE: FOR DOUBLE SEXTENSION USE SINGLE ON BOTH SIDES.

FRONT ELEVATION



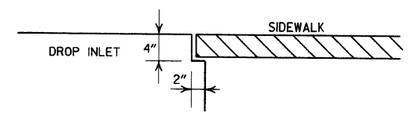
SECTION C-C



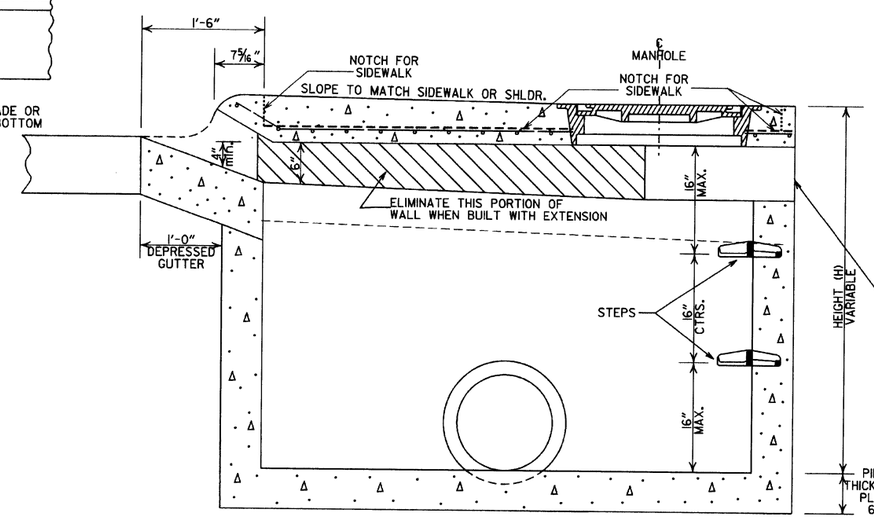
APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER

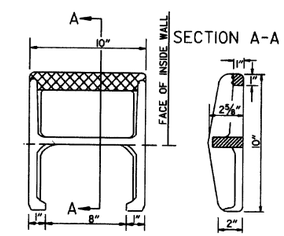
1. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON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



DETAIL OF NOTCH FOR SIDEWALKS



SECTION A-A

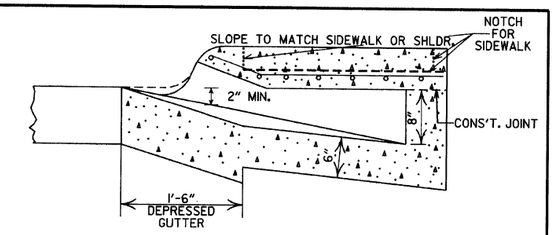


APPROX. WEIGHT = 11 LBS. (CAST IRON)

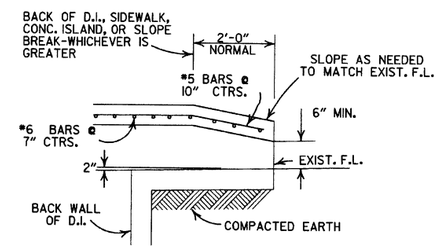
PLAN

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.

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

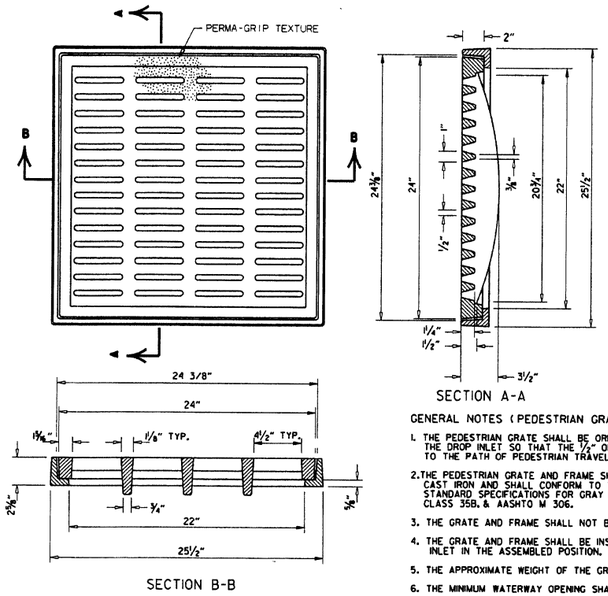
DIA. OF D.I.	DIA. OF OUTLET PIPE	MINIMUM WALL THICKNESS CAST IN PLACE	MINIMUM WALL THICKNESS PRECAST
4' I.D.	12" THRU 27"	6"	5"
5' I.D.	30" THRU 42"	8"	6"
6' I.D.	48" THRU 54"	8"	7"

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	
7-26-95	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
8-15-91	REVISED NOTES 11,12 & ADDED BK.OPEN DETAIL	8-16-91
11-30-89	ADDED NOTE NO. 12	11-30-89
3-21-89	ADDED NOTE & MINUMUM WALL THICKNESS	513-4-28-89
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	4-55-12-87

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLET (TYPE MO)

STANDARD DRAWING FPC-9M



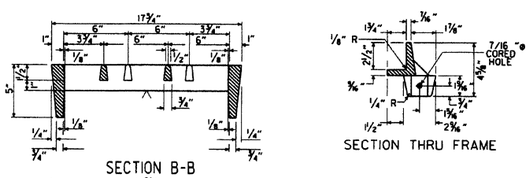
SECTION B-B

SECTION A-A

DETAILS OF PEDESTRIAN GRATE AND FRAME

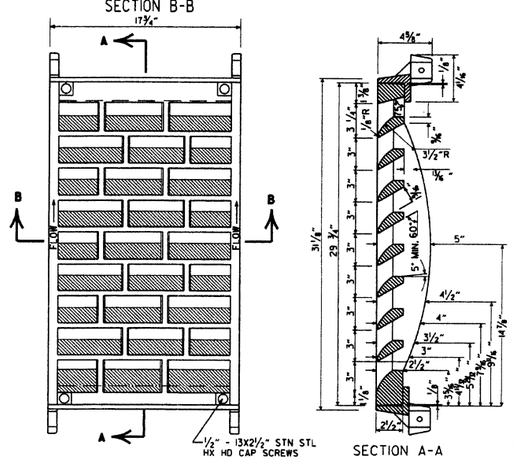
GENERAL NOTES (PEDESTRIAN GRATE & FRAME)

1. THE PEDESTRIAN GRATE SHALL BE ORIENTED IN THE TOP OF THE DROP INLET SO THAT THE 1/2" OPENINGS ARE PERPENDICULAR TO THE PATH OF PEDESTRIAN TRAVEL.
2. THE PEDESTRIAN 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, & AASHTO M 306.
3. THE GRATE AND FRAME SHALL NOT BE PAINTED.
4. THE GRATE AND FRAME SHALL BE INSTALLED IN THE DROP INLET IN THE ASSEMBLED POSITION.
5. THE APPROXIMATE WEIGHT OF THE GRATE AND FRAME SHALL BE 211 LBS.
6. THE MINIMUM WATERWAY OPENING SHALL BE 122 SQ. IN.



SECTION B-B

SECTION THRU FRAME

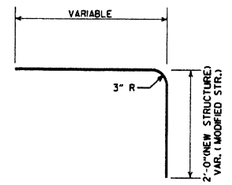


SECTION A-A

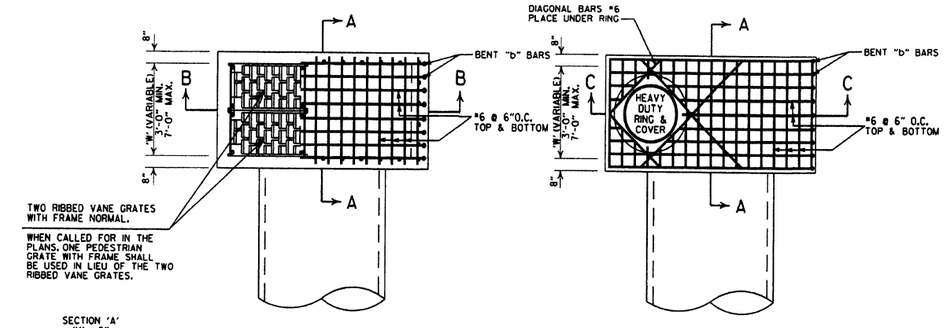
DETAILS OF RIBBED VANE GRATE AND FRAME

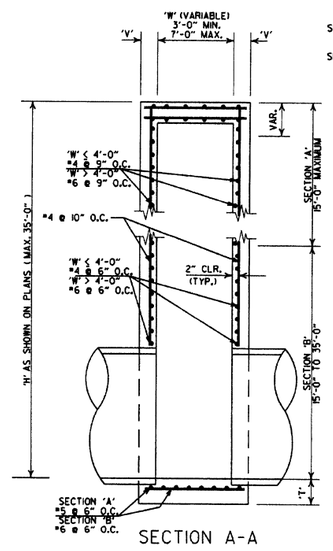
GENERAL NOTES (RIBBED VANE GRATE & FRAME)

1. RIBBED VANE 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, & AASHTO M 306.
2. GRATE AND FRAME SHALL NOT BE PAINTED.
3. GRATE AND FRAME SHALL BE INSTALLED IN DROP INLET IN ASSEMBLED POSITION.
4. APPROXIMATE WEIGHT OF GRATE SHALL BE 170 LBS.



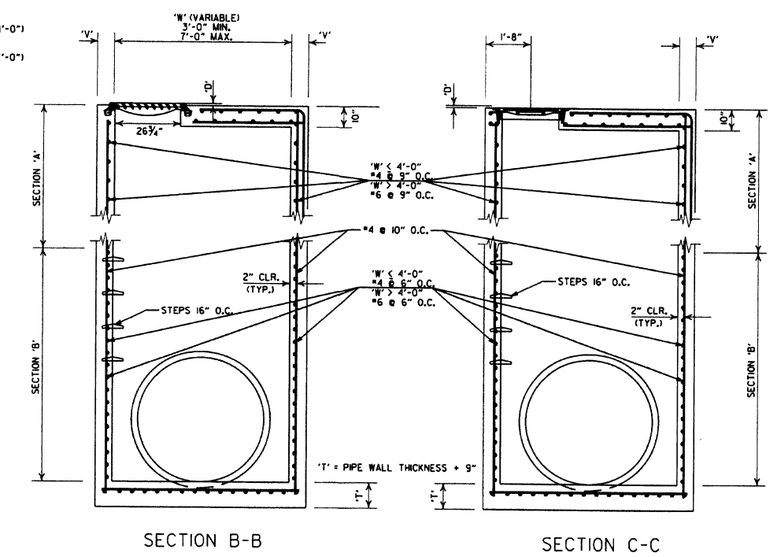
DETAIL OF BENT "b" BAR





SECTION A-A

DETAILS OF DROP INLET (TYPE ST)



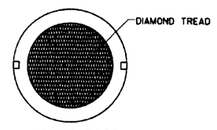
SECTION B-B

SECTION C-C

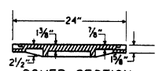
DETAILS OF JUNCTION BOX (TYPE ST)

GENERAL NOTES (TYPE ST DROP INLET & JUNCTION BOX)

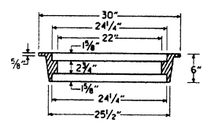
1. THE 'D' DIMENSION SHALL MATCH THE FINAL LIFT OF ACHM SURFACE COURSE SHOWN IN THE PLANS WHEN ASPHALT PAVING SURROUNDS THE GRATE OR RING COVER, AND SHALL BE 0" AT OTHER INSTALLATIONS.
2. THE STEPS SHALL BE OMITTED WHERE 'H' IS LESS THAN 4'-0".
3. ALL EXPOSED CORNERS ARE TO HAVE A 3/4" CHAMFER.



COVER FACE



COVER SECTION



RING SECTION

HEAVY DUTY RING & COVER

APPROXIMATE TOTAL WEIGHT = 333 LBS.

GENERAL NOTES (HEAVY DUTY RING & COVER):

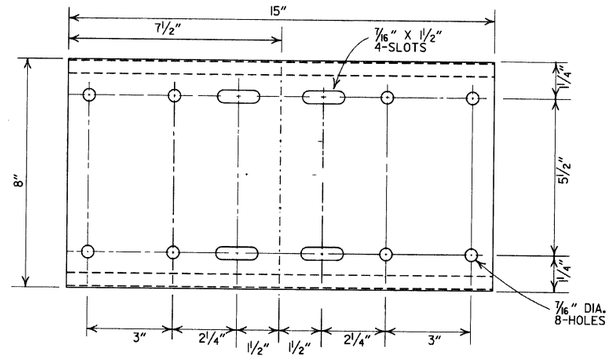
1. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105, CLASS 35B, & AASHTO M 306.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
4. 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 REVISED	DATE FILMED	DESCRIPTION
7-26-12		REMOVED NOTE 4, REVISED 'T', REVISED BOTTOM SLAB REBAR FOR SECTION 'A', SHOWED REBAR CLEARANCE IN SECTIONS
11-16-01		ADDED NOTE 4
1-12-00		REVISED HEAVY DUTY RING & COVER
5-13-99		ADDED PEDESTRIAN FRAME & GRATE
7-02-98		REMOVED NOTE 5, REV. DIMENSIONS, ADDED HEAVY DUTY RING & COVER ADDED AASHTO REF. REVISED GRATE
10-18-96		REVISED ASTM REF. TO AASHTO
10-1-92		REVISED & REISSUED
8-15-91	8-15-91	REVISED & REISSUED

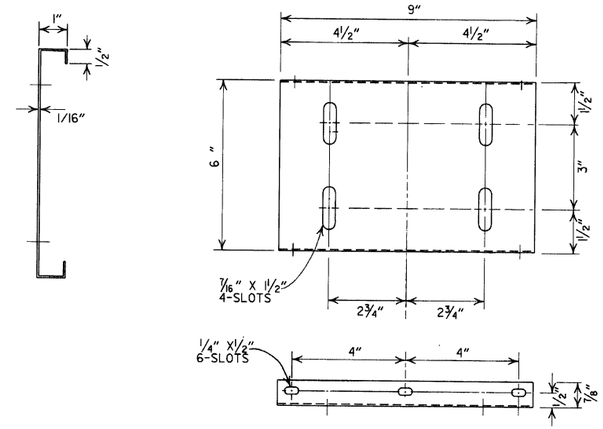
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLET & JUNCTION BOX (TYPE ST)

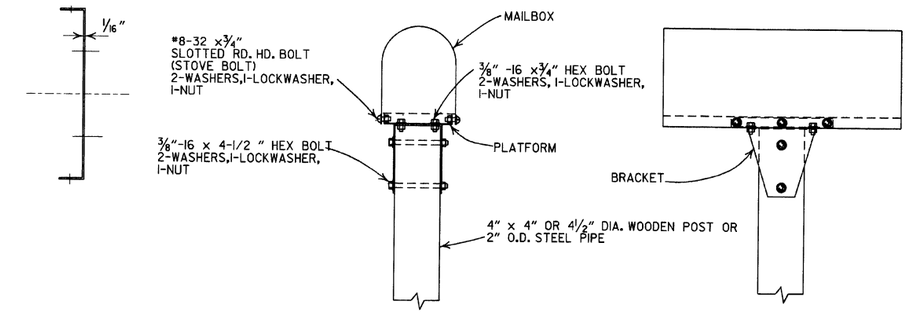
STANDARD DRAWING FPC-9S



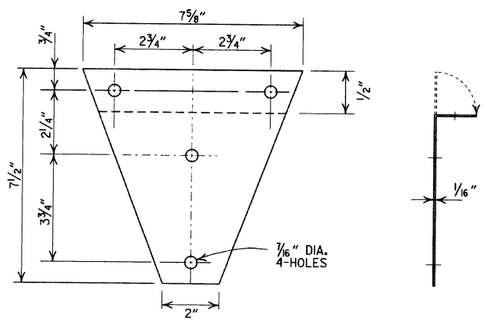
SHELF



PLATFORM



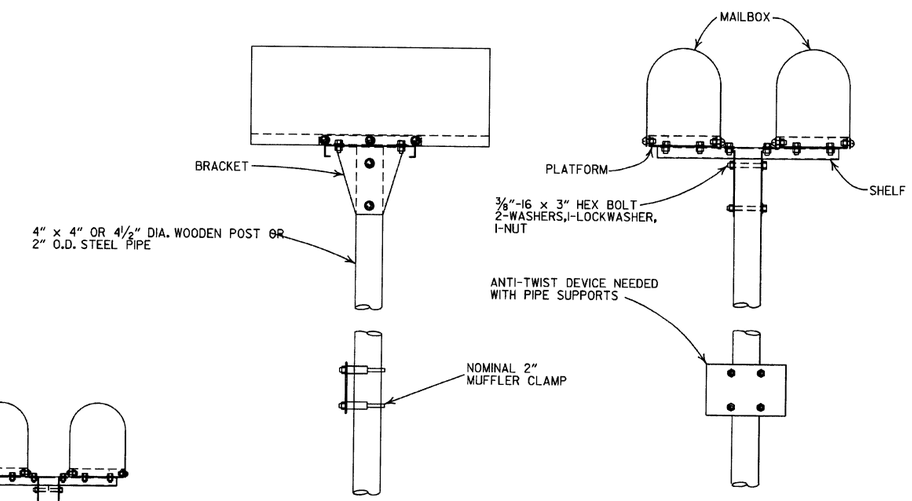
SINGLE INSTALLATION



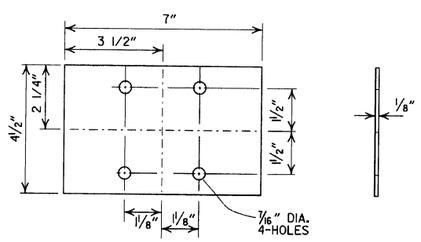
BRACKET

GENERAL NOTES

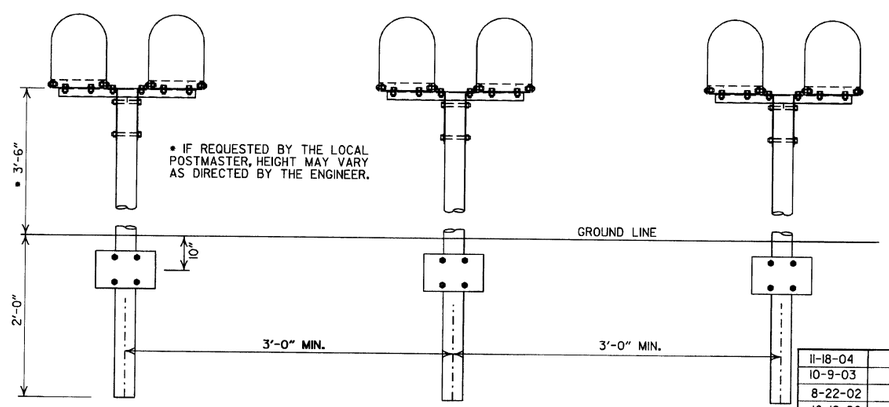
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL. HOWEVER TREATED WOOD MAY BE USED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM SHALL BE A MINIMUM OF 3/4" THICK AND SHALL BE ASSEMBLED WITH BOLTS OF THE APPROPRIATE LENGTH WITH SIX 8 X 3/4" 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 AHTD QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.



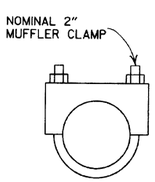
DOUBLE INSTALLATION



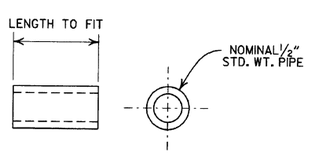
ANTI-TWIST PLATE



SPACING FOR MULTIPLE POST INSTALLATION



CLAMP



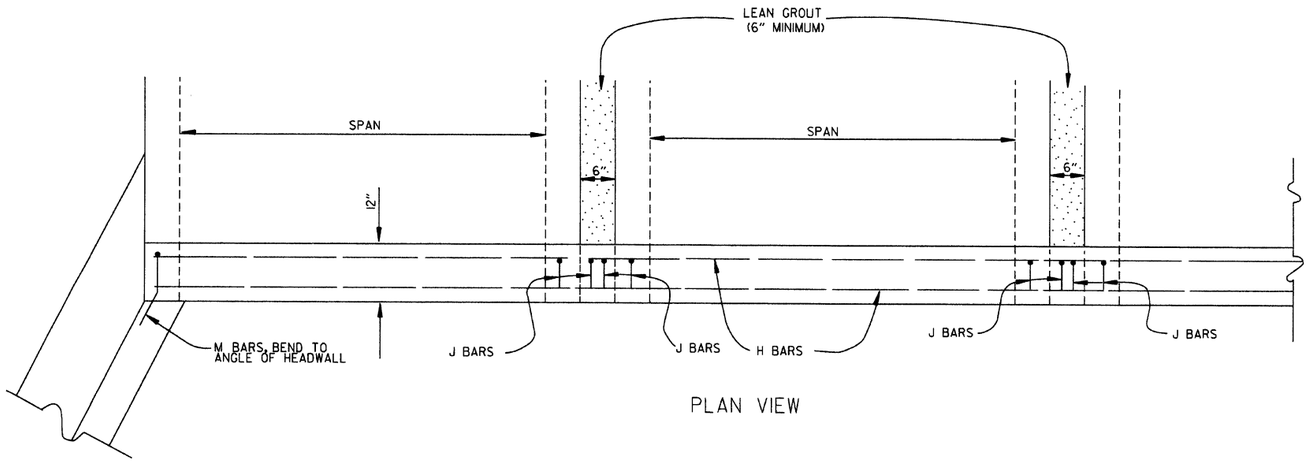
SPACER

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	120-7-15-88	ISSUED

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

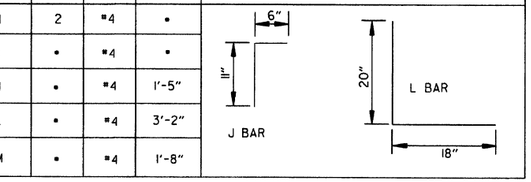
STANDARD DRAWING MB-1



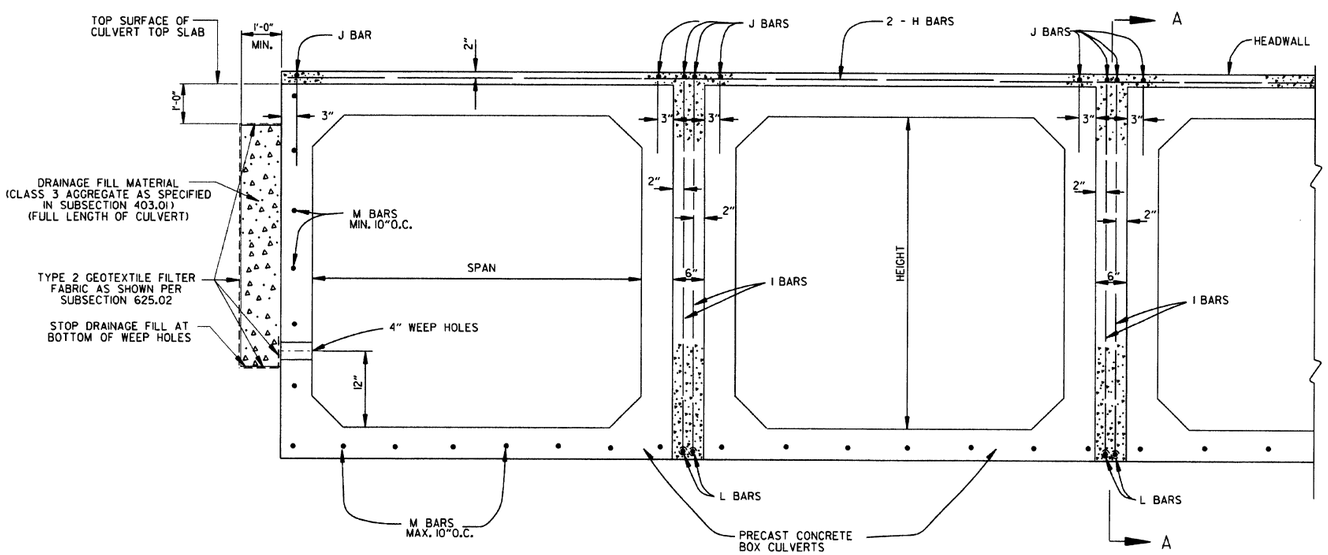
PLAN VIEW

BAR LIST

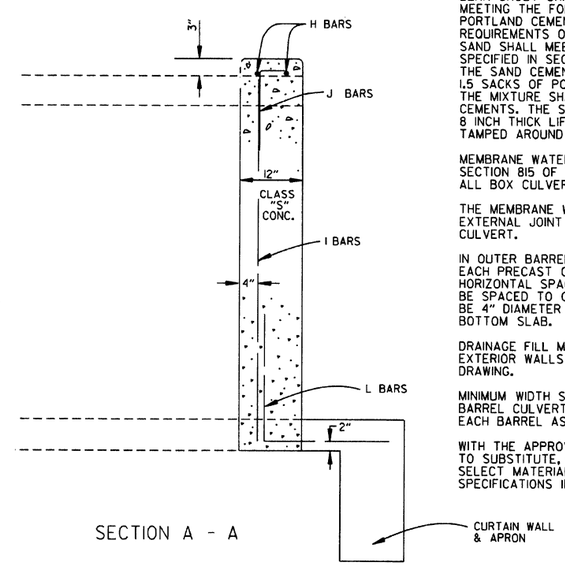
BAR	NO.	SIZE	LENGTH	BAR BENDING DIAGRAM
H	2	#4	•	
I	•	#4	•	
J	•	#4	1'-5"	
L	•	#4	3'-2"	
M	•	#4	1'-8"	



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



END VIEW



SECTION A - A

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 3/4" 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.

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	AHTD NOMINAL	AASHTO M 206	AHTD 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	31 5/16	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)(i).

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

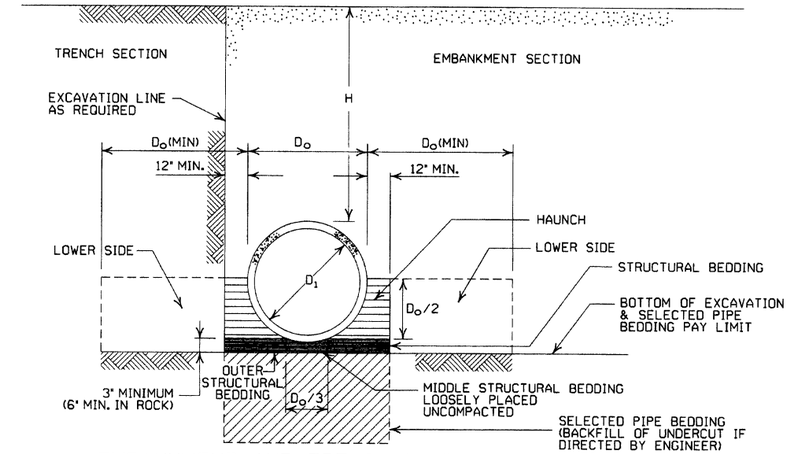
- LEGEND -

D_1 = NORMAL INSIDE DIAMETER OF PIPE
D_o = OUTSIDE DIAMETER OF PIPE
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
= UNDISTURBED SOIL

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR HAUNCH AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 5 OR CLASS 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL*
TYPE 3**	AASHTO CLASSIFICATION A-1 THRU A-6 SOIL OR TYPE 1 OR 2 INSTALLATION MATERIAL

* SM-3 WILL NOT BE ALLOWED.

** MATERIALS SHALL NOT INCLUDE ORGANIC MATERIALS OR STONES LARGER THAN 3 INCHES.



EMBANKMENT AND TRENCH INSTALLATIONS

1. MATERIAL IN THE HAUNCH AND OUTER STRUCTURAL BEDDING SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. FOR TRENCHES WITH WALLS OF NATURAL SOIL, THE DENSITY OF THE SOIL IN THE LOWER SIDE ZONE SHALL BE AS FIRM AS THE 95% DENSITY REQUIRED FOR THE HAUNCH. IF THE EXISTING SOIL DOES NOT MEET THIS CRITERIA, IT SHALL BE REMOVED AND RECOMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OF MATERIAL USED.
3. FOR EMBANKMENTS, THE MATERIAL IN THE LOWER SIDE ZONE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

MINIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

	CLASS OF PIPE			
	CLASS III		CLASS IV	CLASS V
INSTALLATION TYPE	TYPE 1 OR 2	TYPE 3	ALL	ALL
PIPE ID (IN.)	FEET			
12-15	2	2.5	2	1
18-24	2.5	3	2	1
27-33	3	4	2	1
36-42	3.5	5	2	1
48	4.5	5.5	2	1
54-60	5	7	2	1
66-78	6	8	2	1
84-108	7.5	8	2	1

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

MAXIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE		
	CLASS III	CLASS IV	CLASS V
	FEET		
TYPE 1	21	32	50
TYPE 2	16	25	39
TYPE 3	12	20	30

NOTE: IF FILL HEIGHT EXCEEDS 50 FEET, A SPECIAL DESIGN CONCRETE PIPE WILL BE REQUIRED USING TYPE 1 INSTALLATION.

MINIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2 OR TYPE 3	2.5	1.5

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

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

MAXIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2	13	21
TYPE 3	10	16

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT 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
		2⅔ 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: MIN. THICKNESS REQUIRED INCHES	STEEL: ① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	STEEL: MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	ALUMINUM: MIN. THICKNESS REQUIRED INCHES	ALUMINUM: ① MIN. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1	ALUMINUM: MAX. HEIGHT OF FILL, "H" (FT.) INSTALLATION TYPE 1
			2⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM			2⅔ 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			
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

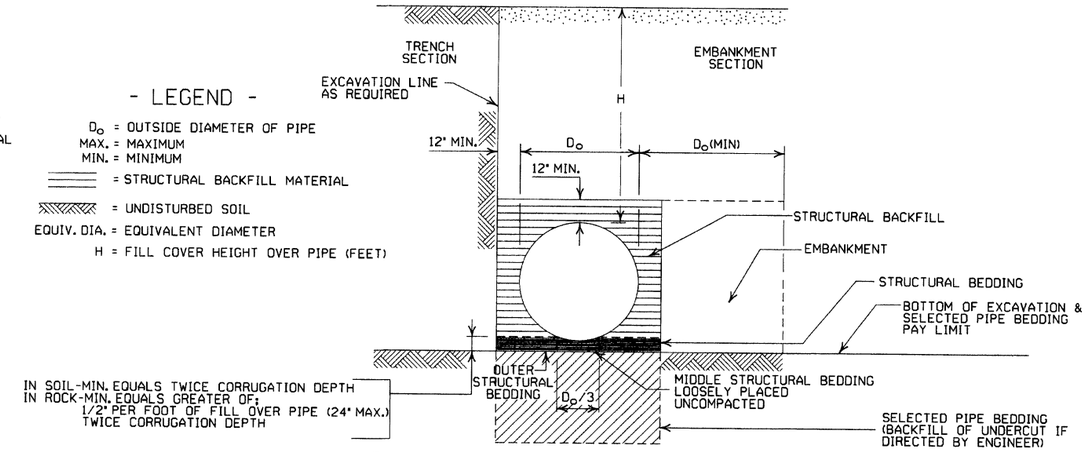
METAL THICKNESS IN INCHES			GAUGE NUMBER
STEEL			
ZINC COATED	UNCOATED	ALUMINUM	
0.064	0.0598	0.060	16
0.079	0.0747	0.075	14
0.109	0.1046	0.105	12
0.138	0.1345	0.135	10
0.168	0.1644	0.164	8

① FOR MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

② WHERE THE STANDARD 2 2/3" x ½" CORRUGATION AND GAUGE IS SPECIFIED FOR A GIVEN DIAMETER, A PIPE OF THE SAME DIAMETER WITH A 3" x 1" OR 5" x 1" CORRUGATION MAY BE SUBSTITUTED, PROVIDING IT IS GAUGED FOR A FILL HEIGHT CONDITION EQUAL TO OR GREATER THAN THE MAXIMUM FILL HEIGHT CONDITION FOR THE SPECIFIED GAUGE AND CORRUGATION.

- LEGEND -

D_o = OUTSIDE DIAMETER OF PIPE
MAX. = MAXIMUM
MIN. = MINIMUM
= STRUCTURAL BACKFILL MATERIAL
= UNDISTURBED SOIL
EQUIV. DIA. = EQUIVALENT DIAMETER
H = FILL COVER HEIGHT OVER PIPE (FEET)



EMBANKMENT AND TRENCH INSTALLATIONS

1. STRUCTURAL BACKFILL, EMBANKMENT, AND OUTER STRUCTURAL BEDDING MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE (ROUND).
3. INSTALALTION TYPE 1 SHALL BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 2⅔" X ½" CORRUGATION.
4. INSTALLATION TYPE 1 OR 2 MAY BE USED FOR CORRUGATED STEEL OR ALUMINUM PIPE ARCHES WITH 3" X 1" OR 5" X 1" CORRUGATION.

GENERAL NOTES

1. METAL PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT 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 FROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
9. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REVISED FOR LRFD DESIGN SPECS	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

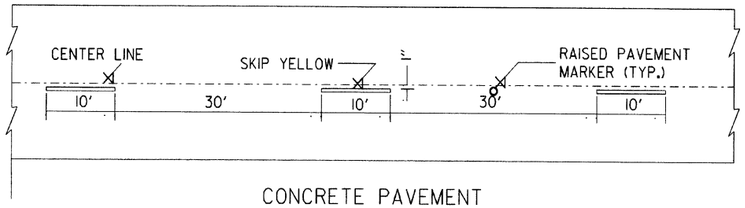
ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

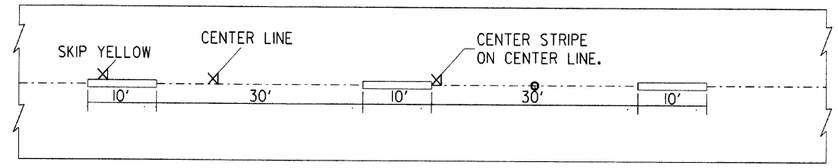
STANDARD DRAWING PCM-1

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.

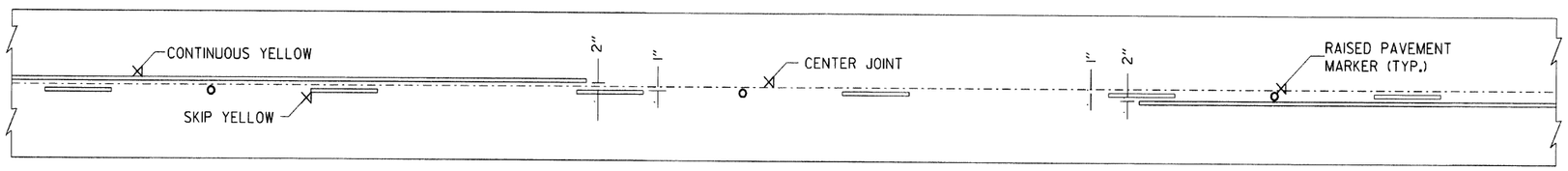


CONCRETE PAVEMENT

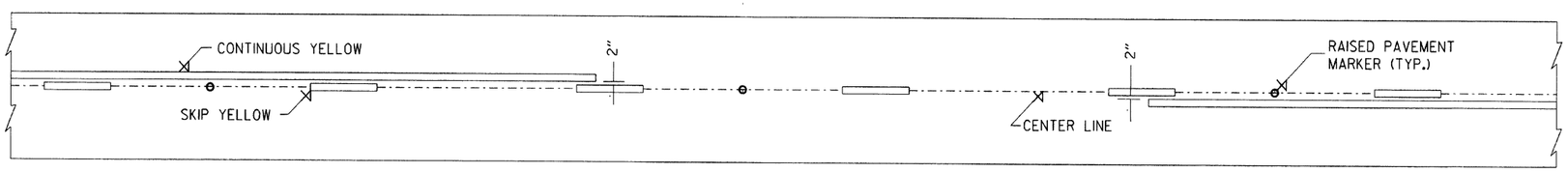


ASPHALT PAVEMENT

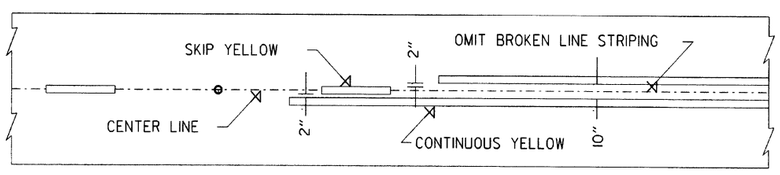
BROKEN LINE STRIPING



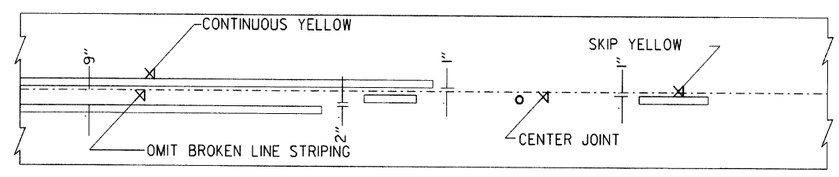
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

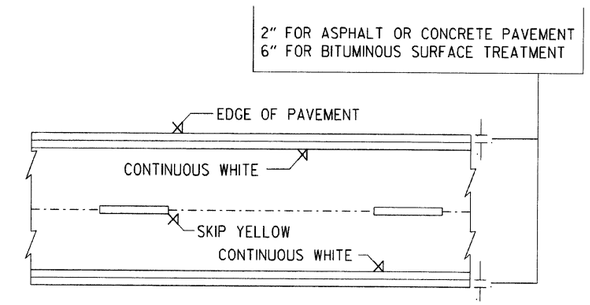


ASPHALT PAVEMENT

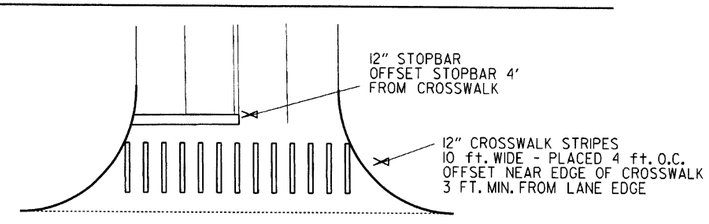


CONCRETE PAVEMENT

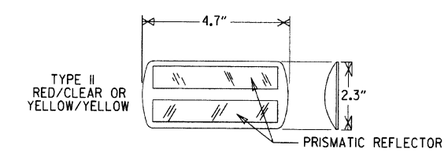
STRIPING AT ADJACENT NO PASSING LANES



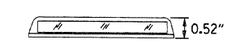
PAVEMENT EDGE LINE MARKING



CROSSWALK AND STOPBAR DETAILS



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



DETAIL OF STANDARD RAISED PAVEMENT MARKERS

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 AHTD QUALIFIED PRODUCTS LIST.

DATE	REVISION	FILMED
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

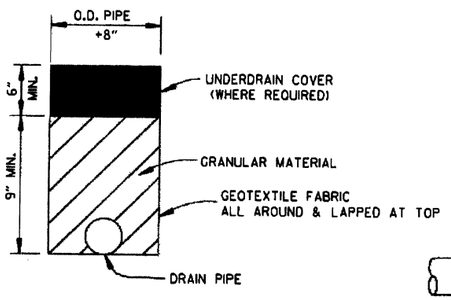
PAVEMENT MARKING DETAILS

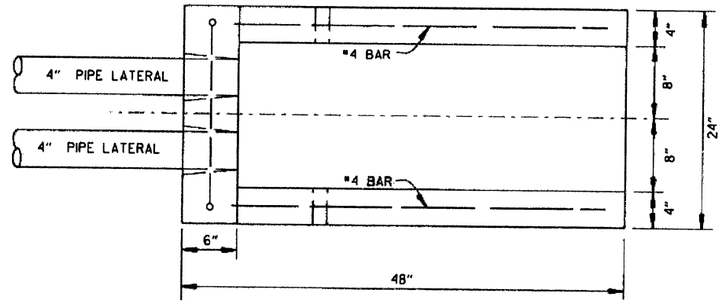
STANDARD DRAWING PM-1

NOTE:

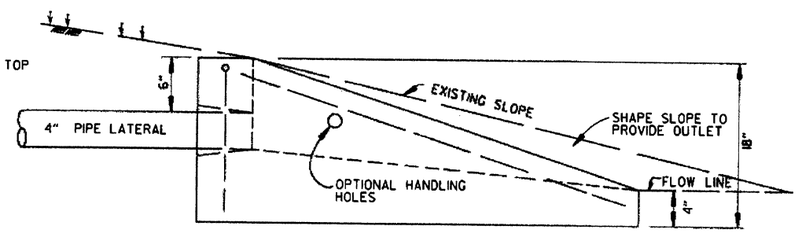
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE THOROUGHLY COMPACTED EARTH AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

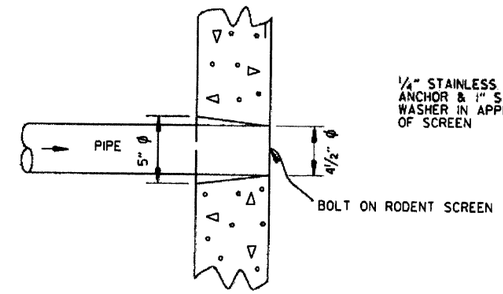




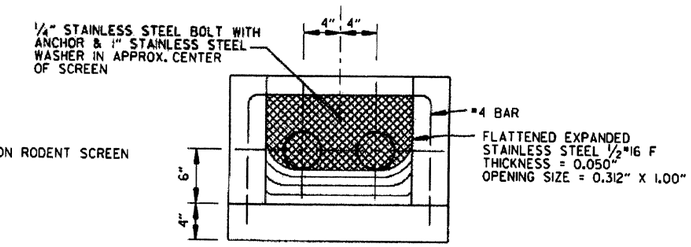
PLAN VIEW



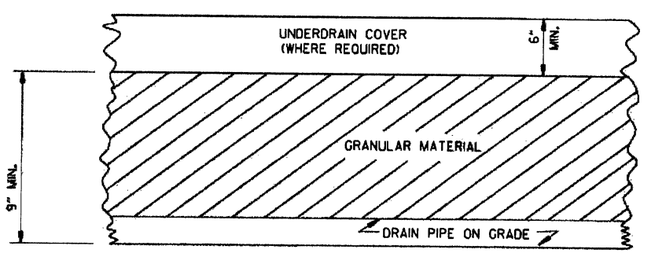
SIDE VIEW



DETAIL OF HOLE FOR 4" PIPE

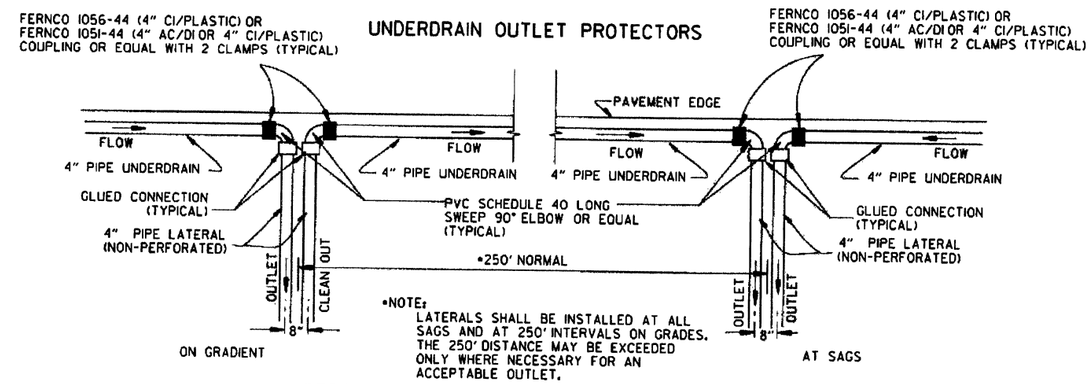


FRONT VIEW
(DETAIL OF RODENT SCREEN)



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 POLYEOTHYLENE 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

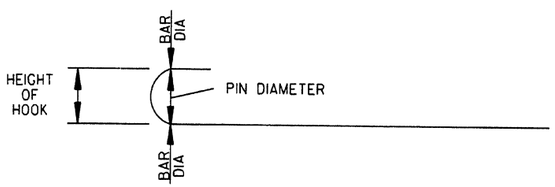
DETAILS OF PIPE UNDERDRAIN

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", "bl", "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", "bl", "b2" OR "b3" BENT BARS THEY REPLACE.



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

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

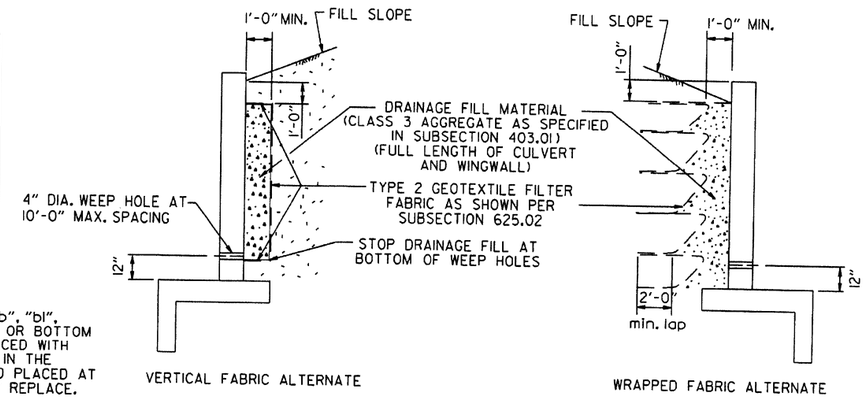
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

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

REPLACEMENT BAR LENGTHS TABLE

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

L = "OW" - 3 INCHES



WINGWALL & CULVERT DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

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

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

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

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

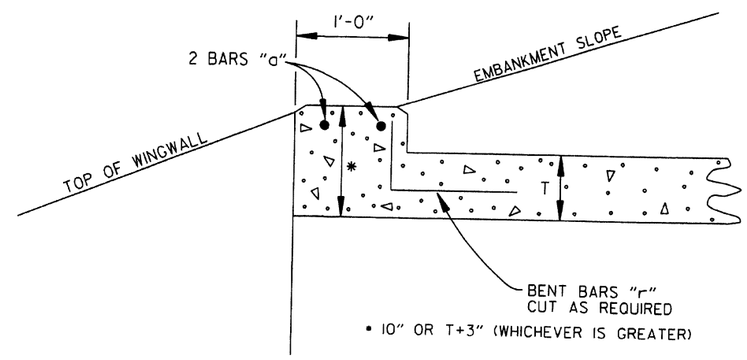
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

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

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

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

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



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

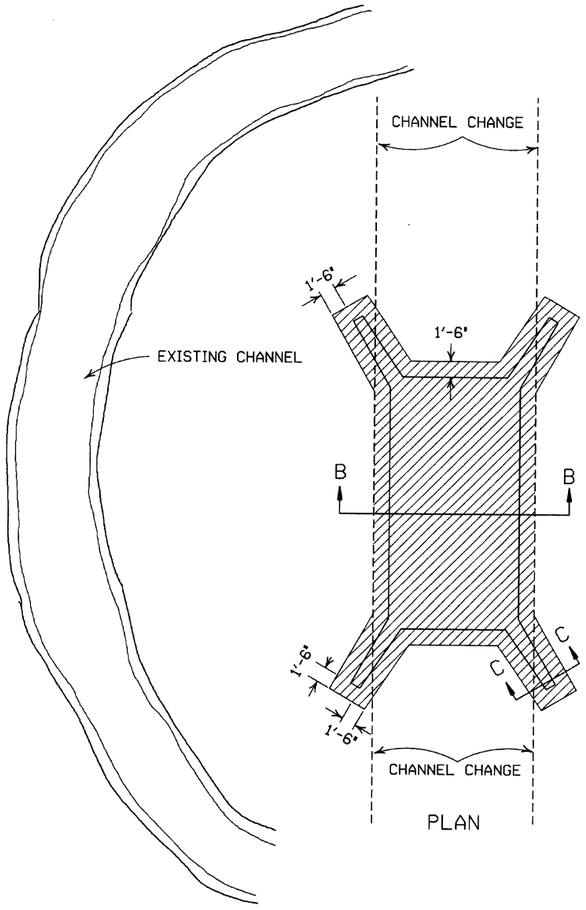
R.C. BOX CULVERT HEADWALL MODIFICATIONS

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

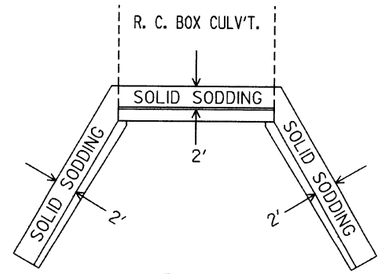
ARKANSAS STATE HIGHWAY COMMISSION

REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



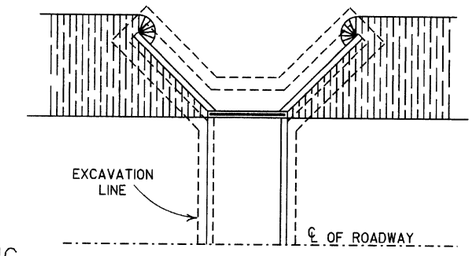
PLAN



PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

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



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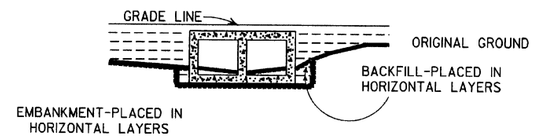
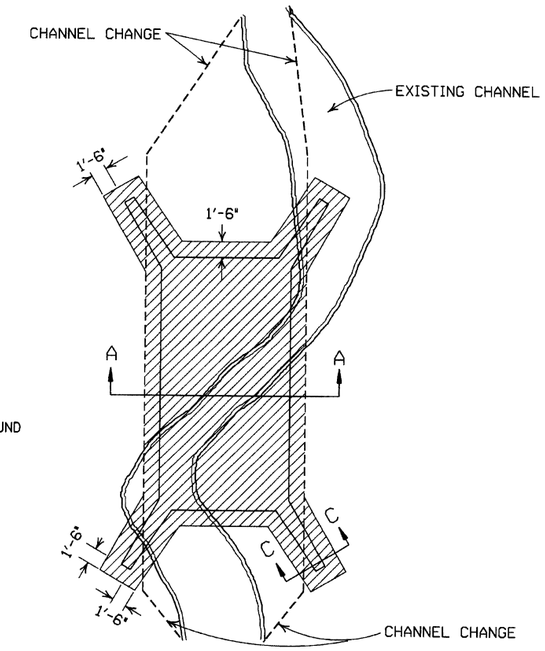
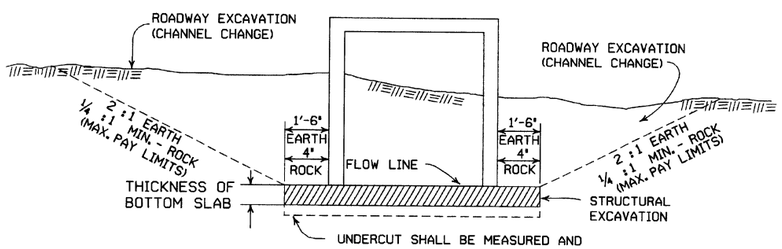


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT



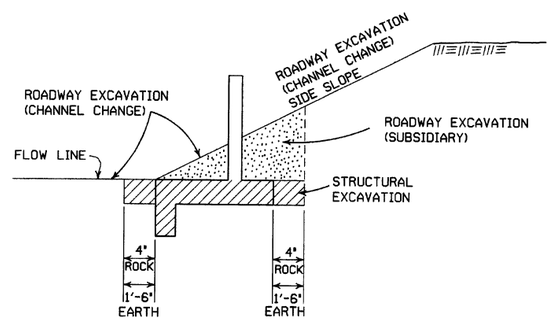
PLAN



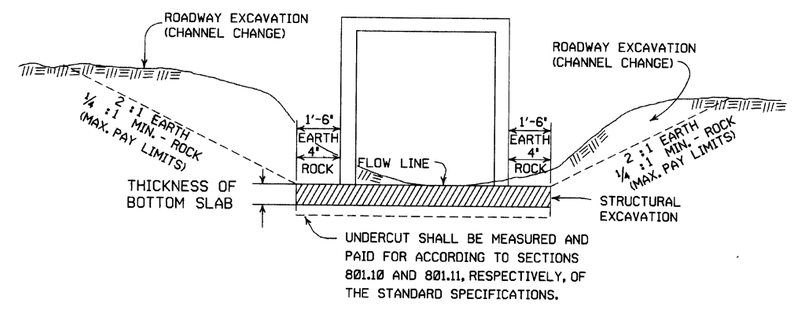
UNDERCUT SHALL BE MEASURED AND PAID FOR ACCORDING TO SECTIONS 801.10 AND 801.11, RESPECTIVELY, OF THE STANDARD SPECIFICATIONS.

SECTION B-B

DETAILS FOR NEW CHANNELS



SECTION C-C



UNDERCUT SHALL BE MEASURED AND PAID FOR ACCORDING TO SECTIONS 801.10 AND 801.11, RESPECTIVELY, OF THE STANDARD SPECIFICATIONS.

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.

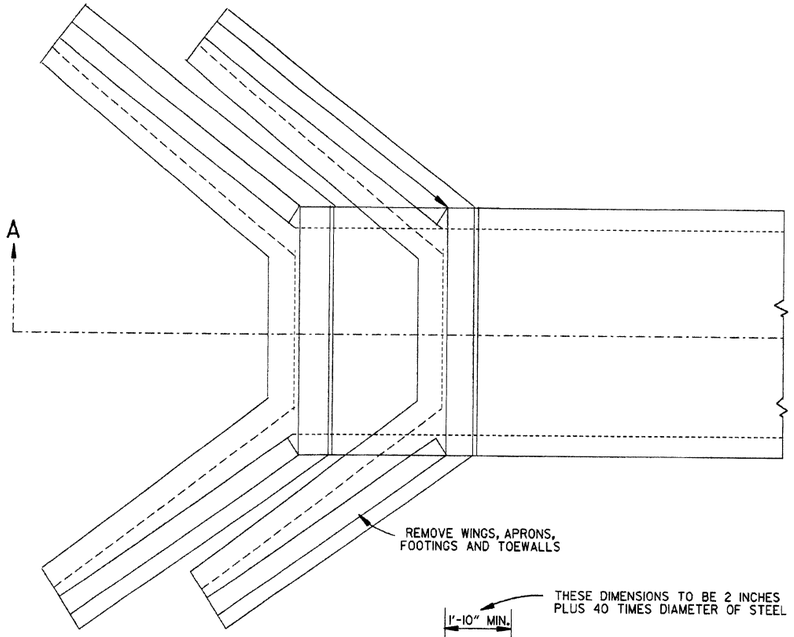
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

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 AND ADDED MAXIMUM PAY LIMIT NOTES.	674-1-4-83
2-2-76	EXCAV. PAY LIMITS	917-2-2-76
10-2-72	REVISED AND REDRAWN	564-10-16-72

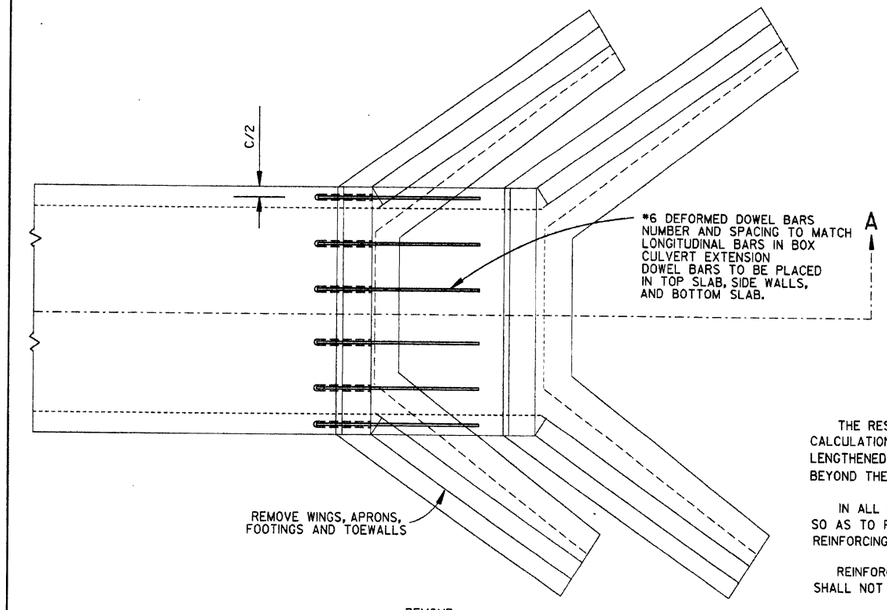
ARKANSAS STATE HIGHWAY COMMISSION

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

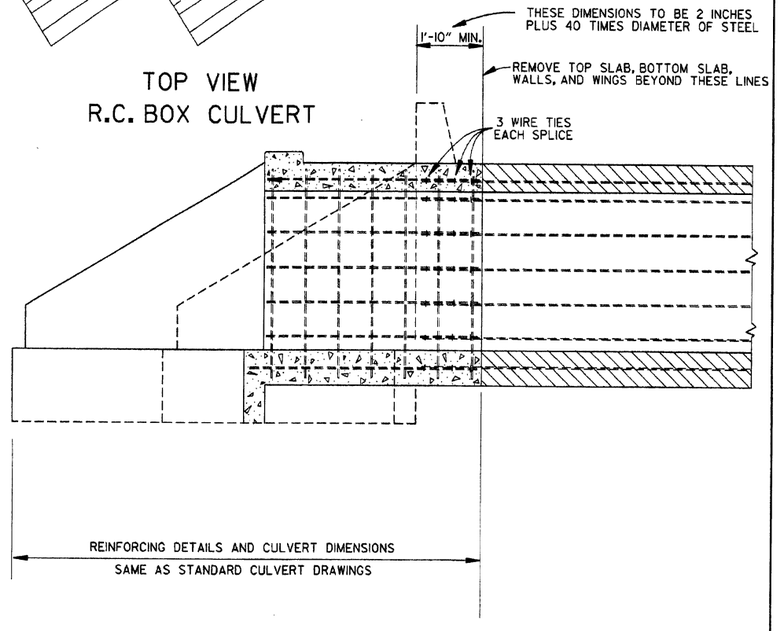
STANDARD DRAWING RCB-2



TOP VIEW
R.C. BOX CULVERT

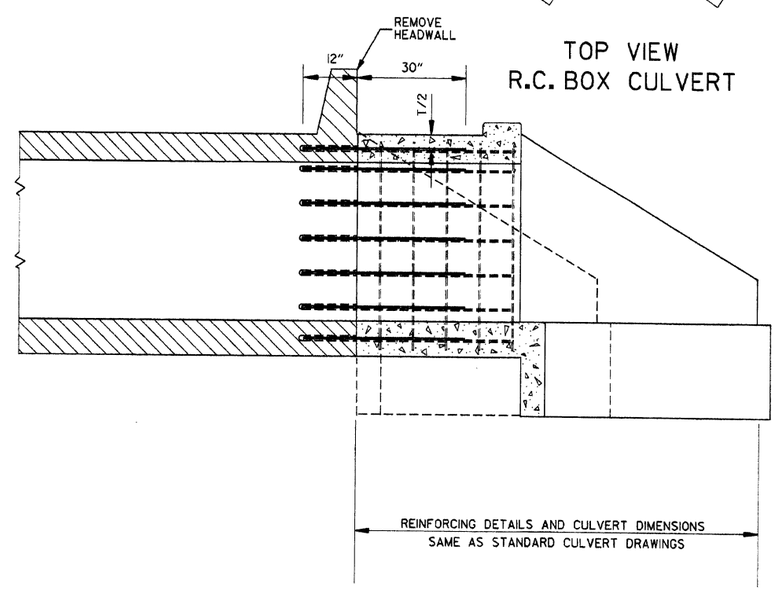


TOP VIEW
R.C. BOX CULVERT



SECTION A-A

METHOD 1



SECTION A-A

METHOD 2

GENERAL NOTES	USE FOR METHOD
THE RESIDENT ENGINEER WILL MAKE INDIVIDUAL CALCULATIONS OF QUANTITIES FOR EACH STRUCTURE LENGTHENED, MAKING NO ALLOWANCE FOR OVERBREAKAGE BEYOND THE LINES INDICATED.	1
IN ALL INSTANCES CONCRETE SHALL BE REMOVED SO AS TO PERMIT FULL 40 DIAMETER SPLICE OF REINFORCING STEEL.	1
REINFORCING STEEL REMOVED FROM EXISTING STRUCTURE SHALL NOT BE REUSED IN CONSTRUCTING EXTENSION.	1&2
ON R.C. BOX CULVERTS THAT HAVE AN EXISTING CONCRETE APRON; THE CONCRETE APRON SHALL BE REMOVED WITH THE WINGS. THE COST OF REMOVING ALL OLD CONCRETE WILL BE INCLUDED IN THE PRICE BID PER CUBIC YARD FOR NEW CONCRETE OF THE CLASS SPECIFIED AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.	1&2
MATERIALS FOR SECURING DOWEL BARS SHALL MEET THE REQUIREMENTS OF SECTION 507.02 OF THE STANDARD SPECIFICATIONS.	2
DOWEL BARS SHALL BE INSTALLED AS FOLLOWS; THE DRILLING PROCEDURE SHALL BE APPROVED BY THE ENGINEER, THE FILLING SYSTEM SHALL BE APPROVED BY THE ENGINEER. AND SHALL BE AN INJECTION-TYPE SYSTEM WHICH WILL INSURE THAT SUFFICIENT MATERIAL IS INJECTED SO IT COMPLETELY SURROUNDS THE BARS AND FILLS THE HOLES.	2
THE CONTRACTOR SHALL HAVE THE OPTION OF USING EITHER METHOD 1 OR METHOD 2. REGARDLESS OF WHICH METHOD IS USED, PAY QUANTITIES WILL BE CALCULATED BASED ON METHOD 1.	1&2

NOTE:
NO PART OF THIS STANDARD IS TO BE USED FOR ANY DETAILS RELATIVE TO NEW CONSTRUCTION.

SEE STANDARD DRAWING LISTED IN TABULATION OF STRUCTURES FOR ALL NEW CONSTRUCTION DETAILS.

DATE	REVISION	DATE FILM
10-12-95	CHANGED DRAWING # FROM 144-A	
4-1-93	ADDED GENERAL NOTE	
10-1-92	ADDED ALT. METHOD OF EXTENSION	
11-30-89	REDRAWN	
1-4-83	ELIMINATED CONCRETE CLASS	
12-20-56	RETRACED	

ARKANSAS STATE HIGHWAY COMMISSION

METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS

STANDARD DRAWING RCB-3

DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

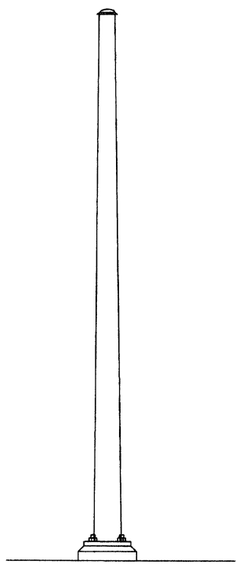
USE FATIGUE CATEGORY II.

CONSTRUCTION SPECIFICATIONS: ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION) WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

BASE WIND SPEED: 90 MPH

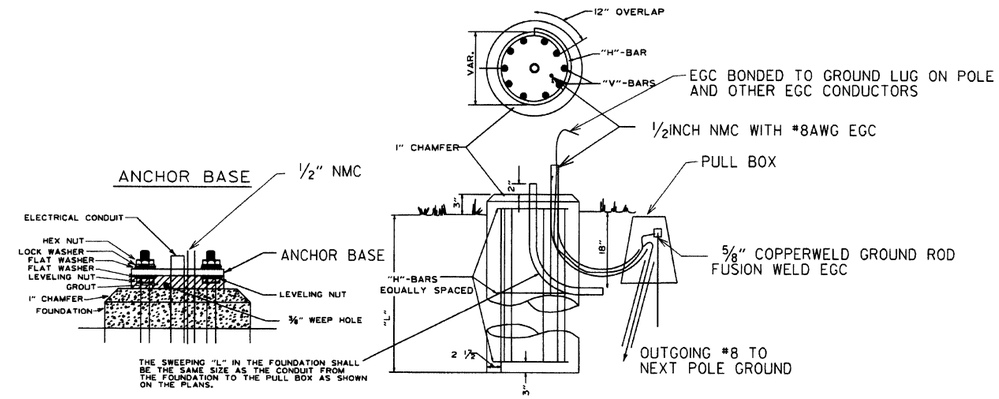
STEEL MEMBERS CONSIDERED MAIN LOAD CARRYING MEMBERS WITH A THICKNESS GREATER THAN 1/2" SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST SPECIFIED IN SUBSECTION 807.05 OF THE STANDARD SPECIFICATIONS.

THE GROUND ROD SHALL BE FUSION WELDED TO A 10/#8 A.W.G. SOLID COPPER GROUND WIRE. ATTACHMENT TO THE PRIMARY GROUND MAY BE BY AN APPROVED CLAMP. THE ROD IS TO BE LOCATED IN THE CONCRETE PULL BOX PAID FOR SEPARATELY AS SHOWN ON THE PLANS.



ANTENNA POLE

NOTE: COMMUNICATION CABLE SHIELD SHALL BE TIED TO GROUND AT ONLY ONE POINT (MASTER CABINET). THE SHIELD SHALL BE MAINTAINED CONTINUOUS (THROUGH ALL SPLICES). PLEASE REFER TO TESTING PROCEDURES IN SPECIAL PROVISIONS.



TYPICAL FOUNDATION DETAILS

POLE FOUNDATION MINIMUM DIMENSIONS AND STEEL REINFORCING.

POLE HEIGHT	FOUNDATION DIAMETER	DEPTH "L"	VERTICAL	HORIZONTAL	TIE SPACING
20.0'	30"	5'-6"	12-#7	#4	5 SP @ 12"
25.0'	30"	6'-0"	12-#7	#4	6 SP @ 11"
30.0'	30"	6'-6"	12-#7	#4	6 SP @ 12"
35.0'	30"	7'-0"	12-#7	#4	7 SP @ 11"
40.0'	30"	7'-6"	12-#7	#4	7 SP @ 12"
45.0'	36"	8'-6"	13-#8	#4	8 SP @ 12"
50.0'	36"	9'-6"	13-#8	#4	9 SP @ 12"
55.0'	36"	10'-0"	13-#8	#4	10 SP @ 11"
60.0'	36"	10'-6"	13-#8	#4	10 SP @ 12"
65.0'	36"	11'-0"	13-#8	#4	12 SP @ 10 1/2"
70.0'	36"	11'-6"	13-#8	#4	11 SP @ 12"
75.0'	42"	13'-0"	18-#8	#4	14 SP @ 10 1/2"
80.0'	42"	13'-6"	18-#8	#4	13 SP @ 12"
85.0'	42"	14'-6"	18-#8	#4	14 SP @ 12"
90.0'	42"	15'-0"	18-#8	#4	18 SP @ 9 1/2"

ALL CONCRETE SHALL BE CLASS "S" WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH F'C=3500 PSI. CONCRETE SHALL BE POURED IN THE DRY AND ALL EXPOSED CORNERS CHAMFERED 3/4" UNLESS NOTED OTHERWISE.

ALL REINFORCING STEEL SHALL CONFORM TO AASHTO M31 OR M53, GRADE 40 (YIELD STRENGTH=40,000 PSI).

PROVIDE 3" CLEAR TIES. DETAIL 3" TO FIRST TIE AT TOP OF SHAFT.

DATE	REVISION	DATE FILM
2-27-14	REVISED NOTES.	
9-12-13	ISSUED AS STANDARD DRAWING	
5-21-09	REVISED GROUNDING	
7-31-08	REVISED GROUNDING	
4-18-08	REVISED AASHTO NOTES	
4-17-08	REVISED TO 2001 AASHTO STANDARDS	
9-6-00	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

ANTENNA POLE

STANDARD DRAWING SD-1

LOOP DETECTOR INSTALLATION AND TESTING

NOTES:

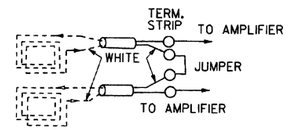
1. LOOPS WITH A PERIMETER GREATER THAN 40' SHALL HAVE TWO TURNS. LOOPS WITH A PERIMETER LESS THAN OR EQUAL TO 40' SHALL HAVE THREE TURNS, UNLESS OTHERWISE NOTED ON THE PLANS. QUADRUPOLE LOOPS SHALL BE TWO TURNS (2-4-2 CONFIGURATION) UNLESS OTHERWISE NOTED.
2. LOOP AND FEEDER WIRE SHALL BE CONTINUOUS WITHOUT SPLICES EXCEPT AT THE LOOP/FEEDER WIRE SPLICE AS SHOWN. SPLICE SHALL BE ROSIN SOLDERED AND WATERPROOFED WITH AN ACCEPTED SPLICE KIT. DRAIN WIRE SHALL BE GROUNDED IN CABINET AND INSULATED AT LOOP TO FEEDER SPLICE.
3. THE LOOP TO FEEDER SPLICE, FEEDER JACKET AND JACKET OF LOOP WIRE IN DUCT SHALL BE COMPLETELY SEALED AND WATERPROOFED.
4. CONTRACTOR MAY MAKE CONNECTIONS TO SIGNAL CABLE AND LOOP TO FEEDER CONNECTION AT TERMINAL STRIPS MOUNTED TO POLE INSIDE HAND HOLD COVER AS SHOWN IN DETAIL. TERMINALS MUST BE EASILY ACCESSIBLE, BUT PROTECTED AGAINST ACCIDENTAL CONTACT. CONNECTION OF POWER CARRYING CIRCUITS MUST BE SEPARATED FROM LOOP OR LOGIC CIRCUITS. ALL CONNECTIONS TO TERMINAL STRIPS SHALL UTILIZE SPADE LUGS OR AS APPROVED BY THE ENGINEER.
5. EACH LOOP SHALL HAVE A SEPARATE "FEEDER WIRE" UNLESS OTHERWISE NOTED. ALL FEEDER WIRES SHALL BE LABELED AS TO LOOP NUMBER AS DESIGNATED ON THE PLANS.
6. ALL LOOP WIRE ENTERING PULL BOXES SHALL BE ENCLOSED IN CONDUIT. EACH LOOP WIRE SHALL ENTER PULL BOX OR POLE BASE THROUGH A SEPARATE PIECE OF ONE INCH (1"Ø) CONDUIT.
7. LOOP WIRE FROM LOOP TO CONDUIT IS NOT TWISTED. LOOP WIRE IN THE CONDUIT MUST BE TWISTED TWO TO FIVE TURNS PER FOOT.
8. WARRANTY PERIOD FOR LOOPS SHALL NOT COMMENCE UNTIL TESTED BY THE CONTRACTOR AND ACCEPTED BY THE ENGINEER. CONTRACTOR SHALL PERFORM TEST AND PROVIDE A RECORD TO THE ENGINEER AS LISTED IN THE DETECTOR LOOP TESTING PROCEDURE.
9. UNLESS OTHERWISE APPROVED BY THE ENGINEER, BACKER ROD SHALL BE INSTALLED IN SHORT SECTIONS SPACED NOT MORE THAN 18" APART AND WEDGED INTO SLOT TO HOLD CABLE IN PLACE. CABLE SHALL BE TOTALLY ENCAPSULATED IN SEALER.
10. "HOT POUR" SEALER SHALL NOT BE ALLOWED WITH 705-LOOP WIRING IN DUCT.
11. WHERE UNDERGROUND SPLICES OF SIGNAL CABLE ARE REQUIRED, CONNECTIONS SHALL BE SOLDERED AND COMPLETELY WATERPROOFED TO THE SATISFACTION OF THE ENGINEER. WATERPROOFING SHALL EXTEND A MINIMUM OF TWO INCHES PAST THE SIGNAL CABLE JACKET AND SHALL COMPLETELY COVER ALL INDIVIDUAL CONDUCTORS OF THE SIGNAL CABLE. WATERPROOFING DOES NOT APPLY TO CONNECTIONS MADE IN POLE BASES.
12. CONTRACTOR SHALL CONNECT A SEPARATE NEUTRAL FOR EACH LOAD SWITCH REPRESENTED ON EACH SIGNAL POLE. ONLY ONE NEUTRAL IS REQUIRED FOR PEDESTRIAN SIGNALS. A SEPARATE 5C (TYPICAL) IS PROVIDED FOR PEDESTRIAN PUSH BUTTONS.
13. TRAFFIC CONTROLLER CABINET AND LAYOUT SHALL BE SUCH THAT IT IS NOT NECESSARY TO SHUT DOWN POWER OR REMOVE LOAD SWITCHES IN ORDER TO EASILY TEST OR MODIFY DETECTOR INPUTS TO CONTROLLER. CONTROLLER CABINET SHALL BE WIRED SUCH POWER TO LOAD SWITCHES CANNOT BACKFEED TO LOAD SWITCH POWER BUSS DURING FLASH OPERATION.

TYPICAL PROCEDURE FOR DETECTOR LOOP TESTING

1. DISCONNECT AND TEST CONTINUITY (< 10 OHMS) IF CONTINUITY IS BAD, GO TO TEST 3
2. TEST INSULATION (@ 500 VOLT TEST > 10 MEG-OHM)
   IF TESTS 1& 2 ARE GOOD, NO FURTHER TESTING IS NECESSARY. RECORDED RESULTS CONSIST OF TESTS 1& 2 FROM CONTROL CABINET WITH FEEDER WIRE CONNECTED TO LOOP.
3. OPEN SPLICE (DO NOT BREAK CONNECTION) REPEAT TEST 1& 2 IF TEST 3 IS BAD, GO TO TEST 4
4. BREAK SPLICE, INSTALL JUMPER IN CABINET, REPEAT TESTS 1& 2 SEPARATELY FOR FEEDER AND FOR LOOP

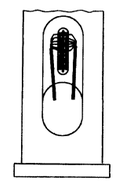
FAILURES TYPICALLY RESULT FROM BROKEN WIRE IN PAVEMENT, FAULTY INSULATION OF LOOP OR FEEDER WIRE, OR POORLY INSULATED SPLICE CONNECTION.

SERIES CONNECTED LOOPS

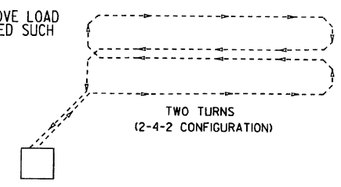


WIND LOOPS COUNTERCLOCKWISE; TAG WIRE EXITING SLOT AND TIE TO WHITE LEAD OF FEEDER WIRE; WHEN LOOPS ARE TIED TO SAME VEHICLE DETECTOR, SERIES CONNECT IN CABINET AS SHOWN.

HANDHOLE TERMINAL

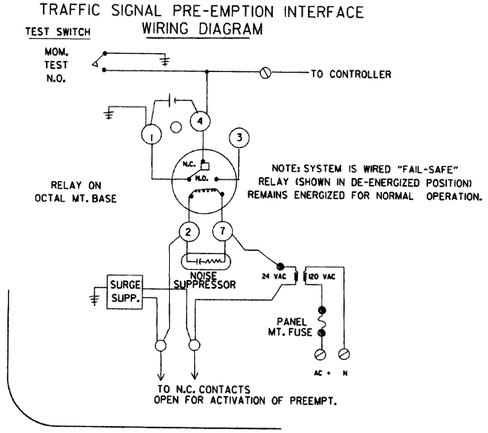


QUADRUPOLE LOOP

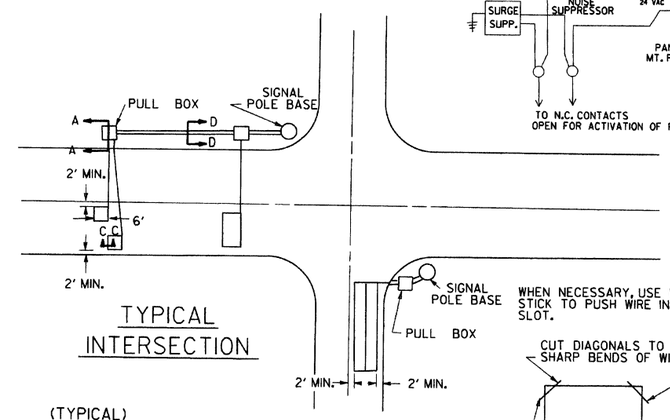


TWO TURNS (2-4-2 CONFIGURATION)

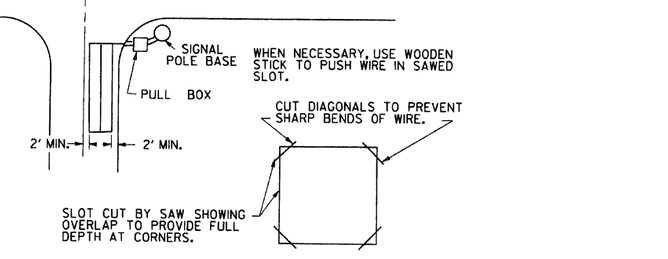
TRAFFIC SIGNAL PRE-EMPTION INTERFACE WIRING DIAGRAM



TYPICAL INTERSECTION

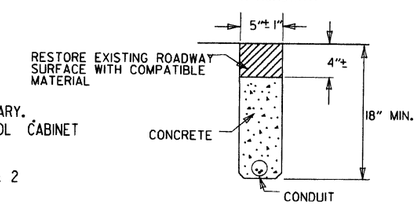


TYPICAL SECTIONS FOR PULSE AND PRESENCE LOOP DETECTORS



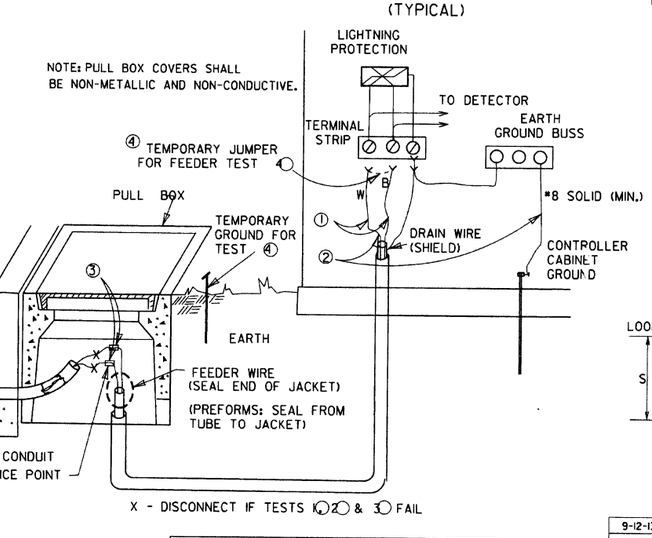
TRENCHING DETAIL

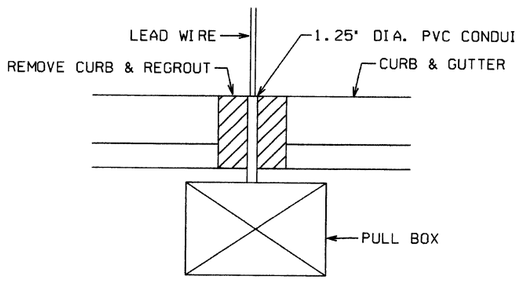
(FOR SAW CUT TRENCH IN ROADWAY)



NOTE: CONDUIT SHALL BE INSTALLED IN CURB AS SHOWN OR AS DIRECTED BY THE ENGINEER. END OF CONDUIT SHALL BE WATER-TIGHT.

NOTE: PULL BOX COVERS SHALL BE NON-METALLIC AND NON-CONDUCTIVE.

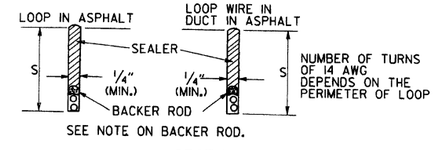




1"Ø CORE AT PAVEMENT JOINT OR FAULT

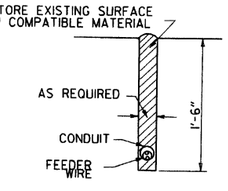
SECTION A-A

1'-6" CONCRETE COMBINATION CURB AND GUTTER



SECTION C-C

S=2 1/2" IN ASPHALT
S=1 1/2" IN CONCRETE



SECTION D-D

SPECIAL NOTE

IF FEEDER WIRE JACKET IS LEFT UNSEALED AND WATER IS ALLOWED TO ENTER JACKET, CONTRACTOR WILL BE REQUIRED TO REPLACE FEEDER AT NO COST TO THE DEPARTMENT.

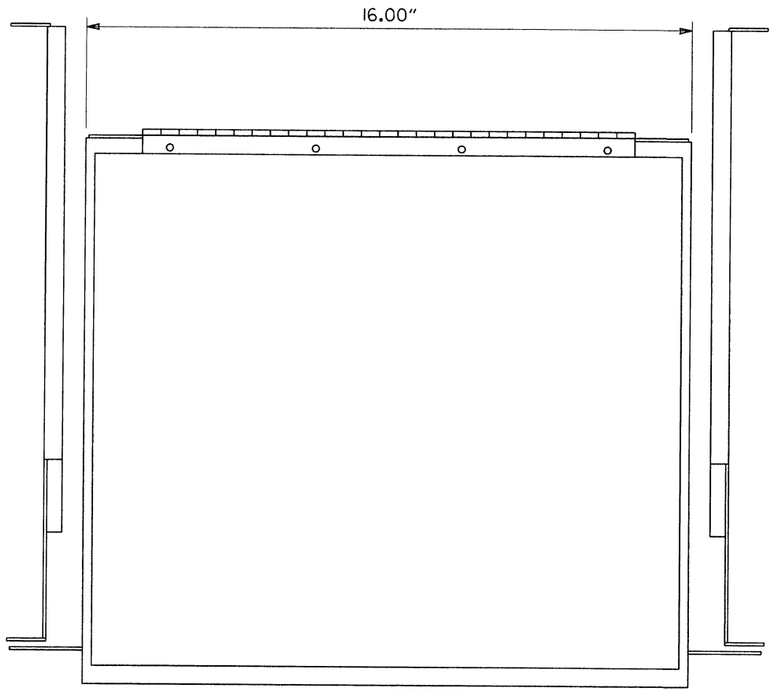
DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
5-17-01	REVISED	
4-11-01	REVISED	
2-4-00	REVISED PRE-EMPTION TEST SWITCH	
11-18-98	REVISED NOTES	
11-21-95	ISSUED	

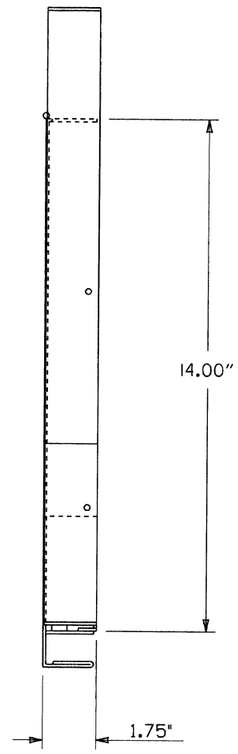
ARKANSAS STATE HIGHWAY COMMISSION

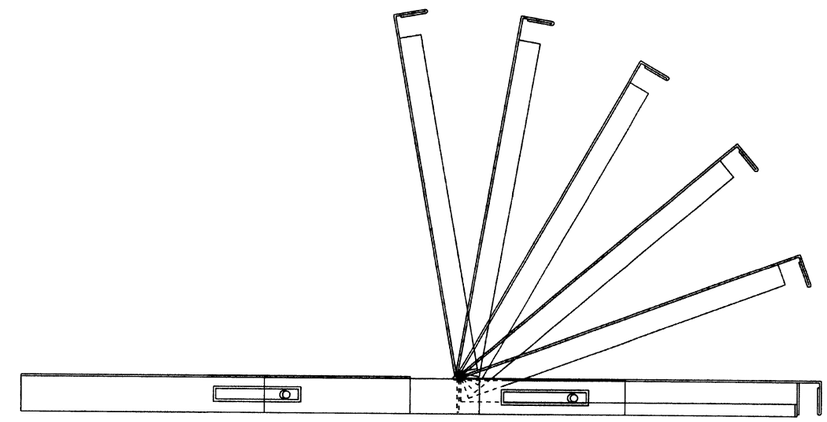
LOOP DETECTOR INSTALLATION

STANDARD DRAWING SD-4

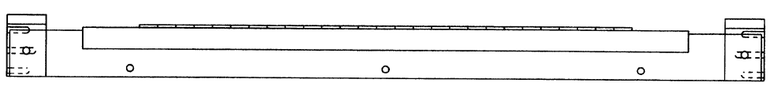
DRAWER PLAN VIEW



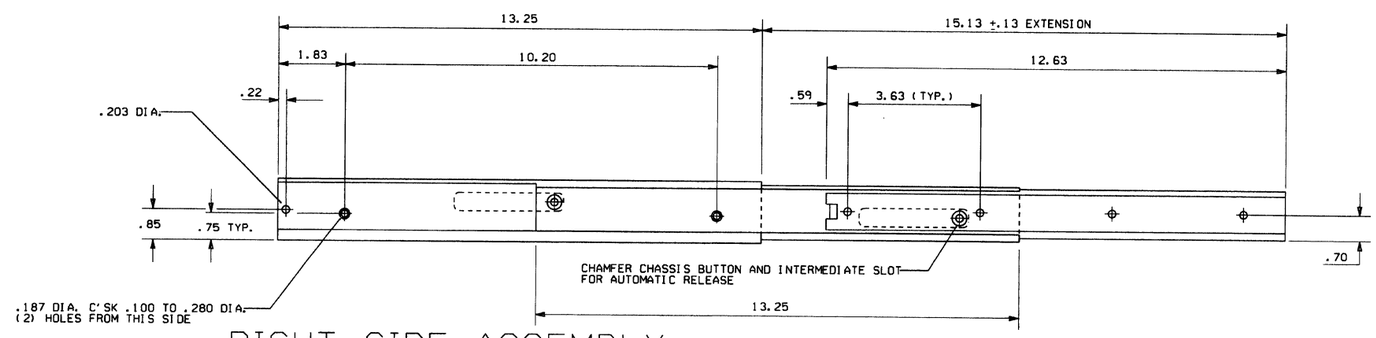




NOTES:
1. RIGHT HAND SLIDE SHOWN, LEFT SLIDE OPPOSITE.
2. GENERAL DEVICES (CC3002-99-0102) OR EQUAL AND CONTAINS (1) RIGHT HAND SLIDE ASSEMBLY, (1) LEFT HAND SLIDE ASSEMBLY.
3. ALL HARDWARE NECESSARY TO FASTEN SLIDE ASSEMBLY TO UNDERSIDE OF CONTROLLER SHELF SHALL BE INCLUDED.



FRONT VIEW



RIGHT SIDE ASSEMBLY

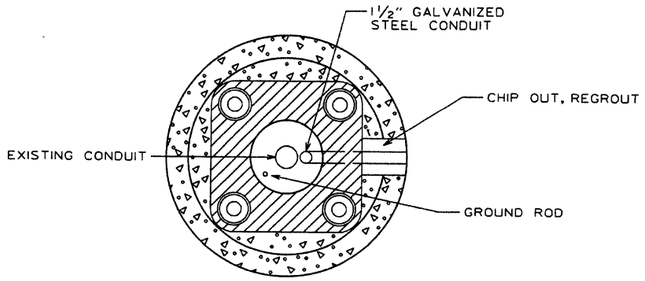
DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
6-15-05	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

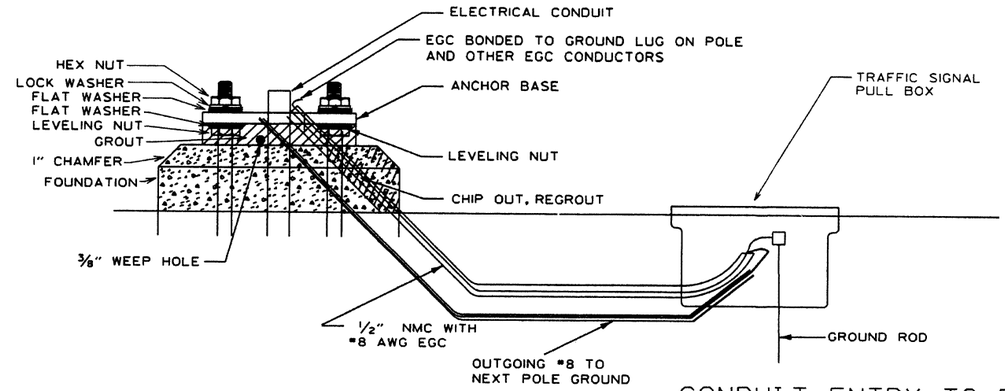
CONTROLLER CABINET UTILITY DRAWER

STANDARD DRAWING SD-5

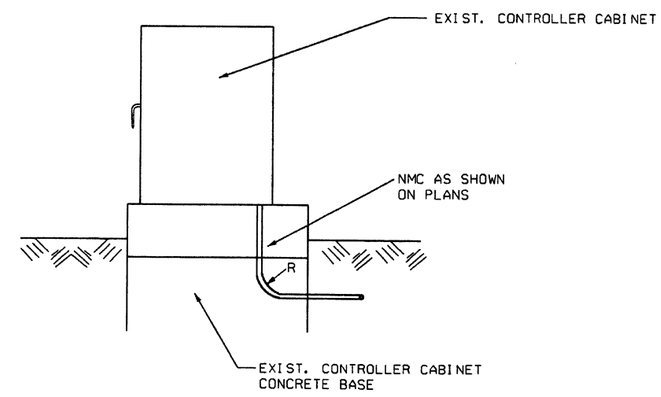
CONDUIT ENTRY TO EXISTING POLE BASE



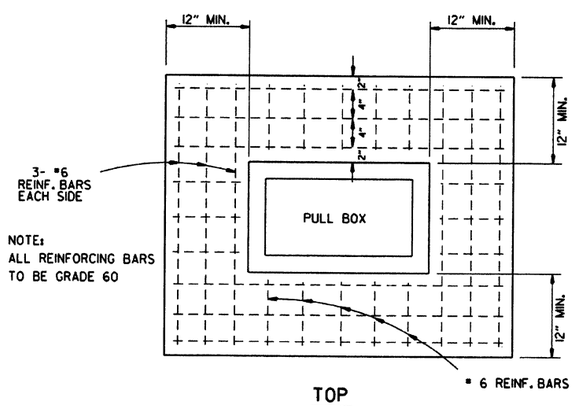
ANCHOR BASE



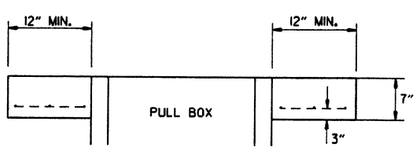
CONDUIT ENTRY TO EXISTING CONTROLLER CABINET



NOTE: ENTRY TO CABINET SHALL BE THROUGH A CUT IN THE BASE SUFFICIENT TO PROVIDE ADEQUATE CONDUIT RADIUS FOR ITEM.

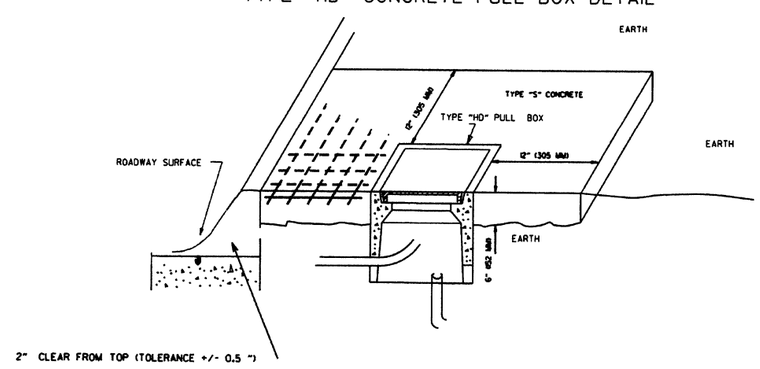


TOP



ELEVATION

TYPE "HD" CONCRETE PULL BOX DETAIL



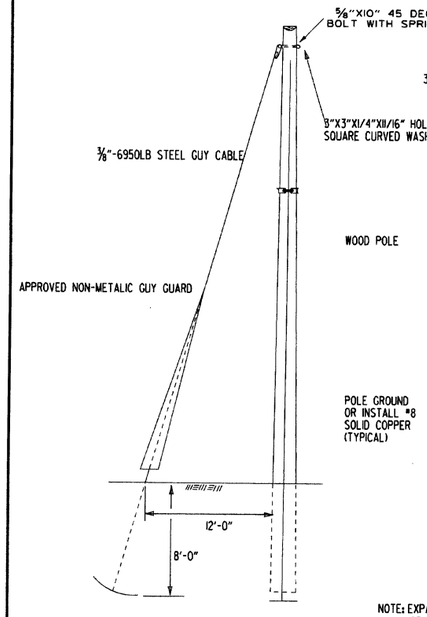
NOTE: ALL TYPE 1 AND TYPE 2 HD PULL BOXES ARE INSTALLED WITH AN APRON OF CONCRETE 12" (305 MM) WIDE AND 7" (178 MM) IN DEPTH. ALL PAYMENT SHALL BE INCLUDED IN THE PRICE OF THE TYPE HD PULL BOX. PULL BOX SHALL BE INSTALLED FLUSH TO SURROUNDING GRADE UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER. THE CONCRETE SHALL BE CLASS "S." THREE #6 REINFORCING BARS IN THE APRON ON ALL SIDES OF THE PULL BOX IS REQUIRED IN CONCRETE.

DATE	REVISION	DATE FILM
9-2-15	REVISED PULL BOX DEPTH	
9-12-13	ISSUED AS STANDARD DRAWING	
5-21-09	REVISED GROUNDING	
7-31-08	ADDED & REVISED CONDUIT ENTRY	
6-23-04	REVISED CLEARANCE AT CURB ENTRY	
1-4-02	ADDED REINFORCING TO BOX APRON	
7-2-01	REVISED	
12-27-99	REVISED NOTES	
11-18-98	ISSUED	

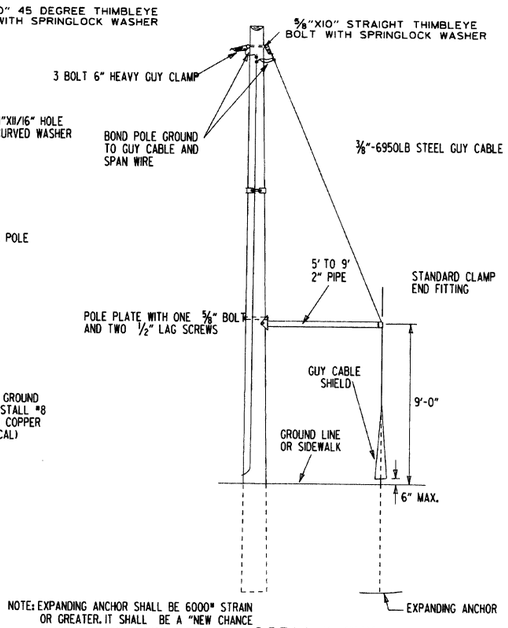
ARKANSAS STATE HIGHWAY COMMISSION

HEAVY DUTY PULL BOX

STANDARD DRAWING SD-6



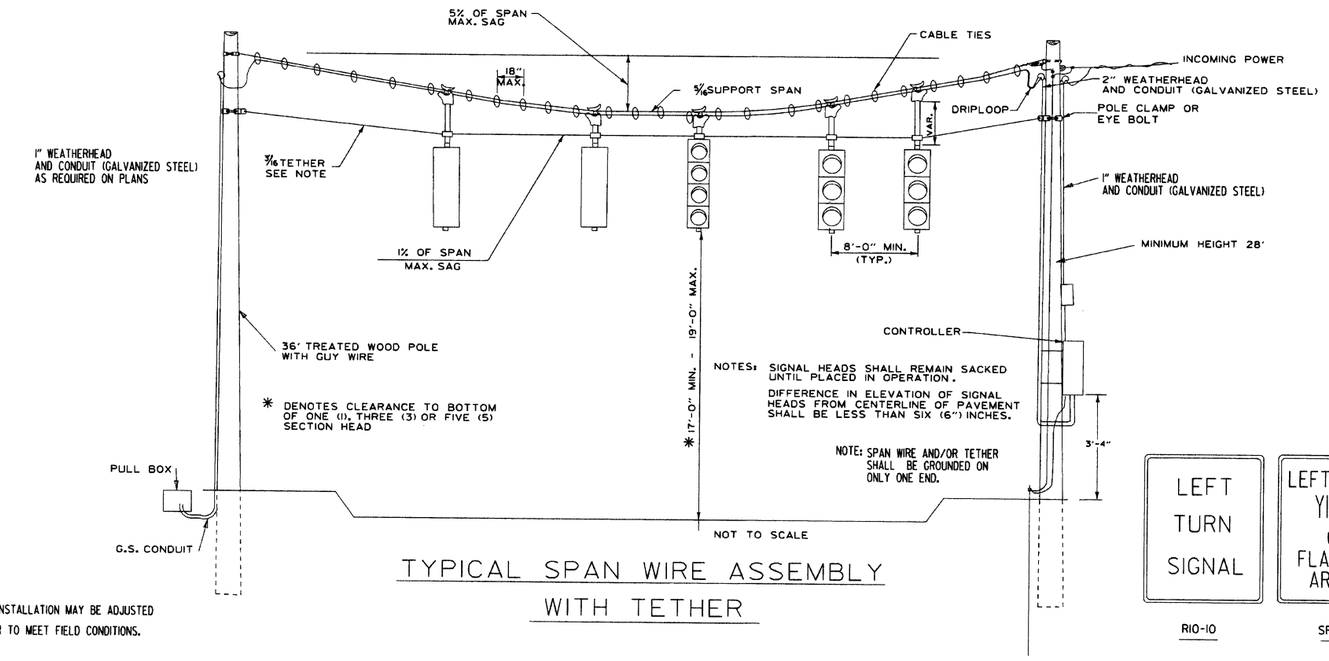
STANDARD GUY INSTALLATION



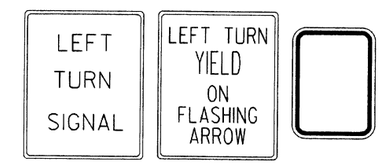
NOTE: EXPANDING ANCHOR SHALL BE 6000# STRAIN OR GREATER. IT SHALL BE A "NEW CHANCE 8-WAY EXPANDING ANCHOR", WITH A 5/8" MINIMUM GUY ROD.

SIDEWALK GUY INSTALLATION

NOTE: CONDUIT INSTALLATION MAY BE ADJUSTED BY THE ENGINEER TO MEET FIELD CONDITIONS.



TYPICAL SPAN WIRE ASSEMBLY WITH TETHER

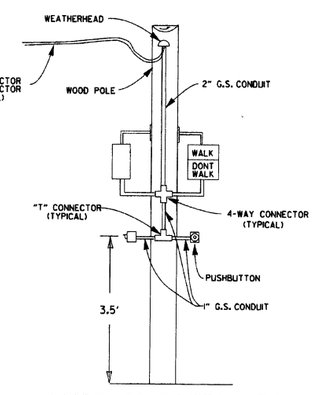


R10-10 SPECIAL R10-3E (SEE MUTCD)

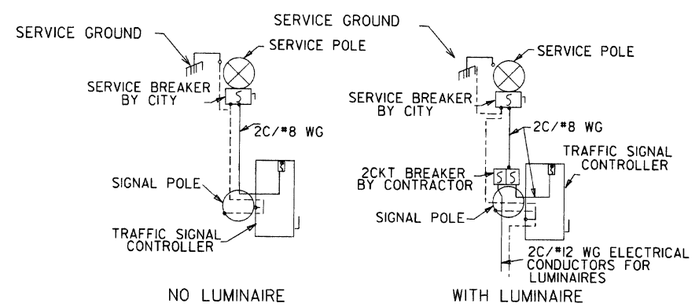
NOTES: SPAN WIRE POLES SHALL BE MOUNTED A MINIMUM OF 4' BEHIND CURB OR SHOULDER.

SPAN WIRE ASSEMBLIES WILL REQUIRE TETHER UNLESS OTHERWISE NOTED ON PLAN SHEETS. CABLE TIES SHALL BE SUITABLE FOR OUTSIDE USE (BLACK).

THE CONTROLLER POWER SUPPLY GROUND BUSS SHALL BE BONDED TO THE GROUND ROD WITH A #8 AWG SOLID COPPER WIRE. ON EXISTING INSTALLATIONS WITH NO GROUND ROD, CONTRACTOR SHALL INSTALL A 10' X 5/8" COPPERWELD GROUND ROD.



WOODEN POLE INSTALLATION OF PED HEADS



NO LUMINAIRE WITH LUMINAIRE

SERVICE DISCONNECT

NOTE: ELECTRICAL GROUND CONDUCTOR IS BONDED TO ALL METAL ENCLOSURES

NOTES:

EACH ITEM "TRAFFIC SIGNAL HEAD (4 SEC., 1-WAY)" SHALL INCLUDE A SPECIAL SIGN AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD UNLESS REMOVED WITHIN SIGNAL PLAN NOTES.

SIGN BLANK SHALL BE CONSTRUCTED OF ALLUMINUM ALLOY (ASTM DESIGNATION B-209, ALLOY 5052-H38) WITH A THICKNESS OF 0.100 INCH.

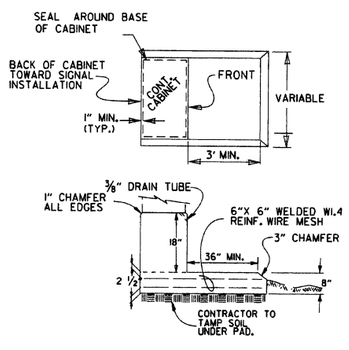
SIGN FACE SHALL BE CONSTRUCTED OF HIGH INTENSITY SHEETING (TYPE III) WITH SILKSCREEN LEGEND AND BORDER.

EACH ITEM "TRAFFIC SIGNAL HEAD (3 SEC., 1-WAY)" TO BE USED AS A LEFT TURN INDICATION ONLY SHALL INCLUDE A SIGN (R10-10) AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD.

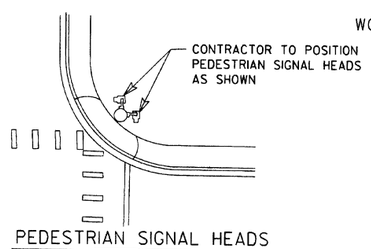
SIGNAL OPERATION NOTES:

FLASHING OPERATION - PRIOR TO NORMAL OPERATION, SIGNAL SHALL BE FLASHED FOR A PERIOD OF 3 TO 5 WORKING DAYS. SIGNAL SHALL BE PLACED IN OPERATION ONLY ON A REGULAR WORK DAY, EXCEPT FRIDAY.

THE CONTRACTOR MAY BE REQUIRED TO ALTER THE FLASHING DISPLAY DURING THE TEMPORARY FLASH PERIOD. AT THE TIME THE INTERSECTION IS PLACED IN PERMANENT OPERATION, THE FLASH SEQUENCE SHALL THEN BE RETURNED TO THAT INDICATED ON THE PLAN SHEETS. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THESE ALTERATIONS IN FLASH SEQUENCE.



CONCRETE BASE MOUNTED CABINET DETAILS



PEDESTRIAN SIGNAL HEADS

UNLESS OTHERWISE DIRECTED BY THE ENGINEER, CABINET ORIENTATION SHALL BE SUCH THAT THE BACK OF THE CABINET IS PARALLEL TO THE STREET AND POSITIONED TO ALLOW VISIBILITY OF THE SIGNAL DISPLAY WHILE OBSERVING THE CONTROLLER FRONT PANEL.

DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

CONSTRUCTION SPECIFICATIONS: ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION) WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

BASE WIND SPEED: 90 MPH

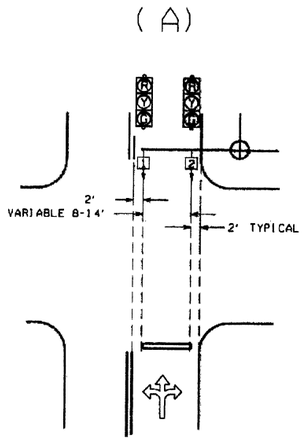
STEEL MEMBERS CONSIDERED MAIN LOAD CARRYING MEMBERS WITH THICKNESS GREATER THAN 1/2" SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST SPECIFIED IN SUBSECTION 807.05 OF THE STANDARD SPECIFICATIONS.

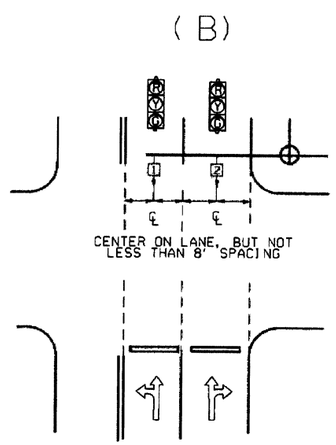
DATE	REVISION	DATE FILM
2-27-14	REVISED NOTES.	
9-12-13	ISSUED AS STANDARD DRAWING	
7-21-11	REVISED PED SIGN, CABINET GROUNDING	
4-17-08	REVISED TO 2001 AASHTO STANDARDS	
10-12-04	REV. CABINET ORIENT. & SIGNAL OPER.	
5-22-02	REV. TYP. SPAN WIRE ASSEMBLY	
12-27-99	REVISED	
11-18-98	REVISED NOTES	
11-21-95	ISSUED	

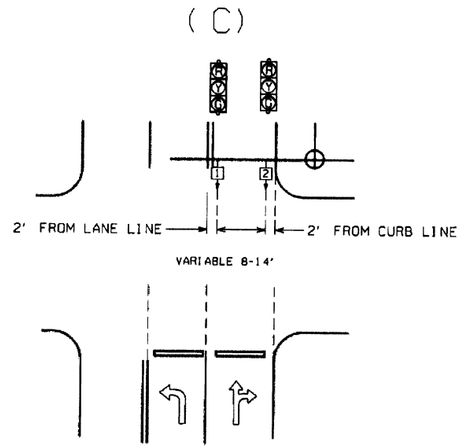
ARKANSAS STATE HIGHWAY COMMISSION

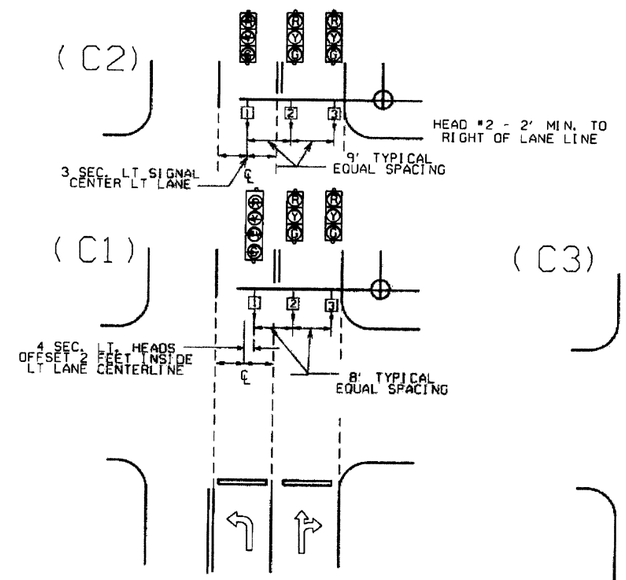
SPAN WIRE ASSEMBLY
WOOD POLE

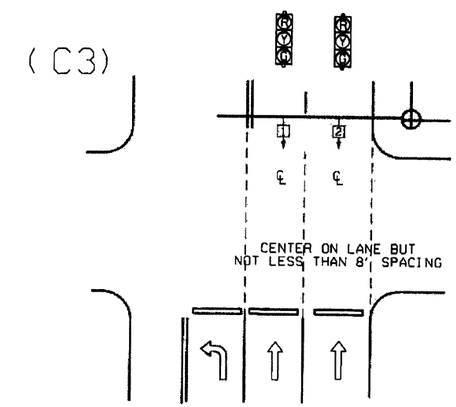
STANDARD DRAWING SD-7

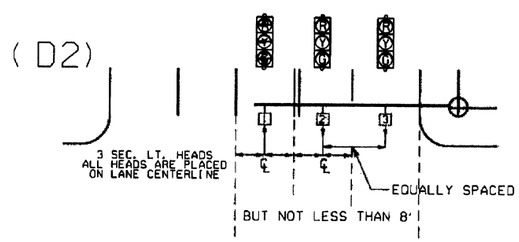




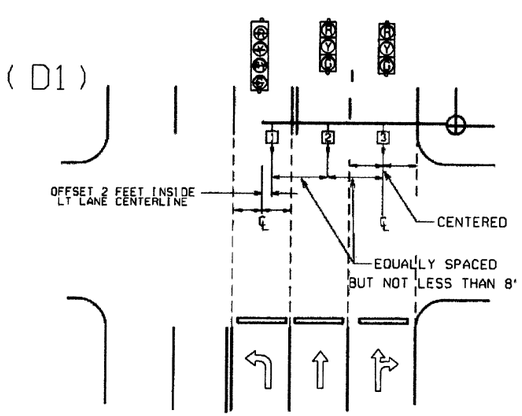


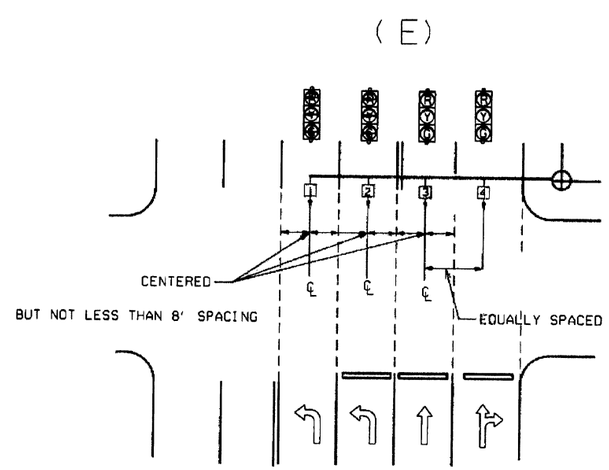






NOTE: WHERE LEFT TURN HEAD (HEAD 1 ON D1 AND D2) IS NOT CALLED FOR ON PLANS, MAST ARM LENGTH MAY STILL BE ALLOWED FOR FUTURE INSTALLATION. HEADS FOR THROUGH MOVEMENTS SHALL STILL BE ALIGNED WITH THROUGH LANES AS SHOWN ON DETAILS.





℄ = CENTER OF LANE FROM APPROACH SIDE

GENERAL NOTES:

1. FOUR SECTION "PROTECTED/PERMISSIVE" LEFT TURN HEADS SHOULD BE PLACED A MINIMUM OF TWO (2') FEET TO THE RIGHT OF THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

2. THREE SECTION "PROTECTED" LEFT TURN HEADS SHOULD BE PLACED ON THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

3. WHEN IT IS NECESSARY TO PLACE POLES OTHER THAN AS SHOWN ON PLAN SHEET(S) RESULTING IN MAST ARM EXTENDING MORE THAN TWO FEET PAST (TO THE LEFT OF) THE CENTERLINE OF THE APPROACHING LEFT TURN LANE, MAST ARM SHALL BE CUT TO APPROPRIATE LENGTH AS DETERMINED BY THE ENGINEER, AND A NEW END CAP PROVIDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THIS PRIOR TO INSTALLING THE MAST ARM IF ADDITIONAL COMPENSATION IS REQUIRED.

4. SIGNAL HEAD SPACING SHALL, IN NO CASE, BE LESS THAN EIGHT (8') FEET BETWEEN HEADS ON CENTER, MEASURED HORIZONTALLY PERPENDICULAR TO THE APPROACH.

5. ALL SIGNAL HEADS SHOWN ON THIS DETAIL SHEET SHALL BE LOCATED ACCORDING TO THE DIMENSIONS SHOWN IN RELATION TO THE APPROACH SIDE OF THE INTERSECTION.

6. MAXIMUM MOUNTING HEIGHT OF SIGNAL FACES LOCATED BETWEEN 40 FEET AND 53 FEET FROM STOP BAR SHALL BE IN ACCORDANCE WITH FIGURE 4D-5 OF 2009 MUTCD.

DATE	REVISION	DATE FILM
12-8-16	REVISED NOTE 6	
9-12-13	ISSUED AS STANDARD DRAWING	
3-11-10	2009 MUTCD	
12-9-99	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

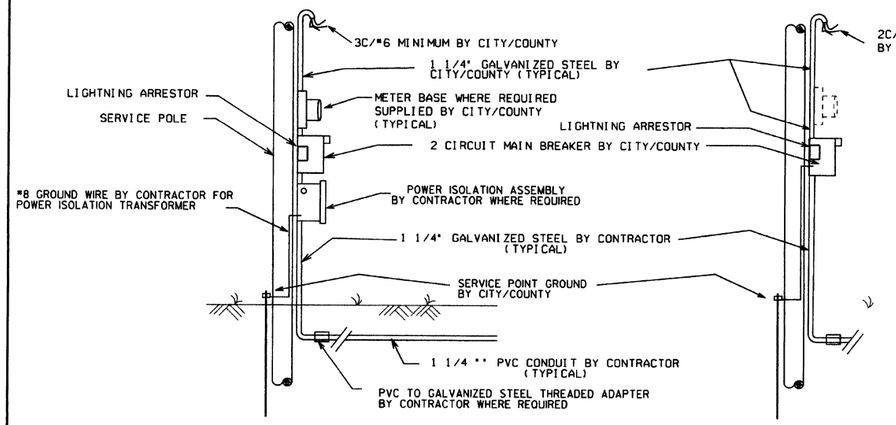
SIGNAL HEAD PLACEMENT

STANDARD DRAWING SD-8

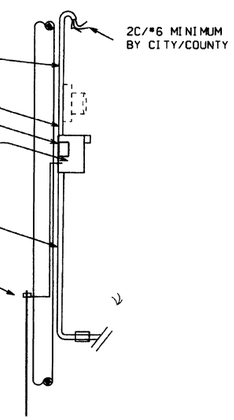
MAIN BREAKER NOT NEAR CONTROLLER CABINET SECONDARY REQUIRED

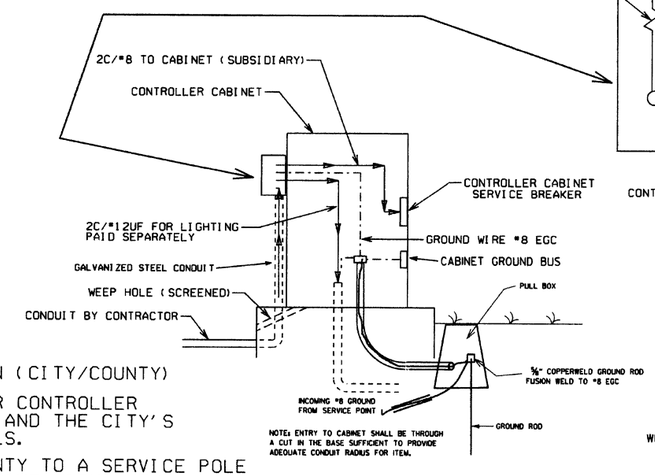
GROUND ROD-A 10' X ⅝" GROUND ROD SHALL BE INSTALLED IN THE PULL BOX FOR EACH POLE AND THE CONTROLLER. PAYMENT FOR THE GROUND ROD AND ½" NMC SHALL BE INCLUDED IN ITEM 701. THE PULL BOX AND CONDUCTOR BOX SHALL BE PAID FOR SEPARATELY.

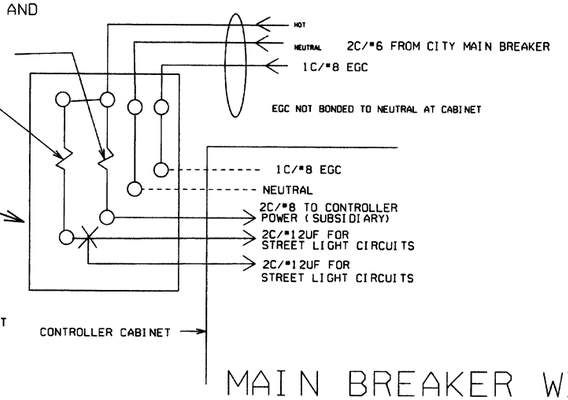
WITH POWER ISOLATION ASSEMBLY



WITHOUT POWER ISOLATION ASSEMBLY







MAIN BREAKER WIRING (TYPICAL)

NOTES TO CONTRACTOR AND AGENCY RESPONSIBLE FOR MAINTENANCE OF THE INTERSECTION (CITY/COUNTY)

ELECTRICAL SERVICE TYPICALLY FALLS INTO TWO CATEGORIES: MAIN BREAKER NEAR CONTROLLER CABINET; AND MAIN BREAKER NOT NEAR CONTROLLER CABINET. THE CONTRACTOR'S AND THE CITY'S OR COUNTY'S RESPONSIBILITY VARIES ACCORDINGLY AS INDICATED ON THESE DETAILS.

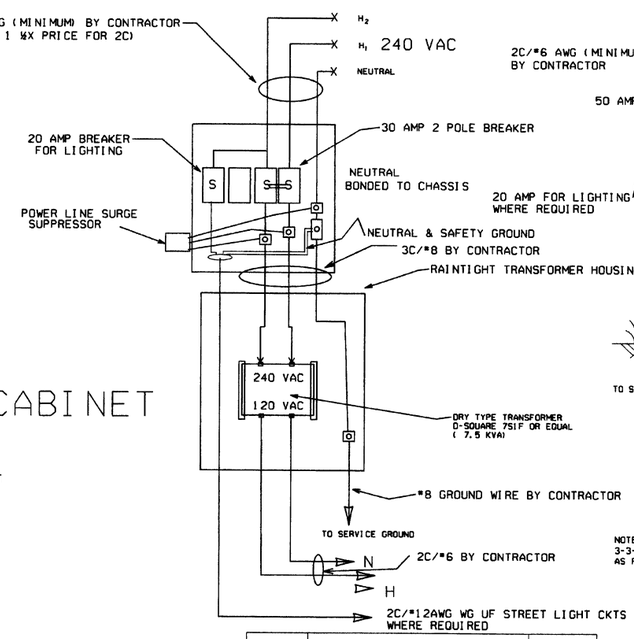
1. ALL SITUATIONS: ELECTRICAL SERVICE SHALL BE PROVIDED BY THE CITY/COUNTY TO A SERVICE POLE WITH EXTERNAL RAINTIGHT BREAKER (MAIN BREAKER) AT A MUTUALLY ACCEPTABLE POINT WITHIN THE RIGHT-OF-WAY. SERVICE POINT INCLUDES GALVANIZED STEEL CONDUIT TO A POINT 18" BELOW GROUND LINE, TWO CIRCUIT MAIN BREAKER, LIGHTNING ARRESTOR, POWER ISOLATION ASSEMBLY WHERE REQUIRED, METER LOOP IF REQUIRED BY LOCAL UTILITY, ELECTRICAL CONDUCTORS AND WEATHERHEAD. WHERE STREET LIGHTING IS INCLUDED AS PART OF SIGNAL INSTALLATION, STREET LIGHTING CIRCUIT (2C/#12 AWG UF RATED, TYPICAL) SHALL BE KEPT SEPARATE FROM THE CIRCUIT SERVING TRAFFIC SIGNAL. SERVICE WIRE AND WIRING FROM THE CONTROLLER TO MAIN BREAKER IS PROVIDED BY THE CONTRACTOR AS A PART OF THIS CONTRACT. WIRE AND WIRING FROM MAIN BREAKER, AND CONNECTION TO THE UTILITY IS THE RESPONSIBILITY OF THE CITY/COUNTY.

2. MAIN BREAKER NOT NEAR CONTROLLER CABINET: THE MAIN BREAKER ASSEMBLY, GALVANIZED STEEL CONDUIT, WEATHERHEAD AND WIRE ABOVE MAIN BREAKER AND CONNECTION TO THE UTILITY SHALL BE PROVIDED BY CITY/COUNTY. CONTRACTOR SHALL PROVIDE AS PART OF CONTRACT SECONDARY BREAKER, CONDUIT, WIRE AND WIRING TO THE MAIN BREAKER.

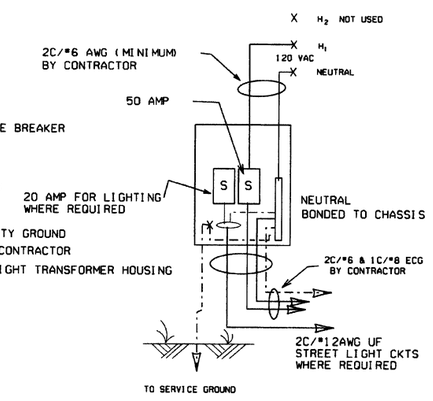
3. MAIN BREAKER NEAR CONTROLLER CABINET: ALL COMPONENTS OF THE SERVICE POINT WITH THE EXCEPTION OF THE WIRE AND WIRING ABOVE THE MAIN BREAKER IS FURNISHED AND INSTALLED BY THE CONTRACTOR. WIRING FROM MAIN BREAKER INCLUDING CONNECTION TO THE UTILITY, IS THE RESPONSIBILITY OF THE CITY/COUNTY. IF METER LOOP IS REQUIRED, METER BASE AND HARDWARE IS PROVIDED BY THE CITY/COUNTY AND INSTALLED BY THE CONTRACTOR.

SERVICE GROUND IS TYPICALLY TIED TO NEUTRAL AT THE MAIN BREAKER. AS SUCH, CONTROLLER GROUND IS NOT TIED TO NEUTRAL AT SECONDARY BREAKER OR IN CONTROLLER CABINET.

WITH POWER ISOLATION ASSEMBLY
4 CIRCUIT MAIN BREAKER

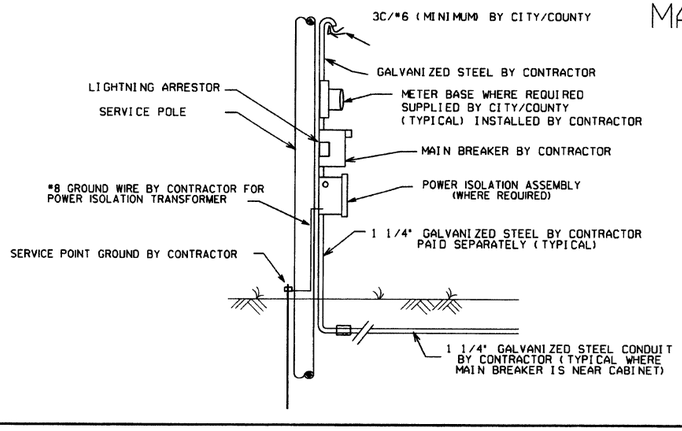


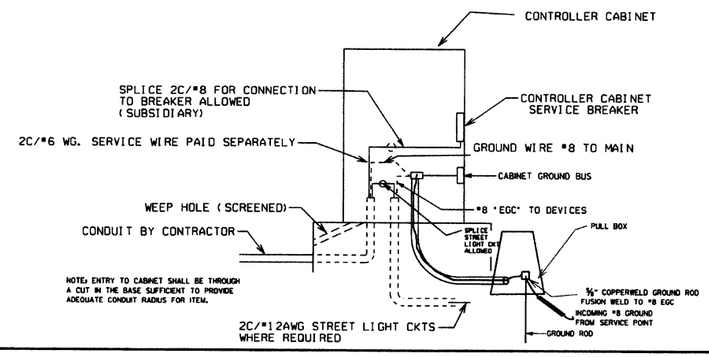
WITHOUT POWER ISOLATION ASSEMBLY
2 CIRCUIT MAIN BREAKER



NOTE: ELECTRICAL GROUND CONDUCTOR (ECG) ADDED 3-3-2003, CONSISTING OF A 1C/#8AWG CU GREEN WIRE AS PER NATIONAL ELECT. CODES.

MAIN BREAKER NEAR CONTROLLER CABINET SECONDARY NOT REQUIRED





DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
4-18-13	ADDED LIGHTNING ARRESTOR	
5-21-09	REVISED GROUNDING	
7-31-08	REVISED GROUNDING	
3-3-03	ADDED EGC NOTE	
9-26-01	REVISED	
12-27-99	REVISED	
7-28-99	REVISED	
2-5-99	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

SERVICE POINT

STANDARD DRAWING SD-9

NOTES, PED AND TRAFFIC SIGNAL HEAD SIGNS:
EACH ITEM "TRAFFIC SIGNAL HEAD (4 SEC., 1-WAY)" SHALL INCLUDE A SPECIAL SIGN AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD UNLESS REMOVED WITHIN THE SIGNAL PLAN NOTES.

EACH ITEM "TRAFFIC SIGNAL HEAD (3 SEC., 1-WAY)" TO BE USED AS A LEFT TURN INDICATION ONLY SHALL INCLUDE A SIGN (R10-10) AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD.

EACH PEDESTRIAN PUSHBUTTON SHALL HAVE ONE R10-3E SIGN ATTACHED TO THE POLE ABOVE THE BUTTON. ALL SIGNS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 723 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

ALL SIGN BLANKS SHALL BE CONSTRUCTED OF ALUMINUM ALLOY (ASTM DESIGNATION B-209. ALLOY 5052-H38) WITH THICKNESS OF 0.100 INCH.

GENERAL NOTES:
1. MAST ARM POLES SHALL BE MOUNTED A MINIMUM OF 4 FT. BEHIND CURB OR SHOULDER.

2. OCTAGONAL POLES AND ARMS MEETING THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS CAN BE INSTALLED IN LIEU OF ROUND. ALL POLES AND ARMS IN A JOB MUST BE THE SAME SHAPE.

3. MINIMUM STRUCTURAL REQUIREMENTS:
DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

USE FATIGUE CATEGORY I FOR ALL STRUCTURES ON ROUTES WHERE THE SPEED LIMIT IS 65 MPH AND GREATER AT THE STRUCTURE LOCATION AND ON ROUTES WHERE SPEED LIMIT IS GREATER THAN 45 MPH WITH AN ARM 60' OR LONGER.

USE FATIGUE CATEGORY II FOR STRUCTURES ON ROUTES WITH A SPEED LIMIT LESS THAN 65 MPH AND GREATER THAN 45 MPH WITH ARMS LESS THAN 60' AND ROUTES WITH SPEED LIMITS OF 45 MPH AND LESS WITH AN ARM 60' OR LONGER.

USE FATIGUE CATEGORY III FOR ALL STRUCTURES WHERE SPEED LIMIT IS 45 MPH AND LESS AND ARMS LESS THAN 60'.

CONSTRUCTION SPECIFICATIONS: ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION) WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

BASE WIND SPEED: 90 MPH.

STEEL MEMBERS CONSIDERED MAIN LOAD CARRYING MEMBERS WITH A THICKNESS GREATER THAN 1/2" SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST SPECIFIED IN SUBSECTION 807.05 OF THE STANDARD SPECIFICATIONS.

DEAD LOAD: AS A MINIMUM, DESIGN SHALL BE BASED ON THE FIXED ATTACHMENTS SHOWN BELOW OR AS MODIFIED IN THE PLANS.

ALL SIGNAL HEADS TO BE ONE WAY, 12 INCH, AND HAVE 5 IN. BACK PLATES:

HEADS AT END OF ARM - ONE 4 SEC., 85 LB., 16.0 SQ. FT. ONE SIGN MOUNTED 3 FT. FROM SIGNAL " 2' X 0" X 2' " 6"; 20 LB. REMAINING HEADS SPACED A 8 FT. " 3 SEC., 56 LB., TWO 5 SEC):
14.4 SQ. FT. DESIGN TO ACCOMMODATE (INCLUDING
2 HEADS FOR ARMS 10 TO 16 FT.
2 HEADS FOR ARMS 10 TO 16 FT., INCLUDING LB.
3 HEADS FOR 18 TO 24 FT. ARMS;
4 HEADS FOR OVER 26 FT. ARMS.

STREET NAME SIGN -- 72" X 18", MOUNTED SUCH THAT OUTSIDE EDGE IS NOT GREATER THAN 12 FT. FROM POLE. DEPENDING UPON POSITION OF SIGNAL HEAD ADJACENT TO POLE, SIGN MAY OVERLAP POLE SHAFT
ROADWAY LUMINAIRES (WHERE REQUIRED ON PLAN SHEET) " VARIABLE ARM LENGTH (MAX.), 3.3 SQ. FT., 75 LB. PED SIGNALS -- TWO 2 SEC. 12 INCH MOUNTED 8 FT. FROM BASE OF POLE.
POST MOUNTED 3 SEC. SIGNAL HEAD AT 10 FT. ON SIDE OF POLE.

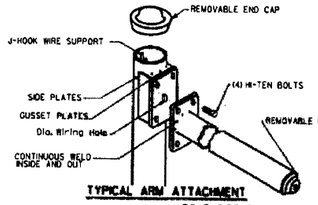
4. POLE/MAST ARM CAP -- POLE AND MAST ARMS CAPS SHALL BE PROVIDED, FABRICATED OF EITHER STEEL OR CAST ALUMINUM.

5. HAND HOLE -- HAND HOLES SHALL BE 4 X 6 INCHES FOR STANDARD, AND 3 X 5 INCHES FOR PED POLES, MINIMUM PLACED APPROXIMATELY 12 INCHES FROM BASE, AND SHALL BE FIXED WITH A BOLT DOWN COVER. A VACUUM FORMED ABS COVER IS AN ACCEPTABLE ALTERNATE TO STEEL. POLES GREATER THAN 21 FT. IN HEIGHT (FOR ROADWAY LUMINAIRE ATTACHMENT) SHALL INCLUDE A HAND HOLD WITHIN 12 INCHES OF MAST ARM(S) ATTACHMENT(S).

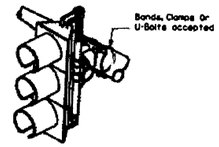
6. POLE/MAST ARM TAPER AND SLOPE - AVERAGE TAPER OF SIGNAL ARMS AND POLE SHALL BE 0.125 TO 0.15 INCHES PER FT.

MAST ARM CENTERLINE ANGLE AT ATTACHMENT POINT WITH POLE SHALL MAINTAIN NOT LESS THAN 0.5 DEGREES OR MORE THAN 4 DEGREES POSITIVE SLOPE WITH A LINE PERPENDICULAR TO THE POLE CENTERLINE. THE ARM SHALL MAINTAIN A POSITIVE AFTER IT IS PLACED UNDER LOAD.

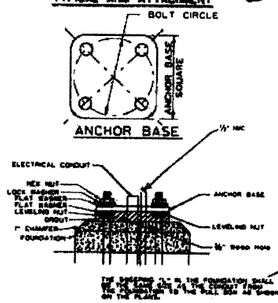
7. NUT COVERS - EACH POLE SHALL INCLUDE A BOLT DOWN NUT COVER FOR EACH ANCHOR BOLT.

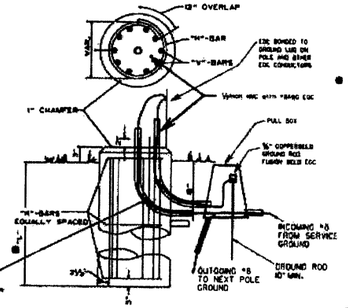


TYPICAL ARM ATTACHMENT



NOTE: THE SIGNAL SHALL BE CONNECTED TO THE MAST ARM BY BRACKETING AS DIRECTED BY THE ENGINEER.



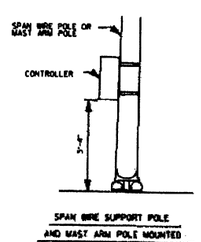


THE GROUND ROD SHALL BE FUSION WELDED TO A 1C/#8 A.W.G. SOLID COPPER GROUND WIRE. ATTACHMENT TO THE PRIMARY GROUND MAY BE BY AN APPROVED CLAMP. THE ROD IS TO BE LOCATED IN THE CONCRETE PULL BOX.

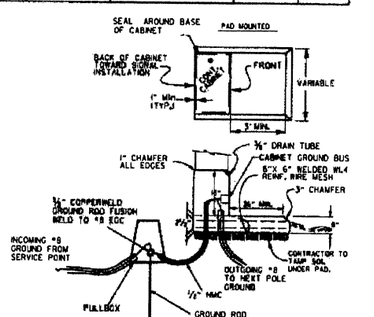
TYPICAL FOUNDATION DETAILS

POLE FOUNDATION MINIMUM DIMENSIONS AND STEEL REINFORCING. ALL REINFORCING STEEL SHALL BE GRADE 40 MIN.

ARM LENGTH	FDN. DIAMETER	DEPTH "L" *	STEEL		
			VERT.	HORZ.	O/C.
PED	30"	7'-0"	12-#7 (6'-6")	10-#4	8.44"
2' to 12'	30"	10'-6"	12-#7 (10'-0")	15-#4	8.42"
over 12' to 20'	30"	11'-6"	12-#7 (11'-0")	16-#4	8.66"
over 20' to 35'	36"	12'-6"	13-#8 (12'-0")	17-#4	8.88"
over 35' to 50'	36"	13'-6"	13-#8 (13'-0")	19-#4	8.56"
over 50' to 72'	42"	14'-6"	18-#8 (14'-0")	20-#4	8.74"
Twins to 20'	30"	16'-0"	12-#6 (15'-6")	22-#4	8.76"
Twins over 20' to 44'	36"	16'-0"	13-#8 (15'-6")	22-#4	8.76"
Twins over 44' to 50'	42"	16'-0"	18-#8 (15'-6")	22-#4	8.76"
Twins over 50' to 72'	42"	16'-6"	18-#8 (16'-0")	23-#4	8.64"



SPAN WIRE SUPPORT POLE AND MAST ARM POLE MOUNTED



CONTROLLER CABINET MOUNTING DETAILS

UNLESS OTHERWISE DIRECTED BY THE ENGINEER, CABINET ORIENTATION SHALL BE SUCH THAT THE BACK OF THE CABINET IS PARALLEL TO THE STREET AND POSITIONED TO ALLOW VISIBILITY OF THE SIGNAL DISPLAY WHILE OBSERVING THE CONTROLLER FRONT PANEL.

8. GROUND ROD - A 10' X 5/8" GROUND ROD SHALL BE INSTALLED IN THE PULL BOX FOR EACH POLE AND THE CONTROLLER. PAYMENT FOR THE GROUND ROD AND 1/2" NMC SHALL BE INCLUDED IN ITEM 714 FOR SIGNAL POLES AND ITEM 701 FOR THE CONTROLLER. THE PULL BOX AND CONDUCTOR BOX SHALL BE PAID FOR SEPARATELY.

9. POLE BASE/FOUNDATION - ANCHOR BOLTS SHALL INCLUDE AS A MINIMUM, ONE LEVELING NUT, TWO FLAT WASHERS, ONE LOCK WASHER, AND ONE HEX. NUT. PERIMETER OF ANCHOR BASE SHALL BE GROUTED WITH A 1/4" WEEP HOLE. ALL CONCRETE SHALL BE CLASS "S" OR GREATER.

10. CONCRETE - ALL CONCRETE FOR CONTROLLER CABINET AND POLE FOUNDATIONS SHALL BE CLASS "S" OR GREATER.

11. PEDESTRIAN PHASES - PEDESTRIAN MOVEMENTS SHALL BE PUSH BUTTON ACTUATED AND CONCURRENTLY TIMED, UNLESS OTHERWISE INDICATED ON THE PLAN SHEET(S). FURNISHING AND INSTALLING PED PUSH SWITCH SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM PEDESTRIAN SIGNAL HEAD.

SIGNAL OPERATION NOTES:

FLASHING OPERATION - PRIOR TO NORMAL OPERATION, SIGNAL SHALL BE FLASHED FOR A PERIOD OF 3 TO 5 WORK DAYS OR AS DIRECTED BY THE ENGINEER. SIGNAL SHALL BE PLACED IN OPERATION ONLY ON A REGULAR WORK DAY, EXCEPT FRIDAY.

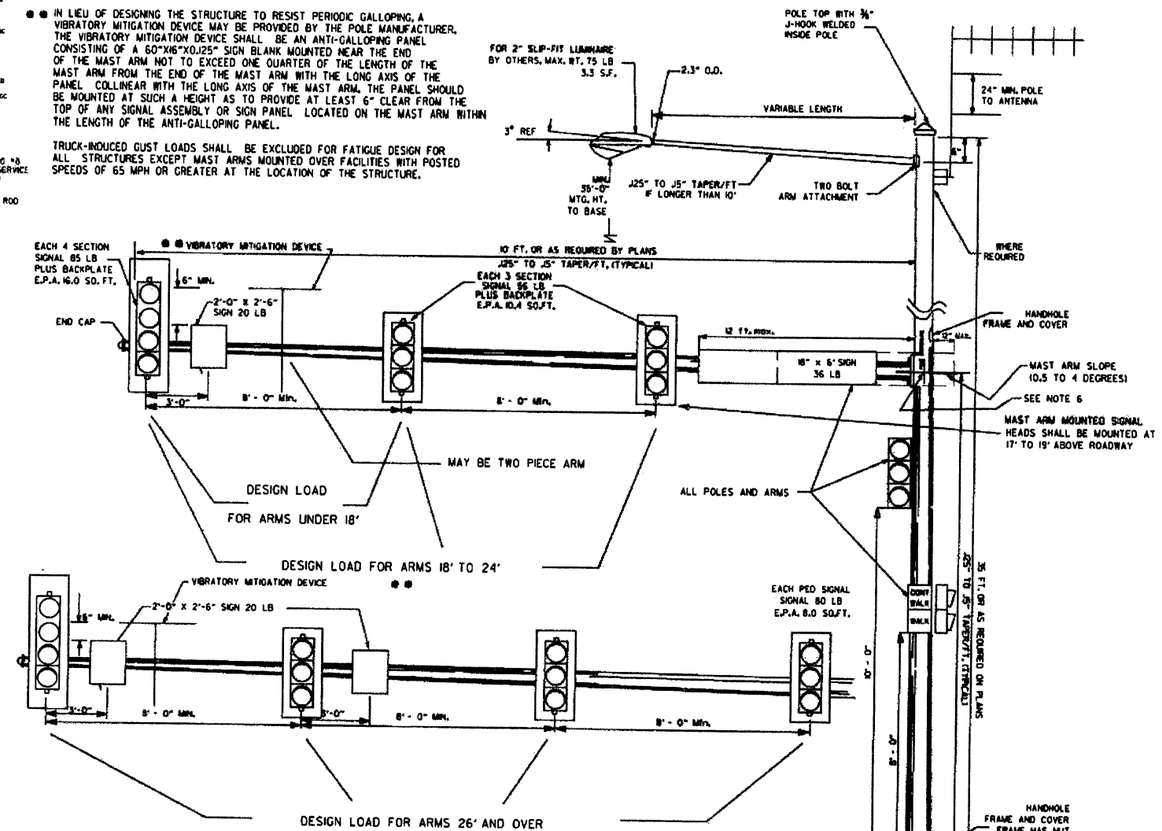
THE CONTRACTOR MAY BE REQUIRED TO ALTER THE FLASHING DISPLAY DURING THE TEMPORARY FLASH PERIOD. AT THE TIME INTERSECTION IS PLACED IN PERMANENT OPERATION, THE FLASH SEQUENCE SHALL THEN BE RETURNED TO THAT INDICATED ON THE PLAN SHEETS. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THESE ALTERATIONS IN FLASH SEQUENCE.

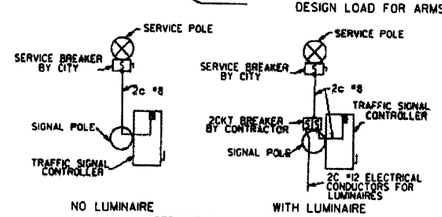
SPECIAL NOTE: 90 MPH WIND ZONE DESIGN, SEE NOTE 3. MINIMUM STRUCTURAL REQUIREMENTS.

* WHEN THE GROUND ELEVATION AT THE POLE IS LOWER THAN THE ROADWAY ELEVATION, THE LENGTH OF FOUNDATION ABOVE THE GROUND MAY BE INCREASED TO PROVIDE THE REQUIRED SIGNAL HEAD CLEARANCE ABOVE THE ROADWAY. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 18" OR LESS, NO INCREASE IN DEPTH "L" WILL BE REQUIRED. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 5'-6" OR LESS, INCREASE DEPTH "L" BY 1'-0". FOR LENGTHS GREATER THAN 5'-6", DEPTH "L" SHALL BE ADJUSTED AS DIRECTED BY THE ENGINEER. LONGITUDINAL REINFORCING, AS SHOWN IN THE TABLE, SHALL BE PROVIDED FOR THE LENGTH OF THE EXTENDED SHAFT AND #4 TIES SHALL BE PROVIDED AT A SPACING NOT TO EXCEED 9" ON CENTERS. PAYMENT WILL BE IN ACCORDANCE WITH SECTION 714 OF THE STANDARD SPECIFICATIONS.

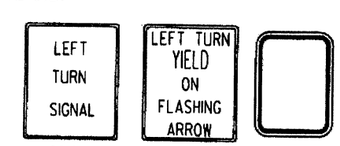
** IN LIEU OF DESIGNING THE STRUCTURE TO RESIST PERIODIC GALLOPING, A VIBRATORY MITIGATION DEVICE MAY BE PROVIDED BY THE POLE MANUFACTURER. THE VIBRATORY MITIGATION DEVICE SHALL BE AN ANTI-GALLOPING PANEL CONSISTING OF A 60"X16"X0.125" SIGN BLANK MOUNTED NEAR THE END OF THE MAST ARM NOT TO EXCEED ONE QUARTER OF THE LENGTH OF THE MAST ARM FROM THE END OF THE MAST ARM WITH THE LONG AXIS OF THE PANEL COLLINEAR WITH THE LONG AXIS OF THE MAST ARM. THE PANEL SHOULD BE MOUNTED AT SUCH A HEIGHT AS TO PROVIDE AT LEAST 6" CLEAR FROM THE TOP OF ANY SIGNAL ASSEMBLY OR SIGN PANEL LOCATED ON THE MAST ARM WITHIN THE LENGTH OF THE ANTI-GALLOPING PANEL.

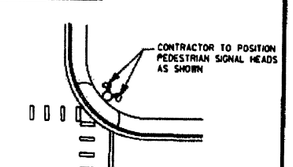
TRUCK-INDUCED GUST LOADS SHALL BE EXCLUDED FOR FATIGUE DESIGN FOR ALL STRUCTURES EXCEPT MAST ARMS MOUNTED OVER FACILITIES WITH POSTED SPEEDS OF 65 MPH OR GREATER AT THE LOCATION OF THE STRUCTURE.





SERVICE DISCONNECT





PEDESTRIAN SIGNAL HEADS

DATE	REVISION	DATE FILM
12-8-16	REVISED NOTES	
2-27-14	REVISED NOTES	
9-12-13	ISSUED AS STANDARD DRAWING	
7-2-12	REVISED TWO SIGNAL HEADS	
5-21-09	REVISED GROUNDING	
7-31-08	REVISED GROUNDING	
4-25-08	ADDED VIBRATORY MITIGATION DEVICE & NOTES	
4-18-08	REVISED AASHTO NOTES	
4-17-06	REVISED TO 2006 AASHTO STANDARDS	
10-12-04	REVISED CABINET ORIENTATION	
6-23-04	REVISED	
5-8-04	REV. NOTE STANDARD REQUIREMENTS	
6-1-01	REV. NOTES & POLE MAST ARM SLOPE	
4-6-01	REVISED POLE TAPERS	
4-25-00	REV. NOTES & SIGNAL HEAD PLACEMENT	
5-22-99	REVISED FOUNDATION DETAILS	
8-17-98	REVISED DETAILS AND NOTES	
9-21-95	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

STEEL POLE WITH MAST ARM

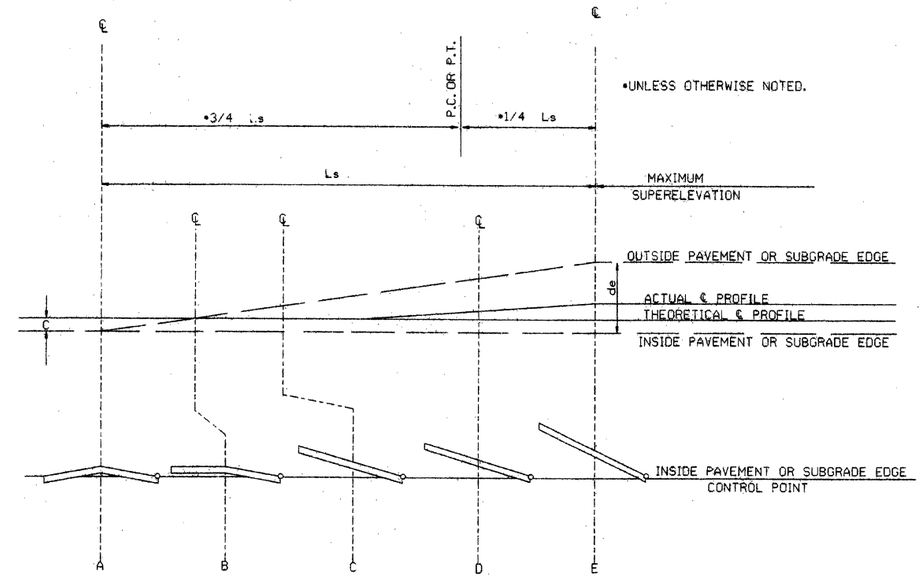
STANDARD DRAWING SD-11

SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

DEGREE OF CURVE	30 MPH e	30 MPH Ls (FT) MINIMUM	30 MPH Ls (FT) DESIRABLE	40 MPH e	40 MPH Ls (FT) MINIMUM	40 MPH Ls (FT) DESIRABLE	50 MPH e	50 MPH Ls (FT) MINIMUM	50 MPH Ls (FT) DESIRABLE	55 MPH e	55 MPH Ls (FT) MINIMUM	55 MPH Ls (FT) DESIRABLE	60 MPH e	60 MPH Ls (FT) MINIMUM	60 MPH Ls (FT) DESIRABLE	70 MPH e	70 MPH Ls (FT) MINIMUM	70 MPH Ls (FT) DESIRABLE
0° 15'	N.C.			N.C.			N.C.			N.C.			N.C.			N.C.		
0° 30'	N.C.			N.C.			N.C.			N.C.			N.C.			N.C.		
0° 45'	N.C.			N.C.			R.C.			0.022			0.023			0.028		
1° 00'	N.C.			N.C.			0.021			0.025			0.030			0.037		
1° 15'	N.C.			R.C.			0.026			0.032			0.037			0.046		
1° 30'	N.C.			0.021			0.031			0.037			0.043			0.054		
1° 45'	N.C.			0.025			0.036			0.043			0.049			0.062		
2° 00'	R.C.			0.028			0.040			0.048			0.055			0.070		
2° 15'	R.C.			0.031			0.045			0.053			0.061			0.078	300	
2° 30'	0.021			0.034			0.049			0.058			0.067			0.085	315	350
2° 45'	0.023			0.037			0.053			0.063			0.072			0.091	335	
3° 00'	0.025			0.040			0.057			0.067	220		0.077	260		0.096	350	
3° 15'	0.027	150		0.043			0.061			0.072	225		0.082	275		0.098	360	400
3° 30'	0.029			0.046			0.065	205		0.076	235		0.086	285		0.100	360	
3° 45'	0.031			0.049			0.069	215		0.080	245		0.090	295				
4° 00'	0.033			0.051			0.072	225		0.083	255		0.093	305				
4° 30'	0.037			0.056			0.078	240		0.087	270		0.096	315				
5° 00'	0.040			0.061			0.083	250		0.091	280		0.098	320				
5° 30'	0.043			0.066	185		0.088	260		0.094	295							
6° 00'	0.046			0.070	190		0.092	270		0.096	300							
6° 30'	0.050			0.074	200		0.095	280		0.100	305							
7° 00'	0.053			0.078	210		0.098	285			315							
7° 30'	0.056			0.081	215		0.099	290										
8° 00'	0.058			0.084	220		0.100	290										
8° 30'	0.061			0.087	225													
9° 00'	0.063			0.089	230													
10° 00'	0.068	160		0.094	235													
11° 00'	0.072	170		0.097	250													
12° 00'	0.076	175		0.099	260													
13° 00'	0.080	180		0.100	250													
14° 00'	0.083	190																
15° 00'	0.086	195																
16° 00'	0.089	200																
17° 00'	0.091	200																
18° 00'	0.093	205																
19° 00'	0.095	210																
20° 00'	0.097	215	250															
21° 00'	0.098	215																
22° 00'	0.099	215																
23° 00'	0.099	215																
24° 00'	0.100	220																
	D MAX = 24° 45'																	
				N.C.			N.C.			N.C.			N.C.			N.C.		
				N.C.			N.C.			N.C.			N.C.			N.C.		
				N.C.			R.C.			0.022			0.023			0.028		
				N.C.			0.021			0.025			0.030			0.037		
				R.C.			0.026			0.032			0.037			0.046		
				0.021			0.031			0.037			0.043			0.054		
				0.025	175		0.036	200		0.043	225		0.049	250		0.062	275	
				0.028			0.040			0.048		300	0.055		300	0.070		300
				0.031			0.045		250	0.053			0.061			0.078		
				0.034			0.049			0.058			0.067			0.085		
				0.037			0.053			0.063			0.072			0.091		
				0.040		200	0.057			0.067	230		0.077	260		0.096		
				0.043			0.061			0.072	245		0.082	275		0.098		
				0.046			0.065	205		0.076	255		0.086	285		0.100		
				0.049			0.069	215		0.080	265		0.090	295	350			
				0.051			0.072	225		0.083	270		0.093	305				
				0.056			0.078	240		0.087	280		0.096	315				
				0.061			0.083	250		0.091	295		0.098	320				
				0.066	185		0.088	260		0.094	300	350						
				0.070	190		0.092	270		0.096	305							
				0.074	200		0.095	280	300	0.100	315							
				0.078	210		0.098	285										
				0.081	215		0.099	290										
				0.084	220		0.100	290										
				0.087	225	250												
				0.089	230													
				0.094	235													
				0.097	250													
				0.099	260													
				0.100	250													
				D MAX = 13° 15'			D MAX = 8° 15'			D MAX = 6° 30'			D MAX = 5° 15'			D MAX = 3° 30'		

ABBREVIATIONS

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



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

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

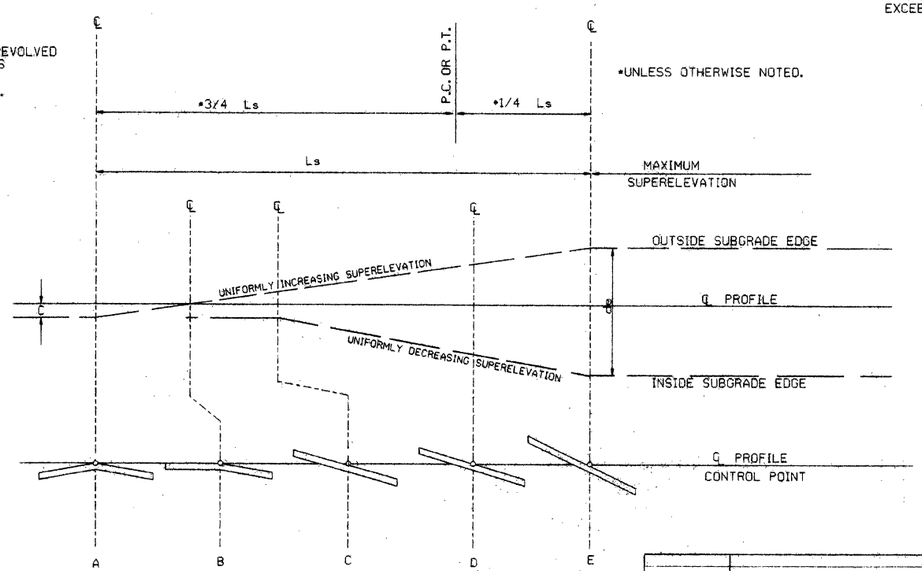
GENERAL NOTES

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

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

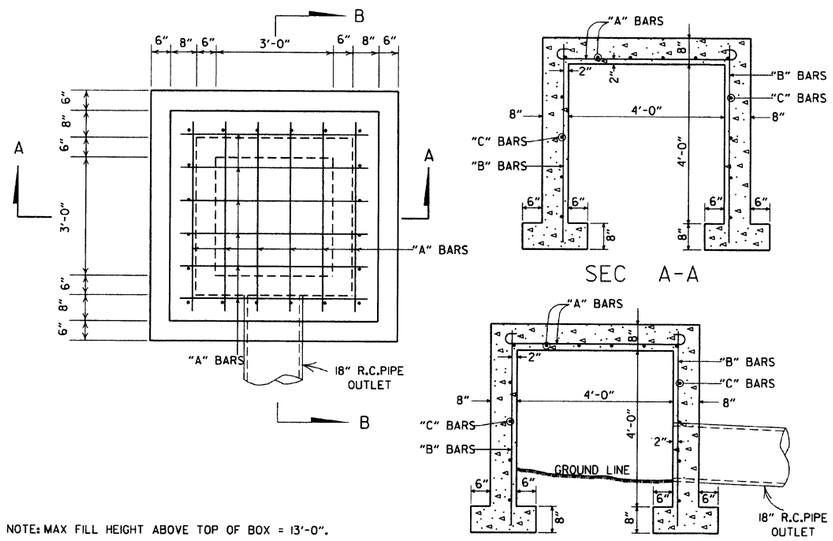
DATE	REVISION	DATE FILMED
10-18-96	ADDED FORMULA	10-18-96
01-09-87	ISSUED	534-1-9-87

ARKANSAS STATE HIGHWAY COMMISSION

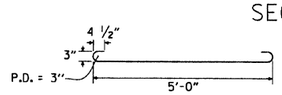
TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC

STANDARD DRAWING SE-2

FILE STDSE2.DGN



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



"A" BARS

STEEL SCHEDULE

BARS	NUMBER	LENGTH	SPACING
"A"	12	6'-0"	10"
"B"	20	5'-0"	10 1/2"
"C"	16	5'-0"	12"

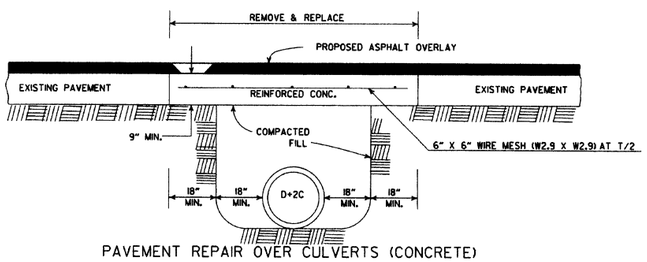
ALL STEEL TO BE #4 BARS

QUANTITIES

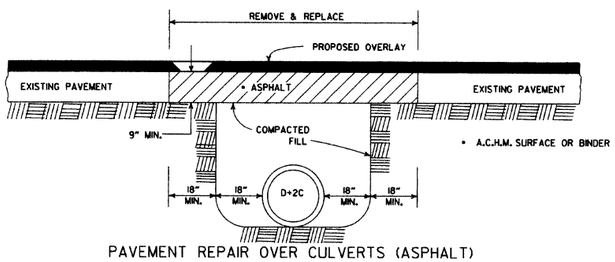
CONCRETE 3.31 CU. YDS.
REINFORCING STEEL 168 LB.

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



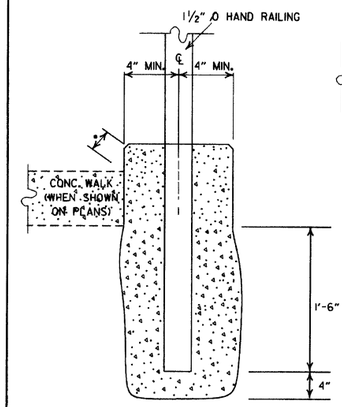
PAVEMENT REPAIR OVER CULVERTS (CONCRETE)



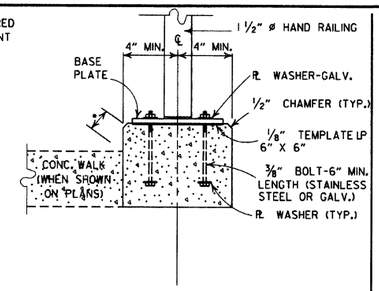
PAVEMENT REPAIR OVER CULVERTS (ASPHALT)

DETAIL SHOWING REPAIR OF EXISTING PAVEMENT AT CULVERT INSTALLATIONS

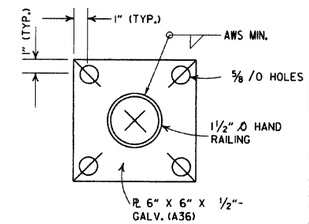
* A 2" MIN. HIGH CURB IS REQUIRED WHEN CONCRETE WALK IS ADJACENT TO THE HAND RAILING. PAYMENT FOR CURB SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR CONCRETE WALKS.



DETAIL OF HAND RAILING SET IN CONCRETE

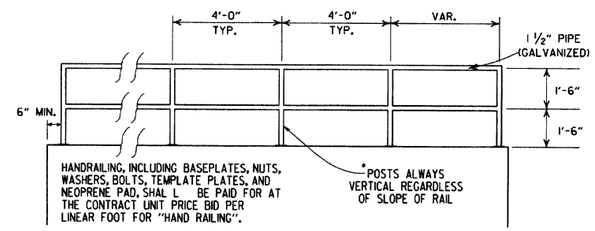


POST CONNECTION TO WALL

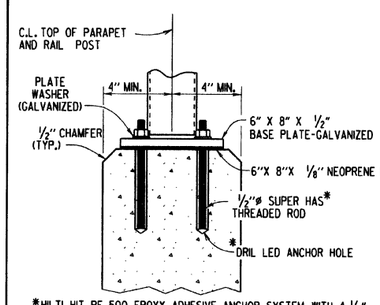


BASE PLATE

POST CONNECTION DETAILS



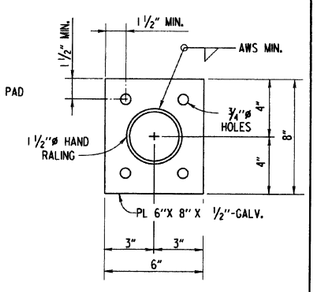
HAND RAILING SHAL L CONFORM TO SECTION 633.



*HILTI HIT RE 500 EPOXY ADHESIVE ANCHOR SYSTEM WITH 4 1/2" EMBEDMENT OR APPROVED EQUAL.

THE ADHESIVE ANCHOR SYSTEM SHAL L BE INSTAL LED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

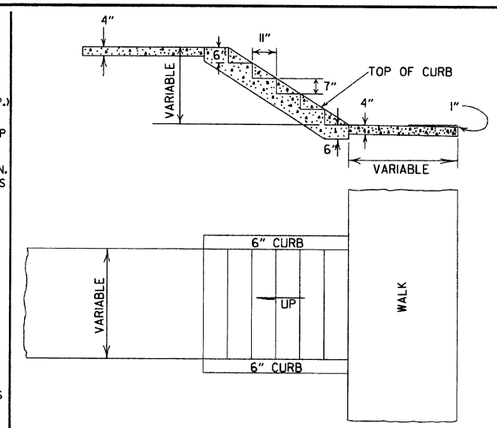
POST CONNECTION TO WALL



BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM
(EPOXY ADHESIVE ANCHORS)

HAND RAILING DETAILS



GENERAL NOTES

1. RISE AND TREAD DIMENSIONS OF STEPS MAY BE VARIED AS DIRECTED BY THE ENGINEER, HOWEVER, TREAD WIDTHS SHALL BE 11" MIN. ALL STEPS IN A FLIGHT SHALL HAVE CONSISTENT TREAD & RISER DIMENSIONS.
2. 1" TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.

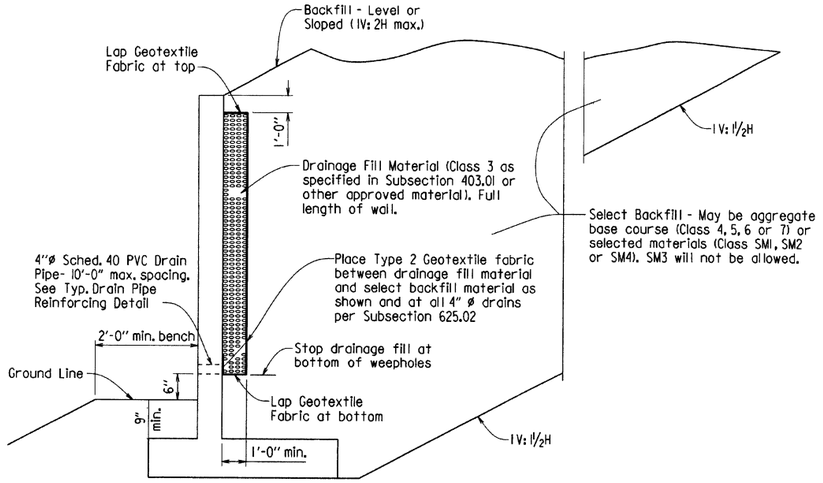
DETAILS OF CONCRETE STEPS & WALKS

DATE	REVISION	DATE FILMED
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

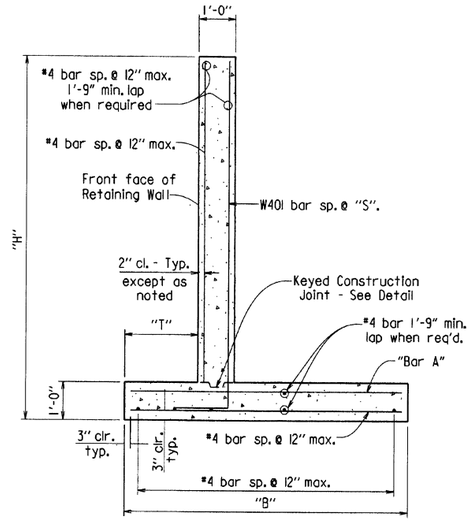
DETAILS OF SPECIAL ITEMS

STANDARD DRAWING SI-1



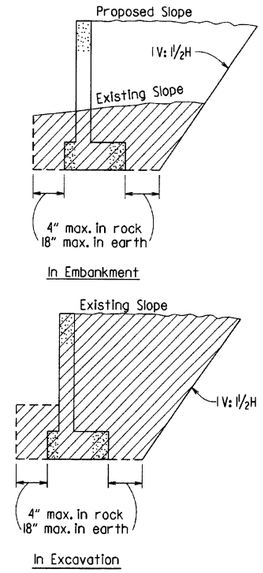
TYPICAL DRAINAGE & BACKFILL DETAILS

N.T.S



TYPICAL SECTION

N.T.S



NOTE: Hatched area denotes maximum limits of pay excavation.

DETAILS OF EXCAVATION

N.T.S

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas state Highway and Transportation Department 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.

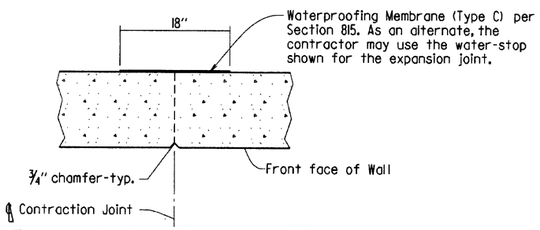
REINFORCING STEEL: All reinforcing steel shall conform to AASHTO M31 orM53, Grade 60.

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, weep holes & geotextile fabric shall not be paid for directly, but shall be considered subsidiary to Class S Concrete.

Drainage fill material (Class 3) and select backfill shall be measured and paid for as Compacted Embankment.

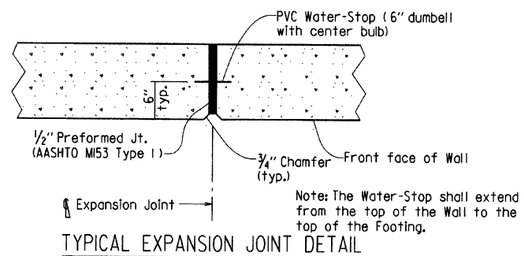
These details are not intended for use along streams or ditches without consideration for scour.



TYPICAL CONTRACTION JOINT DETAIL

N.T.S.

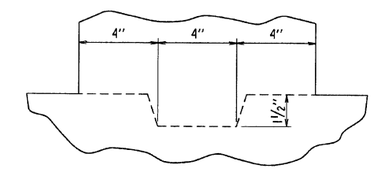
Note: 20'-0" Max. Spacing between Contraction Joints. Horizontal reinforcement shall be continuous through Contraction joints.



TYPICAL EXPANSION JOINT DETAIL

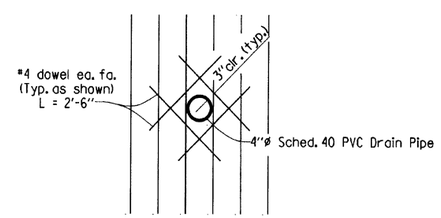
N.T.S.

Note: 60'-0" Max. Spacing between Expansion Joints. Horizontal reinforcing shall stop 2" from ℄ Expansion Joint.



KEYED CONSTRUCTION JOINT DETAIL

N.T.S



TYPICAL DRAIN PIPE REINFORCING DETAIL

N.T.S

SEISMIC ZONE: These walls have been designed for the following site adjusted peak ground accelerations (A℄):
Level Backfill - A℄ ≤ .40g
Sloped Backfill (1V: 2H max.) - A℄ ≤ .30g

TABLE OF RETAINING WALL VARIABLES

(LEVEL BACKFILL)

"H"	"T"	"B"	"S"	"Bar A" Size @ Spacing
3'-0"	9"	2'-6"	12"	#4 @ 12"
4'-0"	9"	3'-6"	12"	#4 @ 12"
5'-0"	9"	4'-0"	12"	#4 @ 12"
6'-0"	9"	4'-6"	12"	#4 @ 12"
7'-0"	9"	5'-6"	12"	#4 @ 10"
8'-0"	9"	6'-0"	12"	#5 @ 10"
9'-0"	1'-0"	7'-0"	12"	#5 @ 6½"

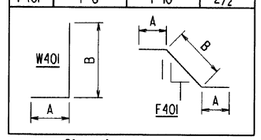
TABLE OF RETAINING WALL VARIABLES

(SLOPED BACKFILL) (1V: 2H MAX.)

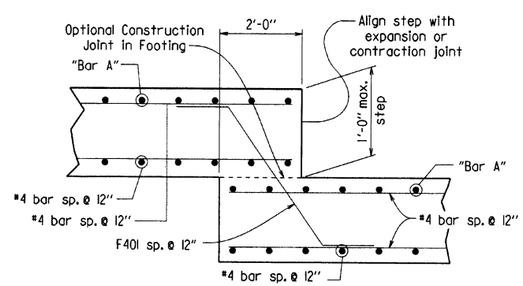
"H"	"T"	"B"	"S"	"Bar A" Size @ Spacing
3'-0"	9"	2'-6"	12"	#4 @ 12"
4'-0"	9"	3'-6"	12"	#4 @ 12"
5'-0"	9"	4'-6"	12"	#4 @ 12"
6'-0"	9"	5'-6"	12"	#4 @ 6"
7'-0"	9"	6'-6"	12"	#5 @ 6½"
8'-0"	1'-6"	8'-0"	7½"	#6 @ 6"
9'-0"	1'-11"	9'-6"	5"	#8 @ 6"

BENDING DIAGRAMS

MARK	∧	∧	P.D.
W401	8"	"H" - 6"	3"
F401	1'-6"	1'-10"	2½"



Dimensions are out to out of bars.



FOOTING STEP DETAIL

N.T.S.

DATE	REVISION	DATE FILMED
5-12-16	REVISED SLOPES FOR SELECT BACKFILL	
2-27-14	REVISED GENERAL NOTES	
7-26-12	DRAWING ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

REINFORCED CONCRETE RETAINING WALL (WITHOUT LIVE LOAD SURCHARGE)

STANDARD DRAWING SI - 2

R1-1 STOP STANDARD 30"X30" EXPRESSWAY 36"X36" SPECIAL 48"X48"	R1-2 YIELD STD. 36"X36"X36" EXPWY. 48"X48"X48" FWY. 60"X60"X60"	R2-1 SPEED LIMIT 50 STD. 24"X30" EXPWY. 36"X48" FWY. 48"X60"	W3-5 SPEED LIMIT XX STD. 36"X36" EXPWY. 48"X48" FWY. 48"X48"	W3-5a XX MPH SPEED ZONE AHEAD STD. 36"X36" EXPWY. 48"X48" FWY. 48"X48"	R4-1 DO NOT PASS STD. 24"X30" EXPWY. 36"X48" FWY. 48"X60"	R4-2 PASS WITH CARE STD. 24"X30" EXPWY. 36"X48" FWY. 48"X60"
R5-1 DO NOT ENTER STD. 30"X30" EXPWY. 36"X36" SPECIAL 48"X48"	R11-2 ROAD CLOSED 48"X30"	R11-3A ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY 60"X30"	R11-4 ROAD CLOSED TO THRU TRAFFIC 60"X30"	RSP-1 SHOULDER CLOSED 48"X30"	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 ROAD NARROWS STD. 36"X36" SPECIAL 48"X48"	W6-3 EXPWY. 36"X36" SPECIAL 48"X48"	W8-7 LOOSE GRAVEL EXPWY. 36"X36" FWY. 48"X48"	W9-2 LANE ENDS MERGE RIGHT STD. 36"X36" FWY. 48"X48"	W13-1 XX M.P.H. STD. 24"X24"	W20-1 ROAD WORK XXXX STD. 48"X48"	W20-2 DETOUR XXXX STD. 48"X48"
W20-4 ONE LANE ROAD XXXX STD. 48"X48"	W20-5 RIGHT LANE CLOSED XXXX STD. 48"X48"	W20-7a 18" 500 FEET W16-2 24" STD. 36"X36" FWY. 48"X48"	W21-2 FRESH OIL STD. 30"X30" SPECIAL 36"X36"	W21-5 SHOULDER WORK STD. 30"X30" SPECIAL 36"X36"	W24-1 STD. 36"X36"	W1-4b STD. 48"X48"
W8-11 UNEVEN LANES STD. 36"X36" FWY. 48"X48"	W8-9 LOW SHOULDER STD. 36"X36" FWY. 48"X48"	G20-1 ROAD WORK NEXT XX MILES 60"X24"	G20-2 END ROAD WORK 48"X24"	OM-3L OM-3R YELLOW BLACK 12"X36"	M4-9 DETOUR STD. 30"X24" SPECIAL 48"X36" SPECIAL 60"X48"	M4-10 DETOUR 48"X18"

R56-1 CONTROLLED ACCESS HWY. NO EXIT STD. 18"X18"	W20-3 ROAD CLOSED XXXX STD. 48"X48"
R55-1 FINES DOUBLE IN WORK ZONES • WHEN WORKERS ARE PRESENT •• 36"X60" • USE 6" C LETTERS •• USE 4" D LETTERS	

ADVANCE DISTANCES
(XXXX)

500 FT	1/2 MILE
1000 FT	3/4 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.

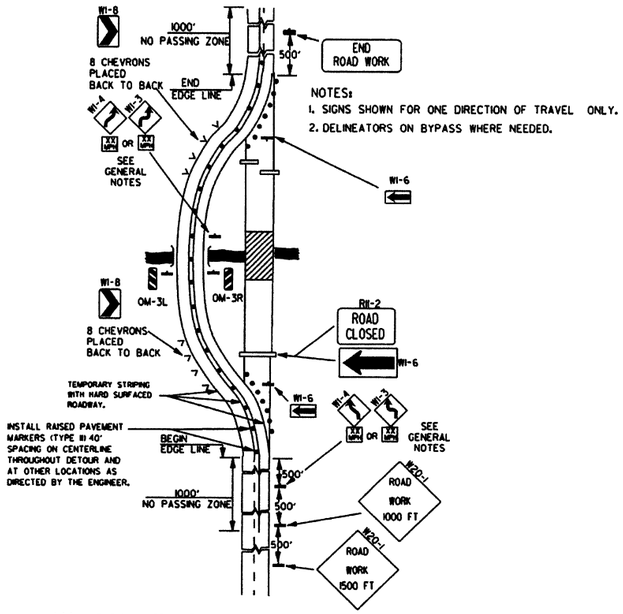
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.

DATE	REVISION	FILMED
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

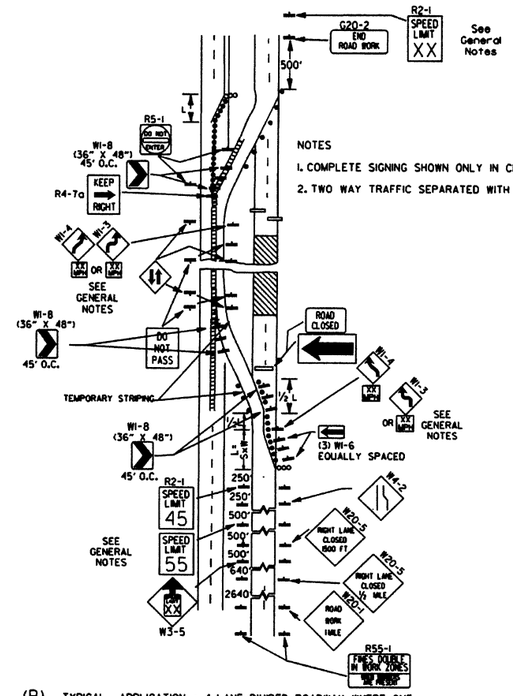
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



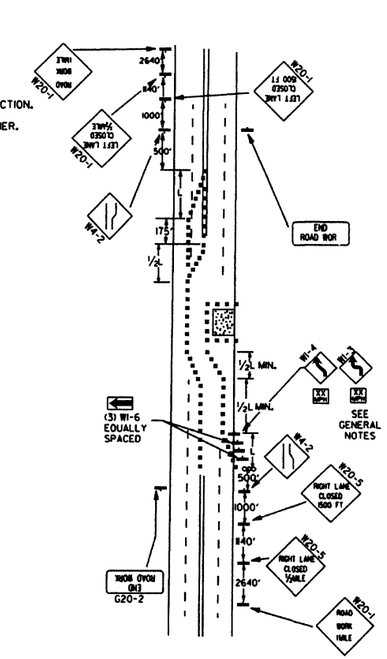
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

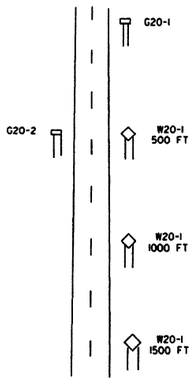


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

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

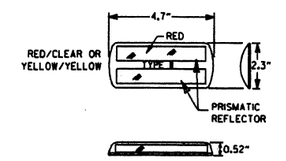


(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



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

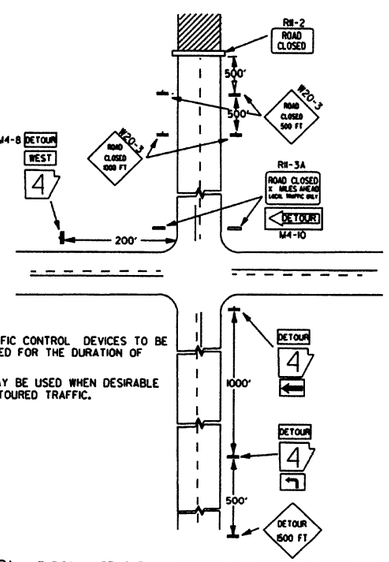
TAPER FORMULAE:

$L = S \times W$ FOR SPEEDS OF 45MPH OR MORE.

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

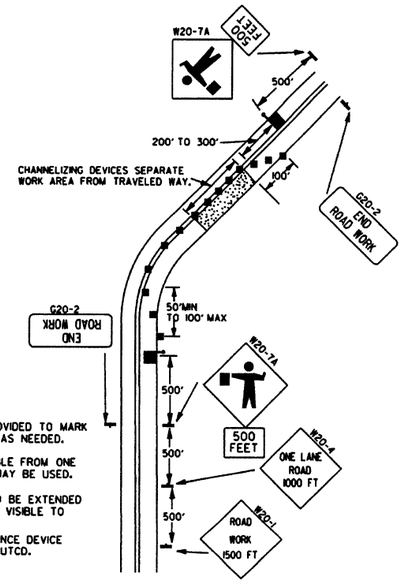
WHERE:
L= MINIMUM LENGTH OF TAPER.
S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.
W= WIDTH OF OFFSET.

GENERAL NOTES:
1. ADVISORY SPEED POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1 45MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1 55MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1MILE INTERVALS. AT THE END OF THE WORK AREA A R2-1(XX) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE.
8. DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE AHTD QUALIFIED PRODUCTS LIST.



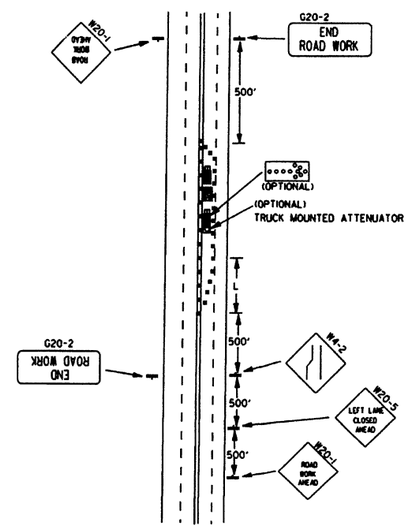
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

(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.



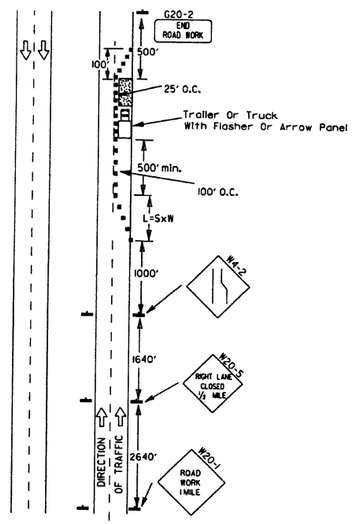
(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

DATE	REVISION	FILMED
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	
3-8-10	ADDED (AFAD)	
8-20-08	REVISED SIGN DESIGNATIONS	
8-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (G) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

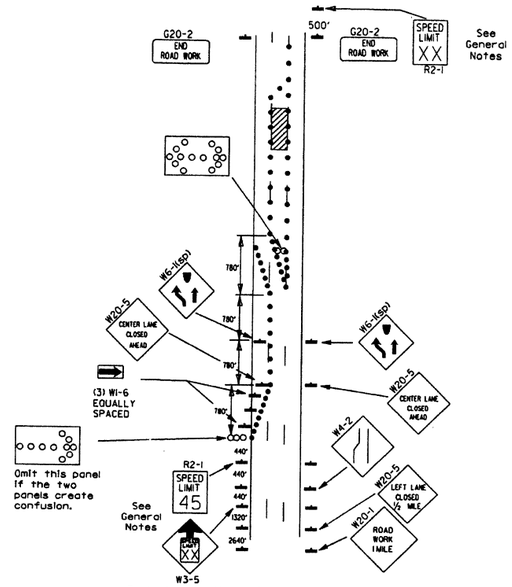
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

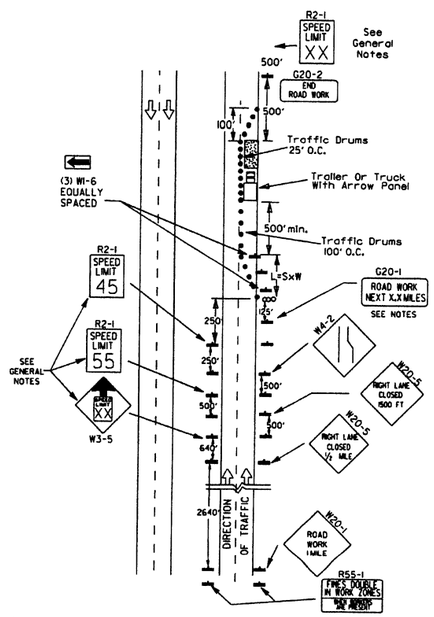
STANDARD DRAWING TC-2



(A) Typical application - daytime maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.



(B) Typical application - 3-lane oneway roadway where center lane is closed.



(C) Typical application - construction operatipns of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

KEY:

ooo Arrow Panel (if Required)

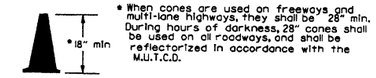
■ Channelizing Device

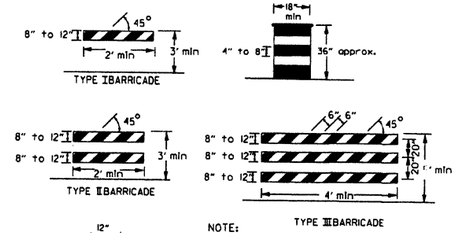
● Traffic drum

GENERAL NOTES:

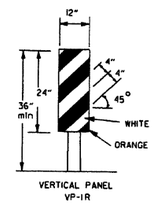
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the W3-5 shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1 mile 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 1 mile 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 1.25' 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 NCHRP-350 or 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.

Channelizing devices





NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.

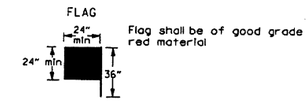


TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

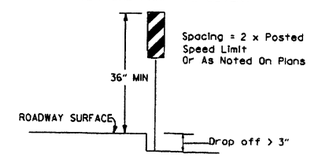
VERTICAL DIFFERENTIAL	LOCATIONS	TRAFFIC CONTROL
1" to 3"	Centerline, lane lines	W8-11
1" to 3"	Edge of shoulder	W8-9
Greater than 3"	Lane lines	Standard lane closure required
Greater than 3"	Edge of traveled lane	*RSP-1 and vertical panels, drums or concrete barrier
Greater than 3"	Edge of shoulder	*Vertical panels, drums or concrete barrier

* When shown on the plans concrete barrier will be used.

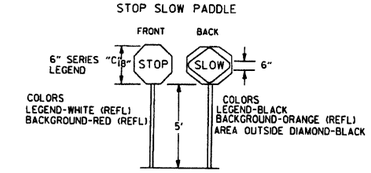
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

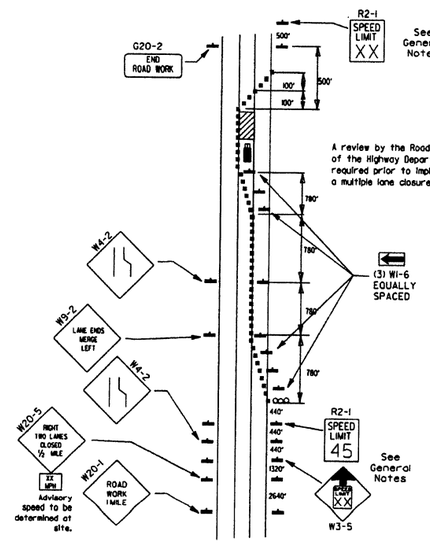


VERTICAL PANEL PLACEMENT



STOP SLOW PADDLE



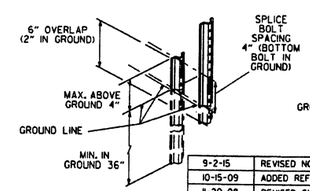


(D) Typical application - closing multiple lanes of a multilane highway.

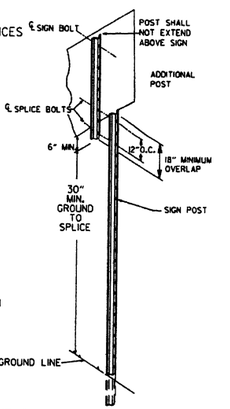
NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2)

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.

SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.



DETAIL OF SPLICES



DATE	REVISION	FILMED
9-2-15	REVISED NOTE 2 & REPLACED R2-5A WITH W3-5	
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1 & REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-3

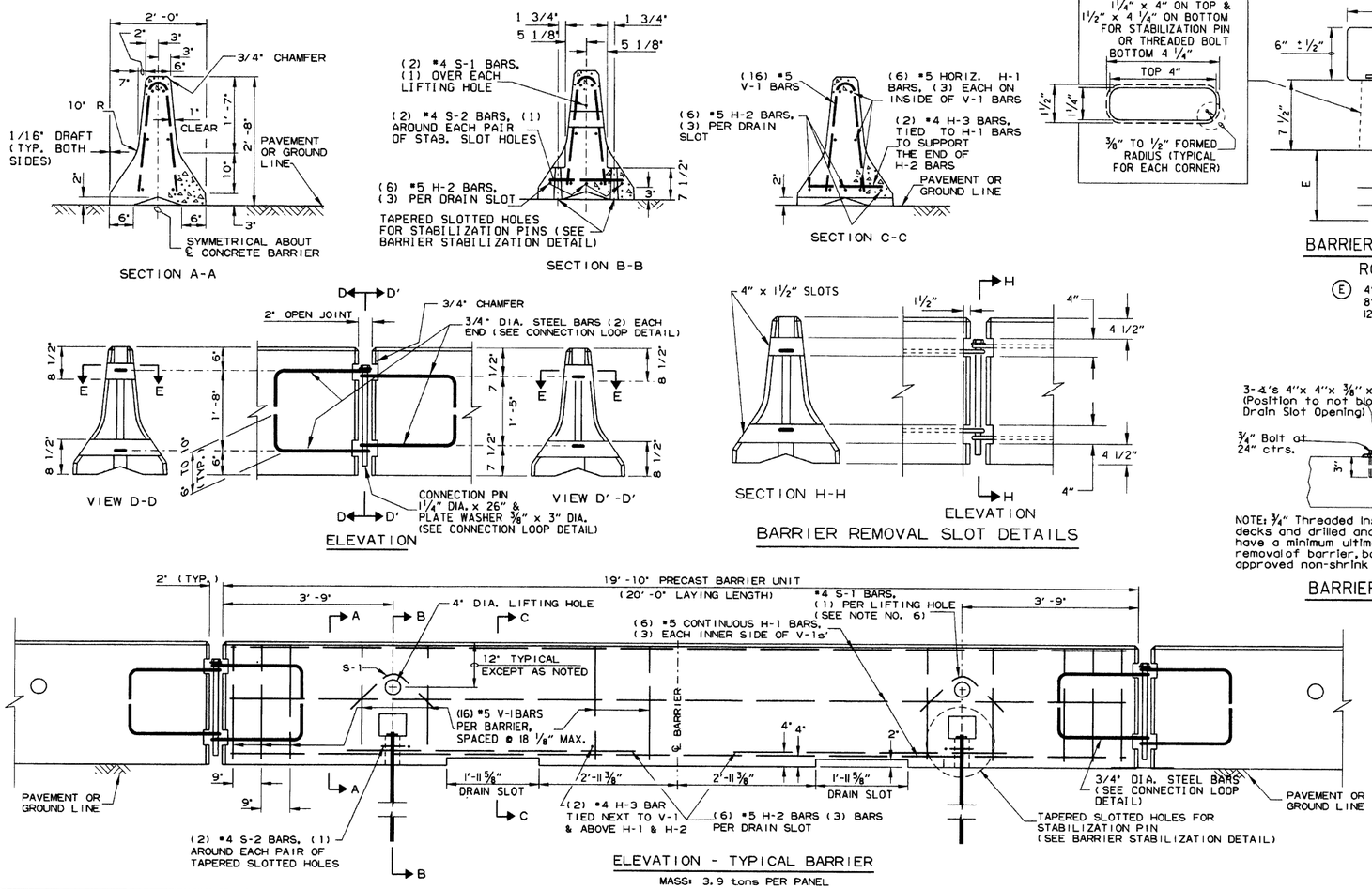
REINFORCING BAR TABLE PER BARRIER UNIT				
MARK	LOCATION	BAR SIZE	(NO. BARS)	SKETCH
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)	19'-3"
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5	(6)	6'-6"
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2. TIED TO V-1	#4	(2)	1'-6"
S-1	OVER LIFT HOLES	#4	(2)	2'-5", 90°, 3 3/8" R, LIFTING HOLE
S-2	HORIZ. AROUND SLOTS BETWEEN V-1'S @ DRAIN SLOTS	#4	(2)	1 1/2" R, SLOTS, 7", 1'-6", 1" MIN. CLEAR TO BAR; 5'-1" BAR W/(4) 1 1/2" R BENDS & MIN. 1'-0" OVERLAP
V-1	VERTICAL IN BARRIER(3) EACH END & (2) AT EACH DRAIN SLOTS	#5	(16)	TOTAL LENGTH 4'-9"; 2 3/16" R, 12°, 4 3/8", 2'-1 3/8", 1 1/2", 9"

SECTION A-A

SECTION B-B

SECTION C-C

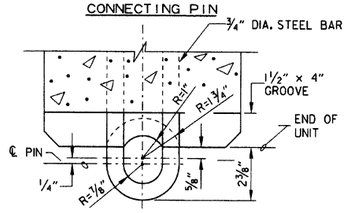
BARRIER REMOVAL SLOT DETAILS



ELEVATION - TYPICAL BARRIER

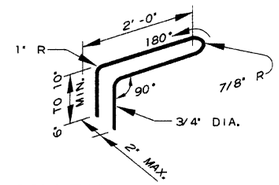
MASS: 3.9 tons PER PANEL

CONNECTING PIN

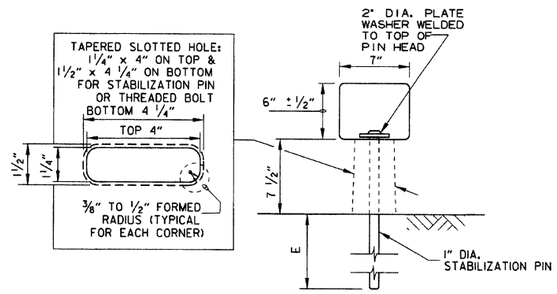


SECTION E-E

CONNECTION DETAILS



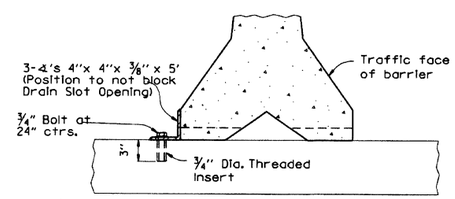
CONNECTION LOOP



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

(E) 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas



NOTE: 3/4" Threaded Inserts shall be cast in place for all new bridge decks and drilled and grouted for existing bridge decks. Inserts shall have a minimum ultimate load capacity of 8000 lbs. in tension. After removal of barrier, bolts, and angles, the inserts shall be filled with approved non-shrink epoxy.

BARRIER STABILIZATION DETAIL

BRIDGE DECKS

General Notes

1. The contractor shall furnish the Precast Concrete Barrier Units and shall be responsible for the manufacture, shipment, storage, placement and removal. At the completion of the project, the precast units will remain the property of the contractor.

2. Materials shall meet the following minimum requirements:
   Concrete: 2500 psi compressive strength at 28 days.
   Reinforcing Steel: AASHTO M 31 or M 53, Grade 60
   Structural Steel: AASHTO-M270 Grade 36 shall be used for the Connection Pin, Connection Loops, and Stabilization Pins. A One Piece Pin with a 3" rounded top may be used in place of the detailed Connection Pin.
   Delineators: Delineators shall be mounted at 10' spacing on top of precast barrier.

   In applications where barrier walls within 6 feet of a traffic lane, additional delineators shall be placed on the barrier at 10' spacing approximately one (1) foot from the top of the barrier. Delineators shall be on the AHTD Qualified Products List for Construction Concrete Barrier Markers.
   Delineator color shall be in accordance with the Manual on Uniform Traffic Control Devices.
   Payment for delineators shall be considered included in the price bid per Lin. Ft. for "Furnishing and Installing Precast Concrete Barrier". The contractor shall certify to the Engineer that the material and the design used in the precast barrier units meets the requirements as shown on this standard drawing.

3. Other Precast Concrete Barriers that have been crash tested and approved by the Federal Highway Administration to meet the requirements of NCHRP-350 test level 3 or Manual For Assessing Safety Hardware (MASH) will be accepted in lieu of the barrier shown. Drain slots shall be provided as needed or as directed by the Engineer. The Contractor shall furnish a certification of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) compliance for any other types of precast barrier to be used. The certification shall state that the precast concrete barrier meets the requirements of NCHRP Report 350 or Manual For Assessing Safety Hardware (MASH) and include a copy of the Federal Highway Administration's (FHWA) approval letter with all attachments. Precast concrete barrier units shall be fabricated and installed in accordance with crash testing and documentation provided in the FHWA approval letter. Mixing of shapes will not be allowed in a continuous line of units.

4. Dowel holes in pavement or bridge slabs that are to remain in place shall be filled. Holes in concrete pavement and bridge slabs shall be filled with an approved non-shrink epoxy grout. Holes in asphalt pavement shall be filled with an approved asphalt joint filler. Payment for drilling and filling holes to be included in the price for various barrier items.

5. Attach Units To Roadway Surface with Stabilization Pins and to Deck Slabs using bolts when required.

6. A 4" White PVC Sleeve may be used to form the Lifting Hole and if used the Sleeve is to be left in place.

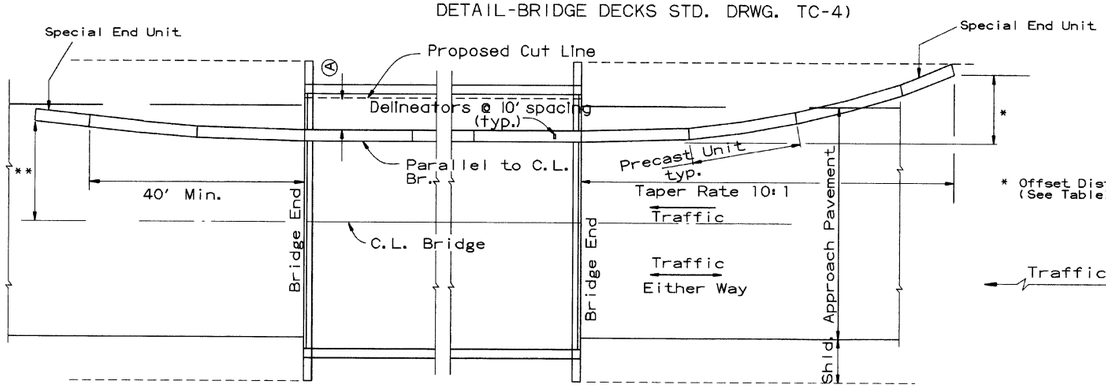
DATE	REVISION	FILMED
2-27-14	REVISED BARRIER STABILIZATION DETAIL	
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	ISSUED NEW DRAWING	

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-4

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

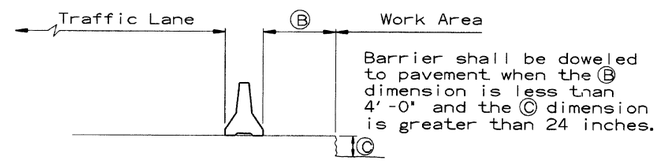


* Offset Distance (See Table)

BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

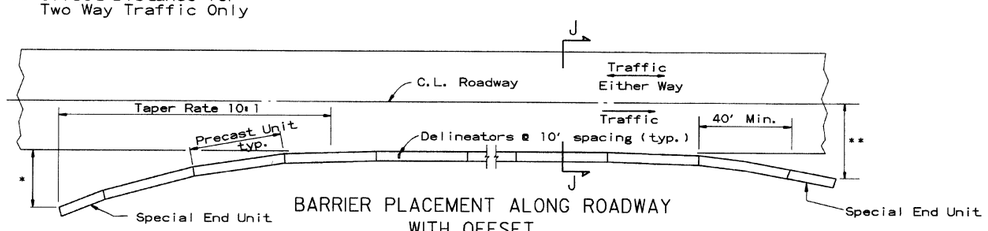
** Offset Distance for Two Way Traffic Only



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

SECTION J-J

No Scale



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

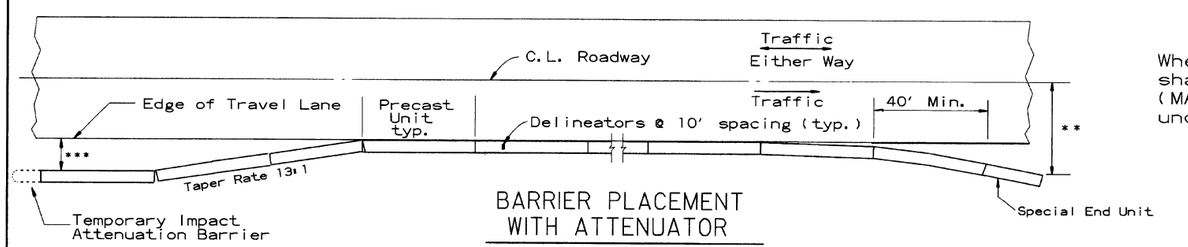
* Offset Distance (See Table)

** Offset Distance For Two Way Traffic Only

Offset Distance Table

Speed (MPH)	Offset Distance (FT.)
≤ 45	12
> 45	18

If offset distance is not attainable, then see "Barrier Placement With Attenuator" Detail shown below.

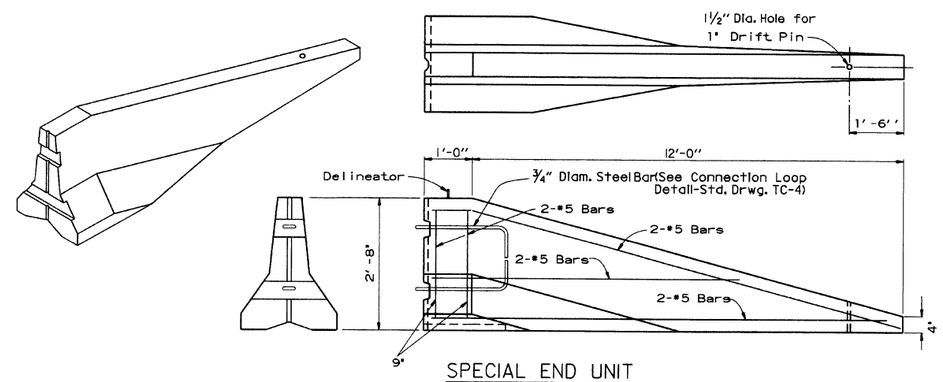


BARRIER PLACEMENT WITH ATTENUATOR

No Scale

** Offset Distance For Two Way Traffic Only

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



SPECIAL END UNIT

No Scale

General Notes

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with an NCHRP-350 or Manual For Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."

DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
5-25-06	REVISED BARRIER PLACEMENT	
8-22-02	ISSUED NEW DRAWING	

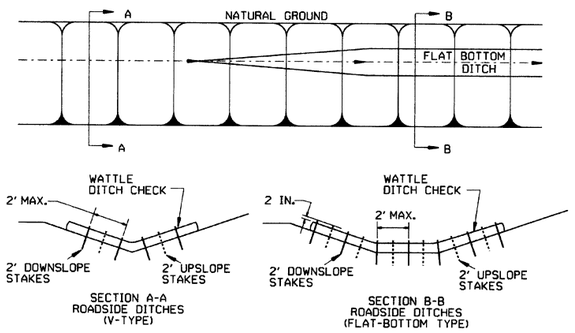
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

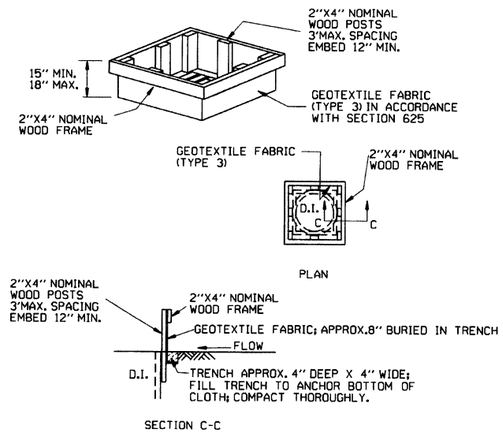
STANDARD DRAWING TC-5

GENERAL NOTES

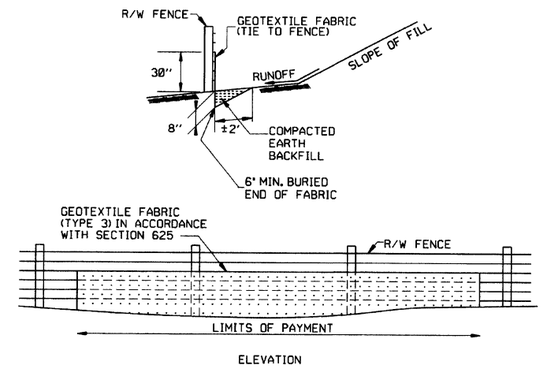
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



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

GENERAL NOTES

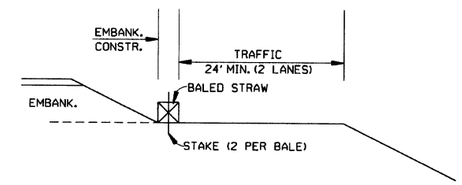
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

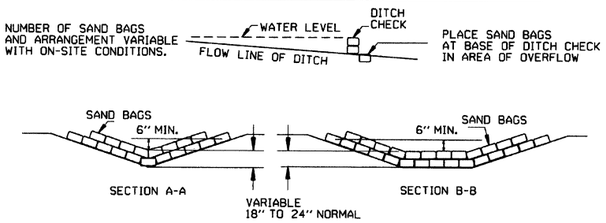
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

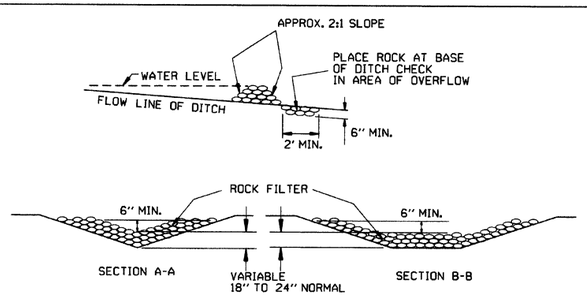
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



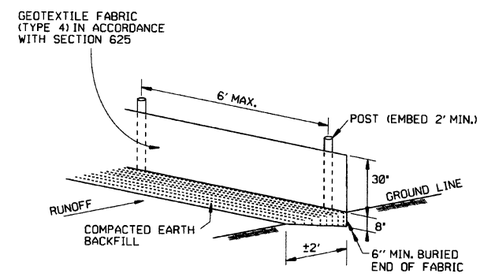
BALED STRAW FILTER BARRIER (E-2)



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

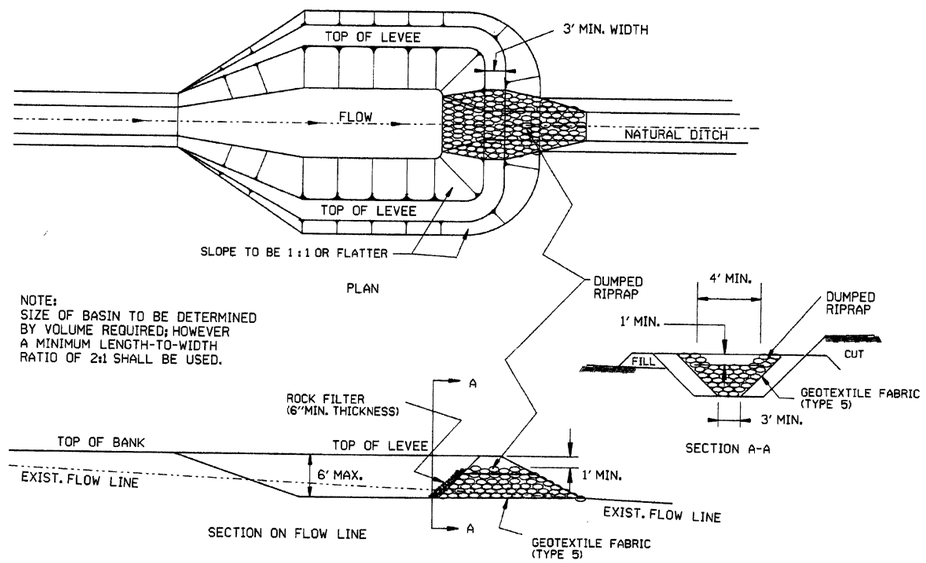
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

DATE	REVISION	FILMED
12-15-11	DELETED BALED STRAW DITCH CHECK & ADDED WATTLE DITCH CHECK	
11-18-98	ADDED NOTES	
7-02-98	ADDED BALED STRAW FILTER BARRIER (E-2)	
7-20-95	REVISED SILT FENCE E-4 AND E-11	7-20-95
7-15-94	REV. E-4 & E-11 MIN. 13" BURIED END OF FABRIC	
6-2-94	REVISED E-1,4,7 & 11; DELETED E-2 & 3	6-2-94
4-1-93	REDRAWN	
10-1-92	REDRAWN	
8-2-76	ISSUED R.D.M.	298-7-28-76

ARKANSAS STATE HIGHWAY COMMISSION

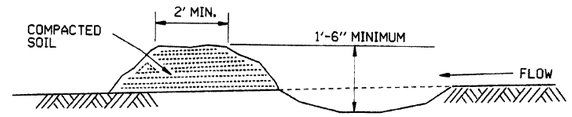
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-1

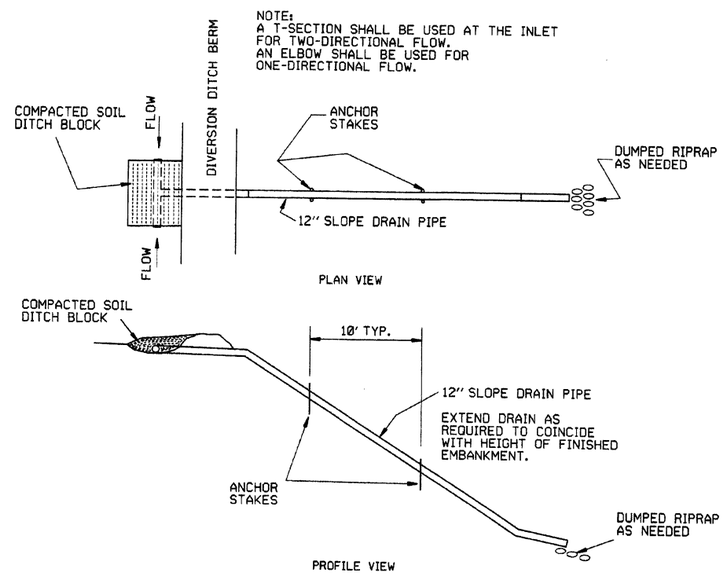


NOTE:
SIZE OF BASIN TO BE DETERMINED BY VOLUME REQUIRED; HOWEVER A MINIMUM LENGTH-TO-WIDTH RATIO OF 2:1 SHALL BE USED.

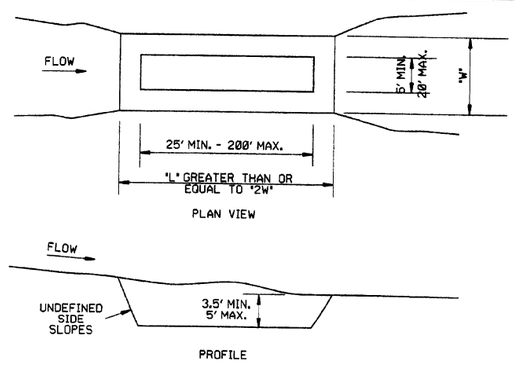
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



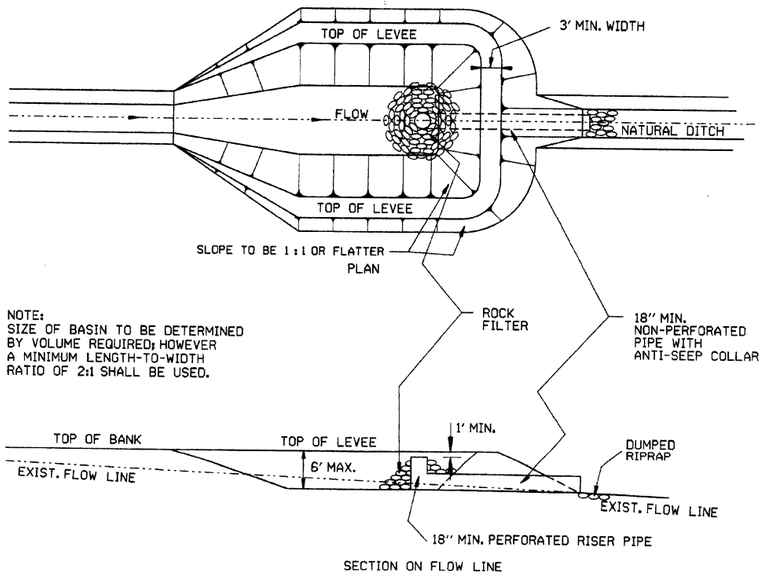
DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)



NOTE:
SIZE OF BASIN TO BE DETERMINED BY VOLUME REQUIRED; HOWEVER A MINIMUM LENGTH-TO-WIDTH RATIO OF 2:1 SHALL BE USED.

SEDIMENT BASIN WITH PIPE OUTLET (E-10)

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

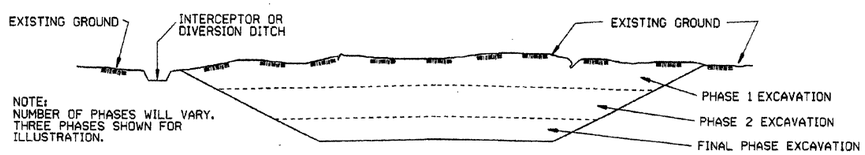
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



NOTE:
NUMBER OF PHASES WILL VARY. THREE PHASES SHOWN FOR ILLUSTRATION.

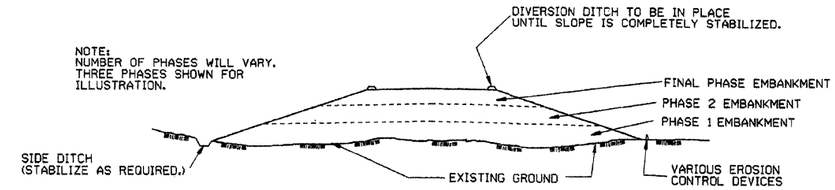
GENERAL NOTE

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.

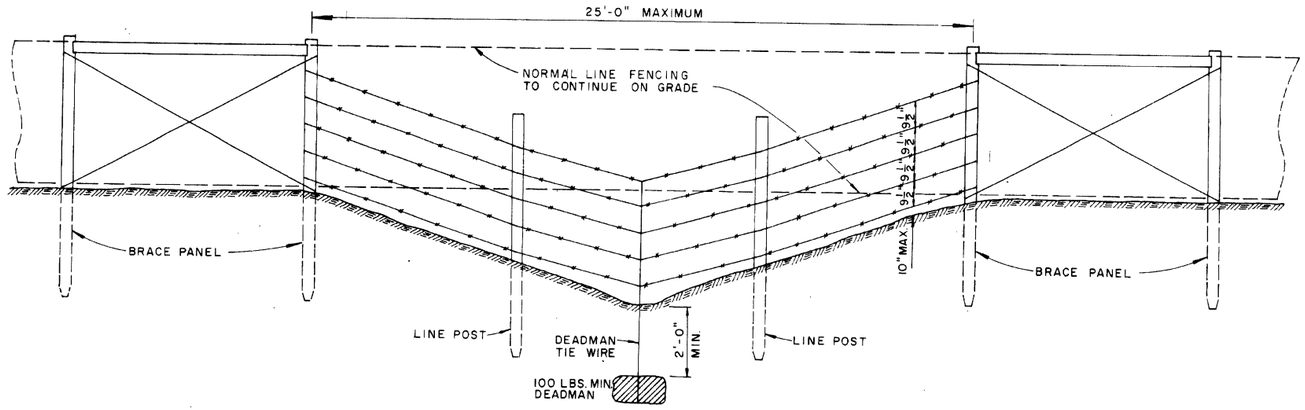
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

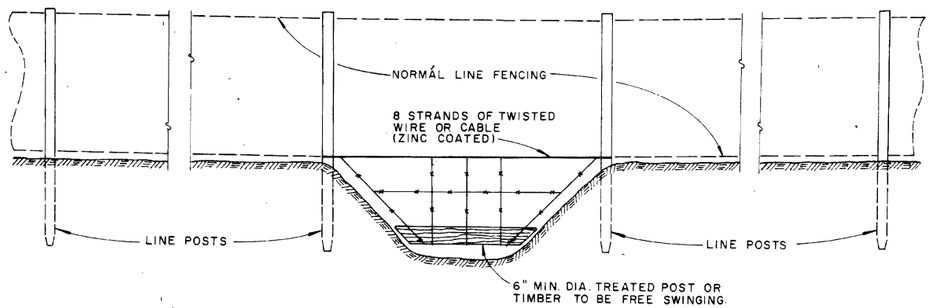
ARKANSAS STATE HIGHWAY COMMISSION

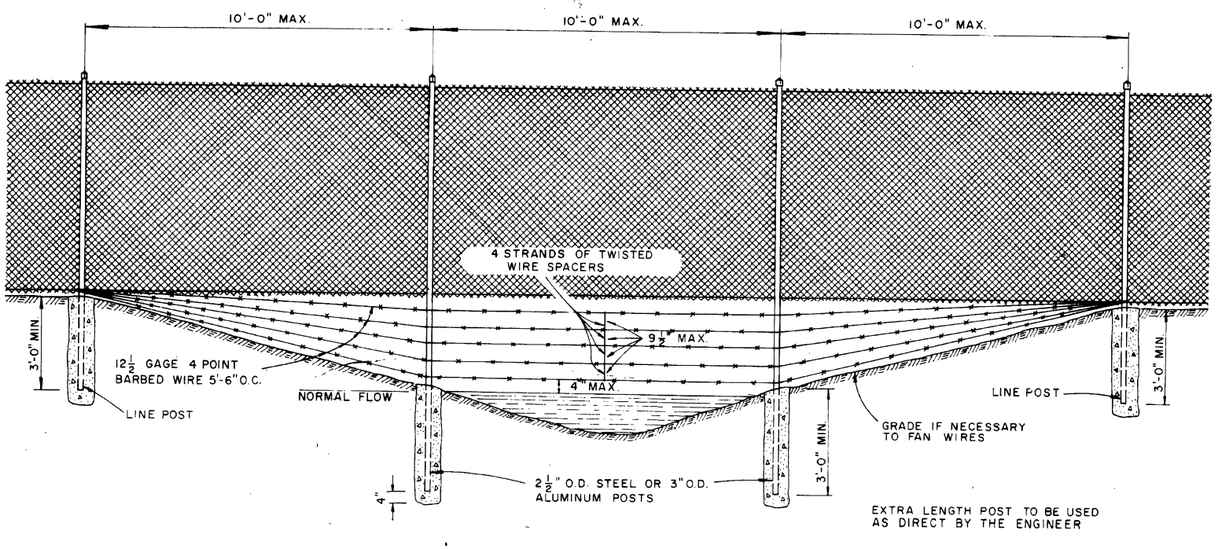
TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3

stdtec3.dgn







GENERAL NOTES:

THESE INSTALLATIONS TO BE USED WHERE NORMAL FENCING INSTALLATION WOULD CAUSE THE COLLECTING OF DRIFT IN THE CHANNEL OR THE DEPRESSION WILL NOT PERMIT NORMAL INSTALLATION. INSTALLATIONS WILL BE MADE ONLY WHERE DIRECTED BY THE ENGINEER.

WHEN A FENCE LINE APPROACHES A DITCH, GULLY OR DEPRESSION, THE LAST POST ON LEVEL GROUND SHALL BE PLACED CLOSE ENOUGH TO THE EDGE OF THE DROP OFF THAT THE FENCE MAY BE STRUNG TO THE POST IN THE DEPRESSION WITHOUT TOUCHING THE GROUND.

IN TERRAIN OF SUCH EXTREME IRREGULARITY THAT MINOR GRADING WILL NOT BE FEASIBLE, THE NORMAL FENCE SHALL CONTINUE ON GRADE AND THE GULLIES OR DEPRESSIONS TREATED BY AUXILIARY FENCES AS SHOWN.

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

DATE	REVISION	DATE FILM'D.
4-20-79	REVISED TOP RAIL & TENSION WIRE	696 4-20-79
10-2-72	REVISED & REDRAWN	529 10-2-72

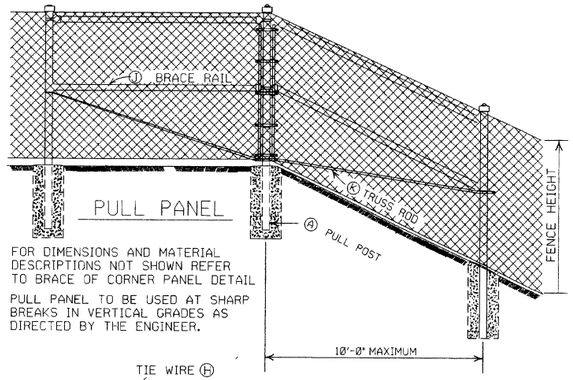
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE WATER GAPS

STANDARD DRAWING

WF-2

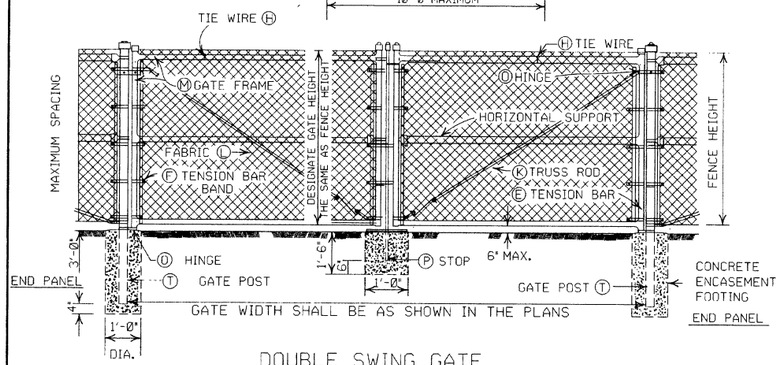
1M—11-71—47001—PP&SC



PULL PANEL

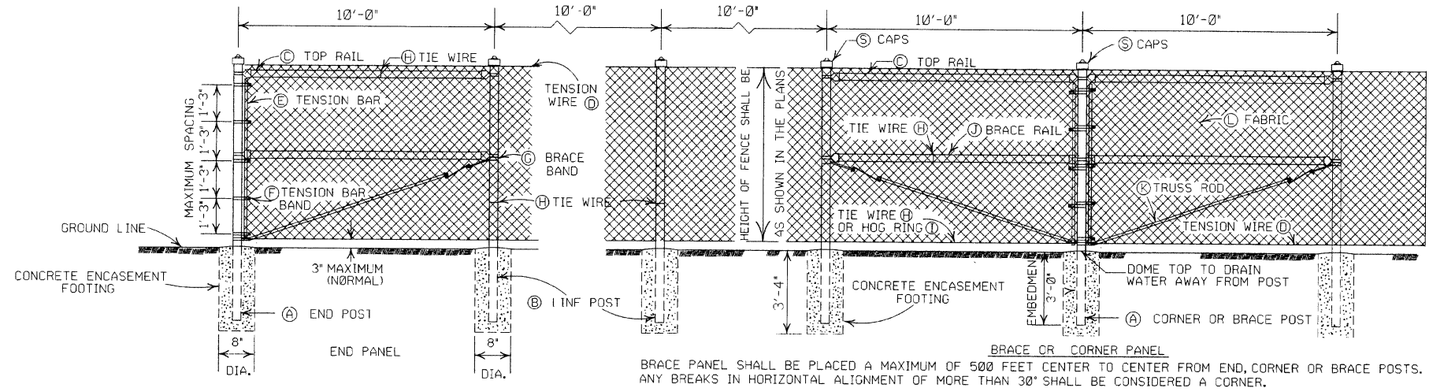
NOTE: FOR DIMENSIONS AND MATERIAL DESCRIPTIONS NOT SHOWN REFER TO BRACE OF CORNER PANEL DETAIL

PULL PANEL TO BE USED AT SHARP BREAKS IN VERTICAL GRADES AS DIRECTED BY THE ENGINEER.



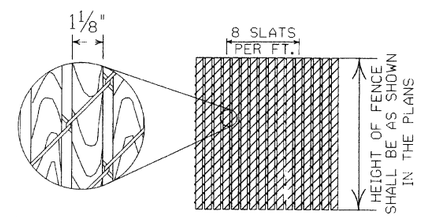
DOUBLE SWING GATE

POST SPACING DETAIL



BRACE OR CORNER PANEL

BRACE PANEL SHALL BE PLACED A MAXIMUM OF 500 FEET CENTER TO CENTER FROM END, CORNER OR BRACE POSTS. ANY BREAKS IN HORIZONTAL ALIGNMENT OF MORE THAN 30° SHALL BE CONSIDERED A CORNER.



1⅛" X ¼" REDWOOD SLATS(LENGTH TO MATCH HEIGHT OF FENCE)

DETAIL OF REDWOOD SLAT INSTALLATION

(WHERE APPLICABLE)

GENERAL NOTES:

(C) CHAIN LINK FENCE BEING PLACED ON PRIVATE PROPERTY SHALL INCLUDE A TOP RAIL. ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER LIN. FT. OF CHAIN LINK FENCE.

(D) TENSION WIRE: SHALL BE SECURED TO ALL TERMINAL, PULL, BRACE OR CORNER POSTS WITH TENSION BAR BANDS.

(J) BRACE RAIL: BRACE RAILS SHALL BE PROVIDED AT ALL TERMINAL, PULL, BRACE OR CORNER POSTS HALFWAY BETWEEN THE TOP RAIL AND GROUND LEVEL WHEN TOPRAIL IS SPECIFIED AND TWELVE INCHES (12") DOWN FROM TOP OF FABRIC WHEN TOP TENSION WIRE IS SPECIFIED. BRACE RAIL SHALL EXTEND FROM SUCH POST TO THE FIRST ADJACENT LINE POST.

(L) FABRIC: SHALL CONFORM TO THE SPECIFICATIONS.

(M) GATE FRAMES: SHALL BE CONSTRUCTED OF TUBULAR MEMBERS ASSEMBLED BY USE OF HEAVY PRESSED STEEL, MALLEABLE FITTINGS OR BY WELDING. ALL GATES SHALL HAVE ONE HORIZONTAL SUPPORT EXTENDING THE WIDTH OF THE GATE AT THE MIDPOINTS OF VERTICAL FRAME MEMBERS. THE COMPLETE FRAME SHALL BE RIGID AND HAVE AMPLE STRENGTH TO BE FREE FROM SAG AND TWIST.

(O) HINGES: SHALL BE OF HEAVY PATTERN, OF ADEQUATE STRENGTH FOR GATE, AND WITH LARGE BEARING SURFACES FOR CLAMPING IN POSITION. THE HINGE SHALL BE OF THE PROPER TYPE TO ALLOW FOR THE DESIGNATED DEGREE OF SWING. THE HINGE SHALL NOT TWIST OR TURN UNDER THE ACTION OF THE GATE. THE GATES SHALL BE CAPABLE OF BEING OPENED AND CLOSED EASILY BY ONE PERSON.

(P) LATCHES AND STOPS: SHALL BE PROVIDED FOR ALL GATES. GATES SHALL HAVE A DROP BAR LATCH. LATCHES SHALL BE ARRANGED FOR LOCKING. THE STOP FOR DROP BAR LATCHES SHALL BE SET IN CONCRETE AND ENGAGE THE PLUNGER OF THE BAR LATCH.

(S) CAPS: ALL POSTS, EXCEPT ROLL FORMED POSTS AND "T" POSTS SHALL BE CAPPED OVER THE EXTERIOR OF THE POST, AND SHALL CONFORM TO ASTM F626.

CONCRETE REQUIRED FOR THE EMBEDMENT OF ALL POSTS SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR CHAIN LINK FENCE.

POSTS SHALL BE SPACED EQUIDISTANT ON A MAXIMUM OF 10' CENTERS.

EXCAVATION FOR POSTS: IN OTHER THAN ROCK SHALL BE OF THE DIMENSIONS INDICATED. IF ROCK IS ENCOUNTERED BEFORE REACHING THE REQUIRED DEPTH, THE EXCAVATION SHALL BE CONTINUED TO THE DEPTH INDICATED OR 1'-6" INTO THE ROCK, WHICHEVER IS LESS, AND SHALL BE A MINIMUM OF 8 INCHES IN DIAMETER.

HEIGHT OF FENCE FABRIC	Ⓐ END, PULL CORNER OR BRACE POST	Ⓑ LINE POSTS SIZE	Ⓑ LINE POSTS TIE SPACING	Ⓒ TOP RAIL SIZE	Ⓒ TOP RAIL TIE SPACING	Ⓒ TOP RAIL MIN. LENGTH	Ⓓ TENSION WIRE SIZE	Ⓓ TENSION WIRE TIE SPACING	Ⓔ TENSION BAR SIZE	Ⓔ TENSION BAR LENGTH	Ⓕ TENSION BAR BAND SIZE	Ⓕ TENSION BAR BAND BOLT SIZE	Ⓕ TENSION BAR BAND SPACING	Ⓖ BRACE BAND SIZE	Ⓖ BRACE BAND BOLT SIZE
6' AND LESS	2½" O.D.	2" O.D.	1 TIE EVERY 1'-2" OF FABRIC HEIGHT	1⅝" O.D.	1 TIE EVERY 2'-0"	10'-0"	7 GAUGE COIL SPRING WIRE	1 TIE EVERY 1'-0"	MIN. OF ⅜" X ¾"	MIN. OF 2" LESS THAN FABRIC HEIGHT	MIN. OF ¾" X 0.074	5/16" X 1¼"	1 BAND AT TOP AND BOTTOM 15" MAX. INTERVAL BETWEEN BANDS	MIN. OF ¾" X 0.105	5/16" X 1¼"
OVER 6' TO 12' INCL.	3" O.D.	2½" O.D.													

HEIGHT OF FENCE FABRIC	Ⓗ TIE WIRE	Ⓘ HOG RING	Ⓙ BRACE RAIL SIZE	Ⓙ BRACE RAIL TIE SPACING	Ⓚ TRUSS ROD	Ⓛ FABRIC SIZE	Ⓛ FABRIC MESH	Ⓛ FABRIC SELVAGE	Ⓜ GATE FRAME SIZE	Ⓜ GATE FRAME TIE SPACING	Ⓝ HORIZONTAL SUPPORT SIZE	Ⓝ HORIZONTAL SUPPORT TIE SPACING	Ⓞ HINGE TYPE 180° SWING	Ⓣ GATE POST GATE WIDTH 12' AND LESS	Ⓣ GATE POST GATE WIDTH OVER 12' TO 24' INCL.
6' AND LESS	MIN. OF 12 GA. STEEL OR 9 GA. ALUM.	SAME GAUGE AS FABRIC	1⅝" O.D.	1 TIE EVERY 2'-0"	MIN. OF ⅜" ROUND WITH TIGHTNERS AND FITTINGS	9 GA.	2"	KNUCK-ING AND/OR TWIST-ING	2" O.D.	1 TIE EVERY 1'-0"	2" O.D.	1 TIE EVERY 1'-0"	OFFSET	3" O.D.	4" O.D.
OVER 6' TO 12' INCL.														4" O.D.	

NOTE: POST SIZES SHOWN ARE FOR STEEL. WHERE ALUMINUM IS PROVIDED, LINE POSTS SHALL HAVE AN OUT SIDE DIAMETER OF 2½" FOR FENCE HEIGHT OF 6' AND LESS, AN OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT OF 6' TO 12'. END, PULL, CORNER OR BRACE POSTS SHALL HAVE AN OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT OF 6' AND LESS; AN OUTSIDE DIAMETER OF 3½" FOR FENCE HEIGHTS OF 6' TO 12'. GATE POSTS WHERE GATE WIDTH IS 12' AND LESS SHALL HAVE AN OUTSIDE DIAMETER OF 3½" FOR FENCE HEIGHT OF 6' AND LESS. ALUMINUM TENSION WIRE SHALL BE 0.192" IN DIAMETER. MINIMUM THICKNESS OF MATERIAL FROM WHICH EXPANSION SLEEVES SHALL BE MADE WILL BE 0.078". POSTS AND RAILS MAY HAVE ANY CROSS-SECTIONAL SHAPE THAT WILL MEET THE SPECIFICATIONS.

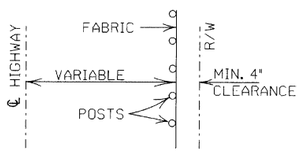
OTHER DETAILS APPLY TO BOTH STEEL AND ALUMINUM FENCE.

ALL MISCELLANEOUS FITTINGS AND HARDWARE SHALL MEET THE REQUIREMENTS AND PRODUCTION TOLERANCES AS SET FORTH IN THE SPECIFICATIONS. 9 GAUGE ALUMINUM WIRE SHALL BE ACCEPTABLE FOR TIEING FABRIC TO TUBULAR AND ROLL FORMED MEMBERS OF STEEL FENCE.

POSTS AND RAILS

SIZE O.D.	GRADE 1 AND ALUMINUM ALLOY O.D. INCHES	GRADE 1 WALL THICKNESS	GRADE 1 LBS. PER LINEAR FT. STEEL	GRADE 1 LBS. PER LINEAR FT. ALUMINUM	GRADE 2 O.D. INCHES	GRADE 2 WALL THICKNESS	GRADE 2 LBS. PER LINEAR FT.
1⅝	1.660	0.140	2.27	0.786	1.660	0.111	1.84
2	1.900	0.145	2.72	0.940	1.900	0.120	2.28
2½	2.375	0.154	3.65	1.264	2.375	0.130	3.11
3	2.875	0.203	5.79	2.004	2.875	0.160	4.64
3½	3.500	0.216	7.58	2.621	3.500	0.160	5.71
4	4.000	0.226	9.11	3.151	4.000	0.160	6.56

TOLERANCES ON DIMENSIONS AND WEIGHTS ACCORDING TO AASHTO M 181



INSTALLATION MAY BE MODIFIED AS SHOWN IN THE PLANS

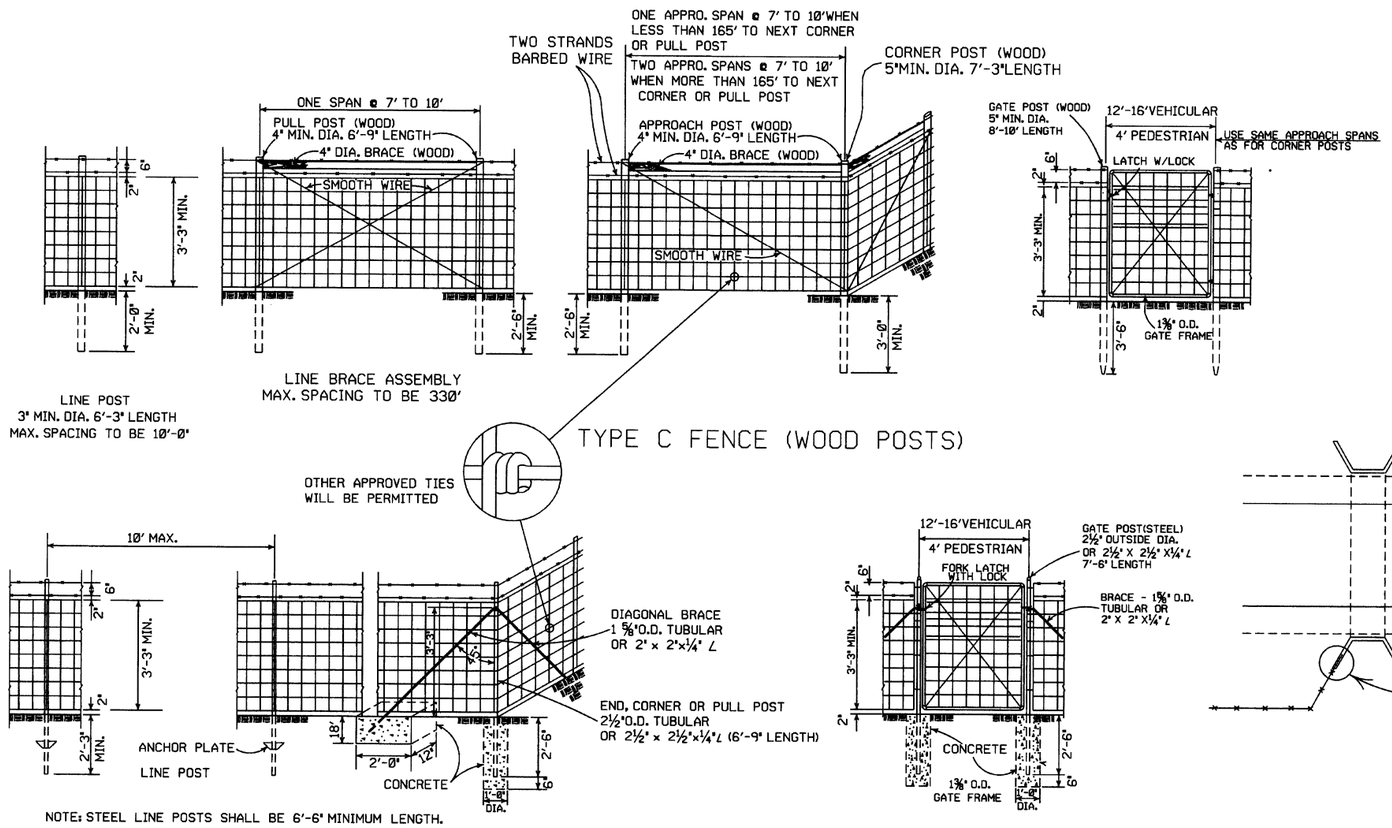
TYPICAL INSTALLATION DIAGRAM

DATE	REVISION	FILMED
11-17-10	REVISED TRUSS ROD	
12-10-09	REVISED POSTS & RAILS TABLE	
5-21-09	ADDED TABLE & GEN. NOTE (C)	
8-22-02	REVISED NOTES, REMOVED TABLE, & REMOVED FENCE ALTERNATE	
4-3-97	REVISED BRACE RAIL NOTE	
10-18-96	REVISED AASHTO & ASTM REF.	
11-3-94	REVISED NOTE (L)	
10-1-92	DELETED ALTERNATE POST	10-1-92
8-15-91	DELETED ROLL FORMED POST DETAIL & ADDED NOTE	8-15-91 8-15-91
11-30-89	DELETED CLASS CONCRETE	11-30-89
11-17-88	REVISED O.D. SIZES	668-11-17-88
10-30-87	GENERAL REVISIONS	548-10-30-87
4-20-79	REVISED TOP RAIL & TENSION WIRE	695-4-20-79
10-2-72	REVISED AND REDRAWN	530-10-2-72

ARKANSAS STATE HIGHWAY COMMISSION

CHAIN LINK FENCE

STANDARD DRAWING WF-3



GENERAL NOTES:

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

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

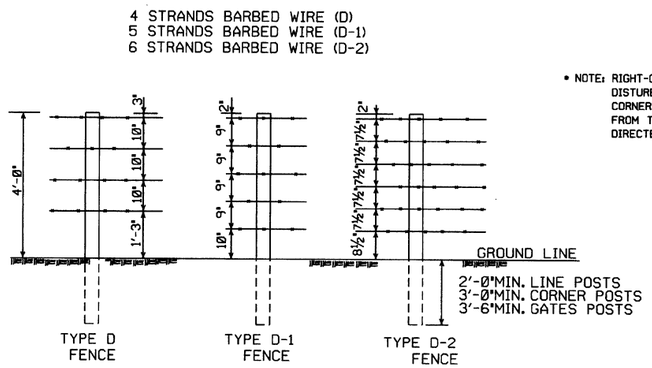
DRIVEWAY GATES, EITHER SINGLE 12' TO 16' OR DOUBLE 6' TO 8' OPENING OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE, FOR USE OF MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON PLANS OR AS DESIGNATED BY THE ENGINEER.

AT STREAM CROSSINGS, THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS. WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF THE BANK TO THE BRIDGE STRUCTURE A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD. WHERE THE CLEARANCE IS NOT SUFFICIENT, THE FENCE SHALL BE TERMINATED WITH CROSS CONNECTIONS AND END POSTS ADJACENT TO BRIDGE ABUTMENTS OR CULVERT WINGWALLS.

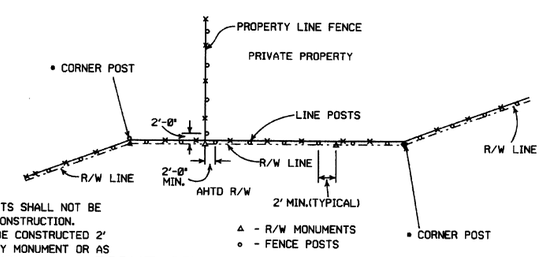
SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD" AS DESCRIBED AS FOLLOWS:
THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRES A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE "WESTERN UNION METHOD" AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

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

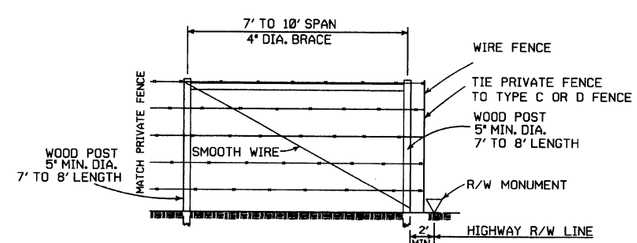


NOTE: SPACING AND SIZE (EXCEPT LENGTH) OF POSTS, APPROACH SPANS, PULL POST ASSEMBLIES, AND CORNER BRACING FOR TYPE D FENCE SHALL CONFORM TO TYPE C FENCE. USE GALVANIZED STAPLES ON WOOD POSTS AND APPROVED FASTENERS ON STEEL POSTS.



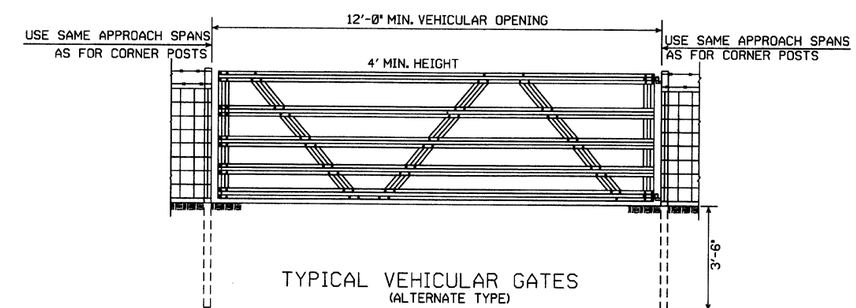
• NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

RIGHT-OF-WAY FENCE LOCATION



PRIVATE FENCE TERMINAL INSTALLATION

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



TYPICAL VEHICULAR GATES
(ALTERNATE TYPE)

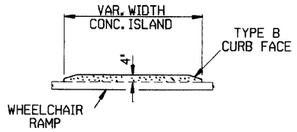
OTHER STYLE VEHICULAR GATES MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
THE METHOD OF SECURING GATE (LATCH AND/OR LOCK) SHALL MEET THE APPROVAL OF THE ENGINEER.

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

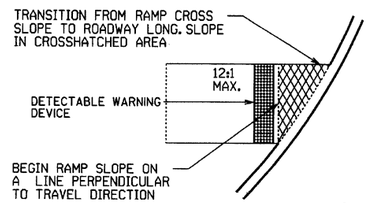
ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE TYPE C AND D

STANDARD DRAWING WF-4



CONCRETE ISLAND DETAIL



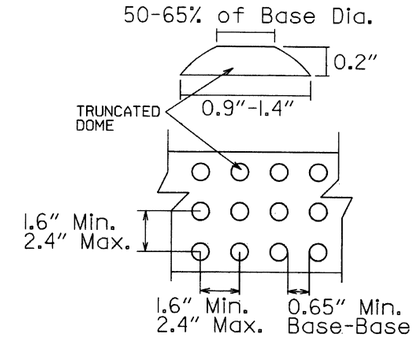
SLOPE TRANSITION DETAILS

TYPE 1 RAMP DIMENSIONS AND QUANTITIES

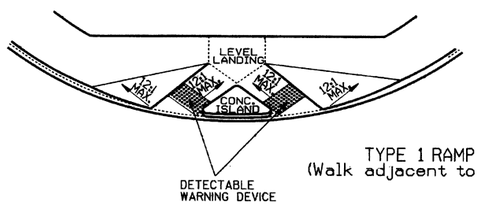
RADIUS "R"	DISTANCE "X"	DISTANCE "Y"	LENGTH "L"	RAMP AREA "A"
FEET	FEET	FEET	FEET	SQ. YD.
15	11.67	18.82	32.18	26.21
20	11.52	22.28	35.46	30.07
25	11.43	26.60	38.77	33.80
30	11.37	30.26	40.93	36.90
35	11.33	33.51	43.11	39.77
40	11.30	36.45	45.26	42.45
45	11.27	39.16	47.34	44.97
50	11.25	41.69	49.36	47.35
55	11.24	44.07	51.31	49.63
60	11.22	46.33	53.21	51.80

GENERAL NOTES FOR DETECTABLE WARNING DEVICES

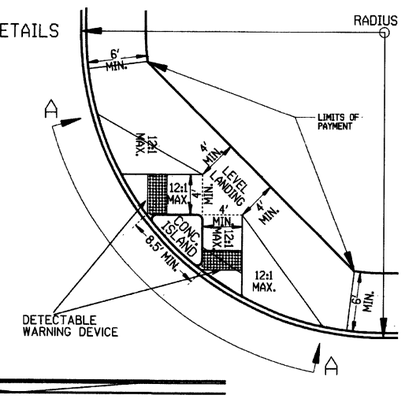
THE DETECTABLE WARNING DEVICE SHALL BE LOCATED SO THAT THE NEAREST EDGE OF THE DEVICE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB.
TRUNCATED DOMES IN THE DETECTABLE WARNING SURFACE SHALL MEET THE REQUIREMENTS OF THE GEOMETRIC CONFIGURATION SHOWN.
DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT 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 AHTD QUALIFIED PRODUCTS LIST FOR CAST-IN-PLACE TACTILE PANELS (ADA DETECTABLE WARNING).

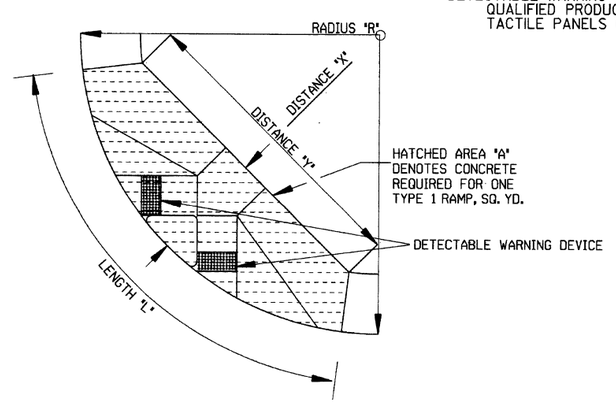


DETECTABLE WARNING DEVICE DETAIL



TYPE 1 RAMP
(Walk adjacent to curb)

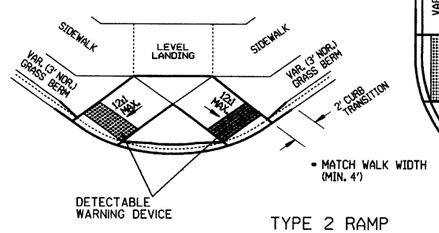




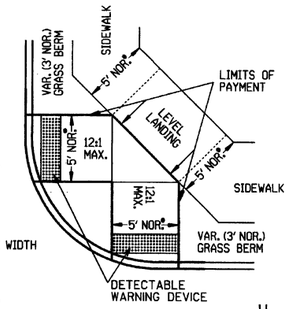
SECTION A-A

GENERAL NOTES:

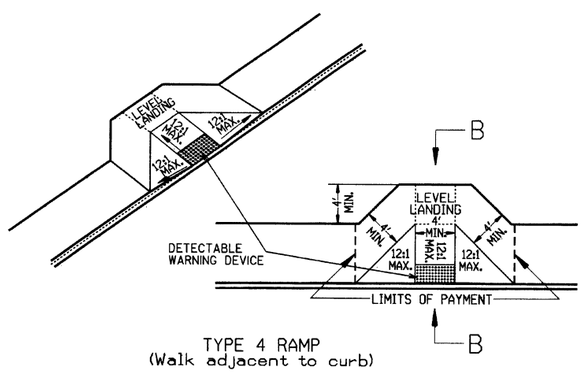
IN NEW CONSTRUCTION, UNLESS OTHERWISE INDICATED ON THE PLANS, WHEELCHAIR RAMPS ARE TO BE PROVIDED AT ALL CORNERS OF CURBED STREET INTERSECTIONS AND MID-BLOCK CROSSWALK LOCATIONS.
IN ALTERATIONS WHEELCHAIR RAMPS ARE TO BE PROVIDED AT CURBED STREET INTERSECTIONS WITH PEDESTRIAN TRAFFIC AND MID-BLOCK CROSSWALK 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.

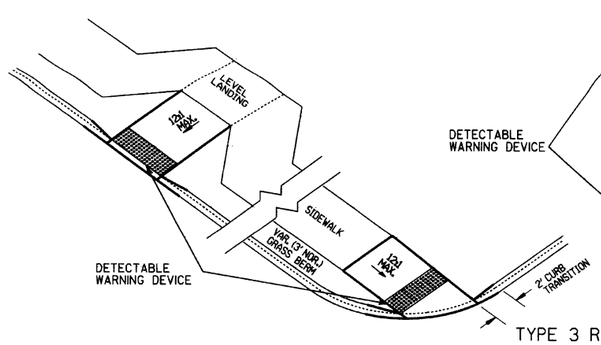


TYPE 4 RAMP
(Walk adjacent to curb)

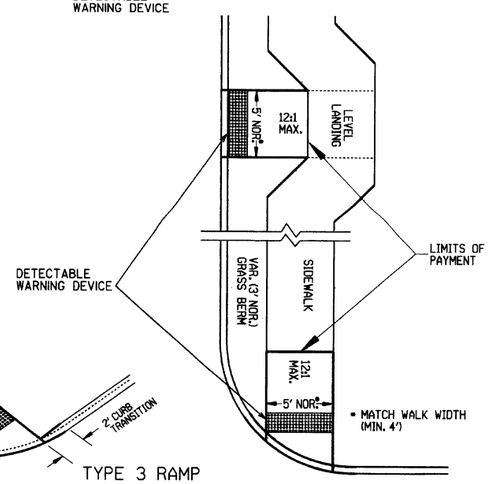
RAMP SELECTION CRITERIA

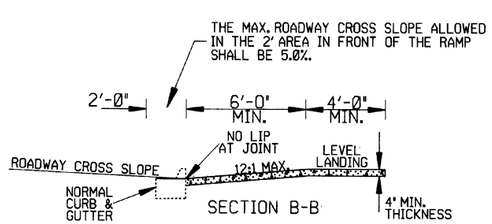
FIRST CHOICE	TYPE 1	CORNER LOCATIONS WITH THE WALK ADJACENT TO THE CURB (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 2	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE INSUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 3	CORNER LOCATIONS WITH 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	FROM8ATO2%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

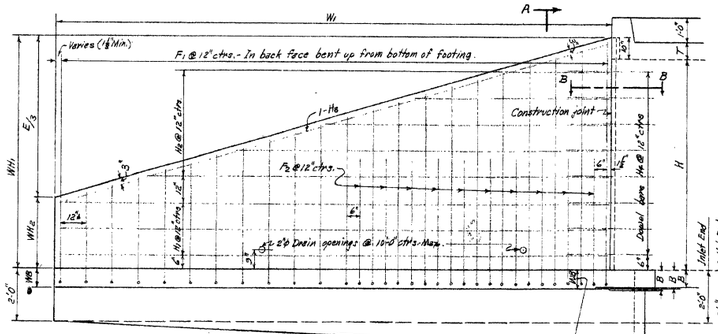
ARKANSAS STATE HIGHWAY COMMISSION

WHEELCHAIR RAMPS
NEW CONSTRUCTION
AND ALTERATIONS

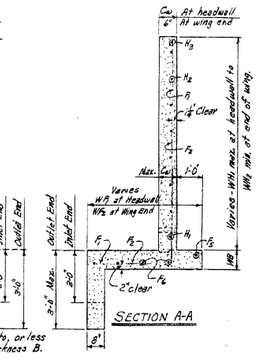
STANDARD DRAWING WR-1

FED. ROAD DIST. No.	STATE	FED. AID PROJECT	SHEET No.	TOTAL SHEETS
6	ARK.			

JOB No.

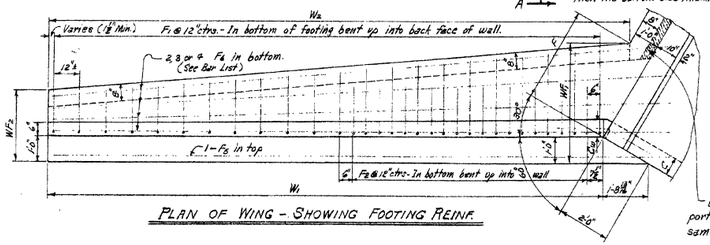


REAR ELEVATION OF WING - SHOWING BACK FACE REINF.



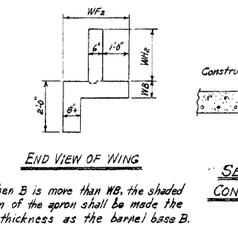
SECTION A-A

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

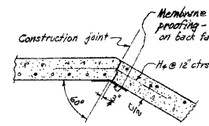


PLAN OF WING - SHOWING FOOTING REINF.

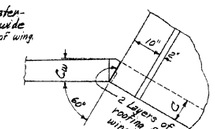
When B is more than WB, the shaded portion of the apron shall be made the same thickness as the barrel base B.



END VIEW OF WING



SECTION B-B THRU CONSTRUCTION JOINT



DETAIL AT TOP OF WING

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

WING DIMENSIONS

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	THICKNESS OF WING AT HEADWALL	WINGWALL HEIGHTS		WIDTHS OF WING FOOTINGS		PERPENDICULAR DIST. FROM HDWL. TO END OF WING	LENGTH OF WING WALLS	INSIDE FOOTING DIMENSION	* QUANTITY PER WING CLASS S CONCRETE	
			AT HEADWALL	AT END OF WING	AT HEADWALL	AT END OF WING				INLET END	OUTLET END
H	WB	Cw	WH1	WH2	W1S	W2S	F	E	W1	W2	CU.YD.	CU.YD.
2'	7"	6"	2'-10"	0'-8"	2'-5"	2'-0"	0'-10 3/8"	6'-6"	7'-6"	7'-1 1/2"	0.889	0.986
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1 1/4"	1'-4 3/8"	8'-6"	9'-9 1/2"	9'-2 1/2"	1.338	1.466
4'	7"	6"	4'-10"	1'-4"	3'-0"	2'-3"	1'-8"	10'-6"	12'-1 1/2"	12'-1 1/2"	1.868	2.027
5'	7"	6"	5'-10"	1'-8"	3'-4"	2'-4 1/2"	2'-1 5/8"	12'-6"	14'-5 1/2"	14'-7 1/2"	2.478	2.668
		7"	5'-10"	1'-8"	3'-4"	2'-4 1/2"	2'-1 5/8"	12'-6"	14'-5 1/2"	14'-7 1/2"	2.582	2.772
6'	8"	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6 1/2"	14'-6"	16'-9"	17'-1 1/2"	3.440	3.661
		7 1/2"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6 1/2"	14'-6"	16'-9"	17'-1 1/2"	3.511	3.732
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-6 1/2"	14'-6"	16'-9"	17'-1 1/2"	3.582	3.803
7'	8 1/2"	7 1/2"	7'-10"	2'-4"	4'-2"	2'-7 1/2"	3'-1 1/4"	16'-6"	19'-0 1/2"	19'-8 1/2"	4.505	4.798
		8"	7'-10"	2'-4"	4'-2"	2'-7 1/2"	3'-1 1/4"	16'-6"	19'-0 1/2"	19'-8 1/2"	4.597	4.851
8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-8"	18'-6"	21'-4 1/2"	22'-4"	5.761	6.097

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

APRON DIMENSION W3

W3 = (OW - 2F)

CLEAR SPAN	CLEAR HEIGHT	FOOTING DIMENSION	SINGLE BARREL CULVERT		DOUBLE BARREL CULVERT		TRIPLE BARREL CULVERT		QUADRUPLE BARREL CULVERT		QUINTUPLE BARREL CULVERT	
			OW	W3	OW	W3	OW	W3	OW	W3	OW	W3
4'	2'	1'-11 1/2"	5'-0"	3'-0 1/2"	9'-8"	7'-8 1/2"	14'-4"	12'-8 1/2"	19'-0"	17'-0 1/2"	23'-8"	21'-8 1/2"
	3'	2'-6 1/2"	5'-0"	2'-3 1/2"	9'-8"	6'-11 1/2"	14'-4"	11'-7 1/2"	19'-0"	16'-3 1/2"	23'-8"	20'-11 1/2"
	4'	3'-6"	5'-0"	1'-6"	9'-8"	6'-2"	14'-4"	10'-10"	19'-0"	15'-6"	23'-8"	20'-2"
	5'	4'-3 1/2"	5'-0"	0'-8 1/2"	9'-8"	5'-4 1/2"	14'-4"	10'-0 1/2"	19'-0"	14'-8 1/2"	23'-8"	19'-8 1/2"
	6'	5'-0 1/2"	5'-2"	0'-1 1/2"	9'-11"	4'-10 1/2"	14'-8"	9'-7 1/2"	19'-5"	14'-2 1/2"	24'-2"	19'-1 1/2"
5'	3'	2'-8 1/2"	6'-0"	3'-3 1/2"	11'-8"	8'-11 1/2"	17'-4"	14'-7 1/2"	23'-0"	20'-3 1/2"	28'-8"	25'-11 1/2"
	4'	3'-6"	6'-0"	2'-6"	11'-8"	8'-2"	17'-4"	13'-10"	23'-0"	19'-6"	28'-8"	25'-2"
	5'	4'-3 1/2"	6'-0"	1'-8 1/2"	11'-8"	7'-4 1/2"	17'-4"	13'-0 1/2"	23'-0"	18'-8 1/2"	28'-8"	24'-8 1/2"
	6'	5'-0 1/2"	6'-2"	1'-1 1/2"	11'-11"	6'-10 1/2"	17'-8"	12'-7 1/2"	23'-5"	18'-2 1/2"	29'-2"	24'-1 1/2"
	7'	6'-2 1/2"	6'-5"	0'-10 1/2"	12'-1"	5'-10 1/2"	17'-11"	11'-8 1/2"	23'-8"	17'-11 1/2"	29'-7"	23'-9 1/2"
6'	3'	2'-8 1/2"	7'-0"	4'-3 1/2"	13'-8"	10'-11 1/2"	20'-4"	17'-7 1/2"	27'-0"	24'-3 1/2"	33'-8"	30'-11 1/2"
	4'	3'-6"	7'-0"	3'-6"	13'-8"	10'-2"	20'-4"	16'-10"	27'-0"	23'-6"	33'-8"	30'-2"
	5'	4'-3 1/2"	7'-0"	2'-8 1/2"	13'-8"	9'-5 1/2"	20'-4"	16'-0 1/2"	27'-0"	22'-8 1/2"	33'-8"	29'-9 1/2"
	6'	5'-0 1/2"	7'-2"	2'-1 1/2"	13'-11"	8'-10 1/2"	20'-8"	15'-7 1/2"	27'-5"	22'-1 1/2"	34'-2"	29'-1 1/2"
	7'	6'-2 1/2"	7'-5"	1'-10 1/2"	14'-1"	7'-10 1/2"	20'-11"	14'-8 1/2"	27'-9"	21'-6 1/2"	34'-7"	28'-9 1/2"
	8'	7'-9"	7'-9"	0'-0"	14'-2"	6'-10"	21'-0"	13'-8"	27'-10"	20'-6"	34'-8"	27'-8"
7'	4'	3'-6"	8'-0"	4'-6"	15'-8"	12'-2"	23'-4"	19'-10"	31'-0"	27'-6"	38'-8"	35'-2"
	5'	4'-3 1/2"	8'-0"	3'-8 1/2"	15'-8"	11'-4 1/2"	23'-4"	19'-0 1/2"	31'-0"	26'-8 1/2"	38'-8"	34'-8 1/2"
	6'	5'-0 1/2"	8'-2"	3'-1 1/2"	15'-11"	10'-10 1/2"	23'-8"	18'-7 1/2"	31'-5"	26'-1 1/2"	39'-2"	34'-1 1/2"
	7'	6'-2 1/2"	8'-5"	2'-10 1/2"	16'-1"	9'-10 1/2"	23'-11"	17'-8 1/2"	31'-9"	25'-6 1/2"	39'-7"	33'-9 1/2"
	8'	7'-9"	8'-9"	1'-0"	16'-2"	8'-10"	24'-0"	16'-8"	31'-10"	24'-6"	39'-8"	32'-8"
8'	4'	3'-6"	9'-0"	5'-6"	17'-8"	14'-2"	26'-4"	22'-10"	35'-0"	31'-6"	43'-8"	40'-2"
	5'	4'-3 1/2"	9'-2"	4'-10 1/2"	17'-11"	13'-7 1/2"	26'-8"	22'-2 1/2"	35'-5"	31'-1 1/2"	44'-2"	39'-10 1/2"
	6'	5'-0 1/2"	9'-2"	4'-1 1/2"	17'-11"	12'-11 1/2"	26'-8"	21'-7 1/2"	35'-5"	30'-6 1/2"	44'-2"	39'-1 1/2"
	7'	6'-2 1/2"	9'-5"	3'-10 1/2"	18'-1"	11'-10 1/2"	26'-11"	20'-8 1/2"	35'-9"	29'-6 1/2"	44'-7"	38'-9 1/2"
	8'	7'-9"	9'-9"	2'-0"	18'-2"	10'-10"	27'-0"	19'-8"	35'-10"	28'-6"	44'-8"	37'-8"
9'	5'	4'-3 1/2"	10'-2"	5'-10 1/2"	19'-11"	15'-7 1/2"	29'-8"	25'-8 1/2"	39'-5"	35'-1 1/2"	49'-2"	44'-10 1/2"
	6'	5'-0 1/2"	10'-2"	5'-2 1/2"	20'-1"	15'-0 1/2"	29'-11"	24'-11 1/2"	39'-9"	34'-7 1/2"	49'-7"	44'-1 1/2"
	7'	6'-2 1/2"	10'-5"	4'-10 1/2"	20'-1"	14'-10 1/2"	29'-11"	23'-11 1/2"	39'-9"	33'-7 1/2"	49'-7"	43'-1 1/2"
	8'	7'-9"	10'-9"	3'-0"	20'-2"	13'-10"	30'-0"	22'-8"	39'-10"	32'-6"	49'-8"	42'-4"
10'	5'	4'-3 1/2"	11'-2"	6'-10 1/2"	21'-11"	17'-7 1/2"	32'-8"	28'-8 1/2"	43'-5"	39'-1 1/2"	54'-2"	49'-10 1/2"
	6'	5'-0 1/2"	11'-3"	6'-2 1/2"	22'-1"	17'-0 1/2"	32'-11"	27'-10 1/2"	43'-9"	38'-6 1/2"	54'-7"	49'-1 1/2"
	7'	6'-2 1/2"	11'-5"	5'-10 1/2"	22'-1"	16'-10 1/2"	32'-11"	26'-10 1/2"	43'-9"	37'-6 1/2"	54'-7"	48'-1 1/2"
	8'	7'-9"	11'-9"	4'-0"	22'-2"	14'-10"	33'-0"	25'-8"	43'-10"	36'-6"	54'-8"	47'-4"
11'	6'	5'-0 1/2"	12'-3"	7'-3 1/2"	24'-1"	19'-1 1/2"	36'-0"	30'-11 1/2"	47'-10"	42'-9 1/2"		
	7'	6'-2 1/2"	12'-4"	6'-11 1/2"	24'-2"	17'-11 1/2"	36'-0"	29'-11 1/2"	47'-10"	41'-7 1/2"		
	8'	7'-9"	12'-8"	5'-0"	24'-3"	16'-10"	36'-0"	28'-8"	47'-11"	40'-6"		
12'	6'	5'-0 1/2"	13'-2"	8'-3 1/2"	26'-2"	21'-1 1/2"	39'-0"	33'-11 1/2"	51'-10"	46'-9 1/2"		
	7'	6'-2 1/2"	13'-3"	7'-11 1/2"	26'-2"	19'-11 1/2"	39'-0"	32'-11 1/2"	51'-10"	45'-7 1/2"		
	8'	7'-9"	13'-6"	6'-0"	26'-2"	18'-10"	39'-0"	31'-8"	51'-10"	44'-6"		

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING OR HEADWALL	THICKNESS OF WINGS FOOTING	REINFORCING STEEL FOR 4 WINGS ®	CLASS S CONCRETE - 4 WINGS: HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS				
					SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT
S	H	Cw	WB	LB.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	CU.YD.
4'	2'	6"	7"	108.0	4.50	5.46	6.42	7.38	8.34
	3'	6"	7"	164.4	6.26	7.21	8.17	9.13	10.09
	4'	6"	7"	256.6	8.33	9.28	10.24	11.20	12.16
	5'	6"	7"	357.8	10.72	11.68	12.64	13.60	14.56
	6'	7"	8"	583.1	14.55	15.53	16.52	17.51	18.49
5'	3'	6"	7"	164.4	6.47	7.63	8.79	9.96	11.12
	4'	6"	7"	256.6	8.54	9.70	10.87	12.03	13.20
	5'	6"	7"	357.8	10.94	12.10	13.26	14.43	15.59
	6'	7"	8"	583.1	14.77	15.96	17.15	18.34	19.54
	7'	7 1/2"	8 1/2"	1134.6	18.94	20.16	21.37	22.59	23.80
6'	3'	6"	7"	164.4	6.68	8.06	9.42	10.80	12.18
	4'	6"	7"	256.6	8.75	10.14	11.49	12.87	14.25
	5'	6"	7"	357.8	11.15	12.53	13.89	15.27	16.65
	6'	7"	8"	583.1	14.98	16.39	17.78	19.18	20.59
	7'	7 1/2"	8 1/2"	1134.6	19.16	20.58	22.00	23.43	24.86
	8'	8"	9"	1425.6	21.09	22.53	23.96	25.39	26.83
7'	4'	6"	7"	256.6	8.97	10.58	12.15	13.76	15.35
	5'	6"	7"	357.8	11.36	12.97	14.54	16.15	17.75
	6'	7"	8"	583.1	15.20	16.82	18.42	20.04	21.66
	7'	7 1/2"	8 1/2"	1134.6	19.38	21.02	22.64	24.28	25.92
	8'	8"	9"	1425.6	24.32	25.97	27.60	29.25	30.89
8'	4'	6"	7"	256.6	9.19	11.03	12.82	14.65	16.45
	5'	7"	7"	357.8	12.03	13.89	15.70	17.55	19.34
	6'	7"	8"	583.1	15.42	17.27	19.09	20.93	22.75
	7'	7 1/2"	8 1/2"	1134.6	19.59	21.44	23.30	25.16	26.99
	8'	8"	9"	1425.6	24.54	26.41	28.29	30.11	31.96
9'	5'	7"	7"	357.8	12.26	14.39	16.37	18.45	20.47
	6'	7 1/2"	8"	583.1	15.94	18.04	20.03	22.13	24.23
	7'	7 1/2"	8 1/2"	1134.6	19.81	21.91	23.96	26.06	28.10
	8'	8"	9"	1425.6	24.76	26.86	28.91	31.00	33.05
10'	5'	7"	7"	357.8	12.49	14.80	17.05	19.26	21.52
	6'	7 1/2"	8"	583.1	16.17	18.50	20.77	22.99	25.28
	7'	7 1/2"	8 1/2"	1134.6	20.04	22.32	24.64	26.87	29.15
	8'	8"	9"	1425.6	24.98	27.31	29.58	31.81	34.10
11'	6'	8"	8"	583.1	16.69	19.27	21.76	24.23	
	7'	8"	8 1/2"	1134.6	20.64	23.22	25.71	28.18	
	8'	8"	9"	1425.6	25.19	27.77	30.27	32.74	
12'	6'	8"	8"	583.1	16.92	19.75	22.45	25.18	
	7'	8"	8 1/2"	1134.6	20.87	23.69	26.40	29.13	
	8'	8"	9"	1425.6	25.42	28.25	30.96	33.69	

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

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have 3/4" chamfers.

REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.

CONSTRUCTION JOINTS:- Construction joints between wingwall, footings and sidewalls shall be only where shown on plans.

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

UNIT STRESSES:-

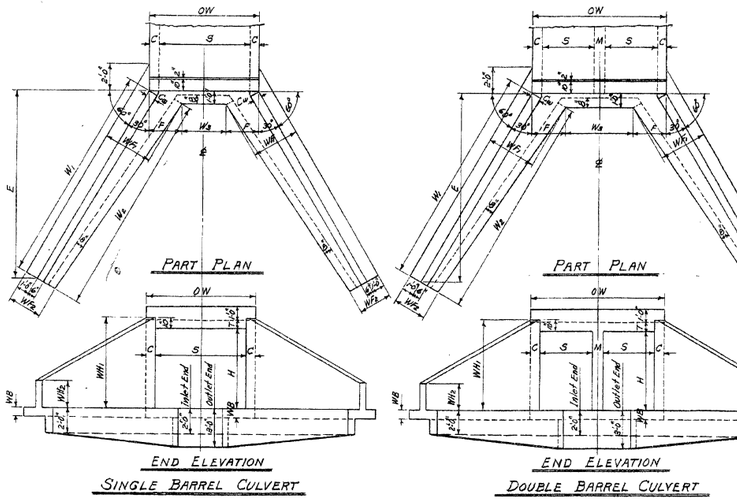
Class S Concrete (n=10) 1200#/□"

Reinforcing Steel 20,000#/□"

NOTE:- This drawing to be used in conjunction with Standard Barrel Sections, Drawing Nos. as listed below.

SINGLES	DOUBLES	TRIPLES	QUADRUPLES	QUINTUPLES
R-100X-0	R-200X-0	R-300X-0	R-400X-0	R-500X-0
R-100X-X1	R-200X-X1	R-300X-X1	R-400X-X1	R-500X-X1
R-100X-X2	R-200X-X2	R-300X-X2	R-400X-X2	
	R-200X-X3	R-300X-X3		

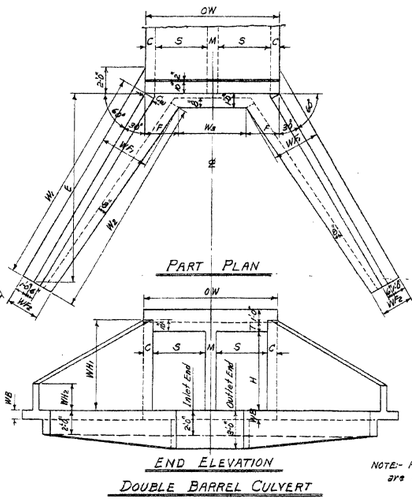
CLASS S CONCRETE



PART PLAN

END ELEVATION

SINGLE BARREL CULVERT

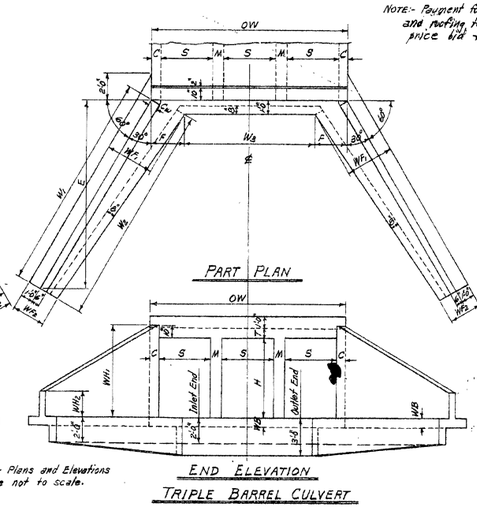


PART PLAN

END ELEVATION

DOUBLE BARREL CULVERT

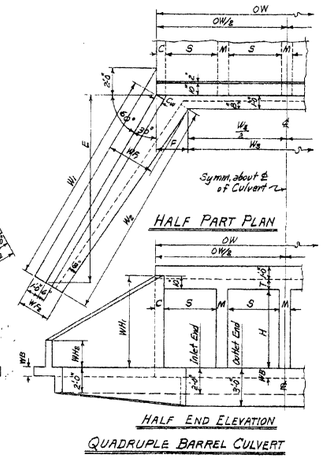
NOTE:- Plans and Elevations are not to scale.



PART PLAN

END ELEVATION

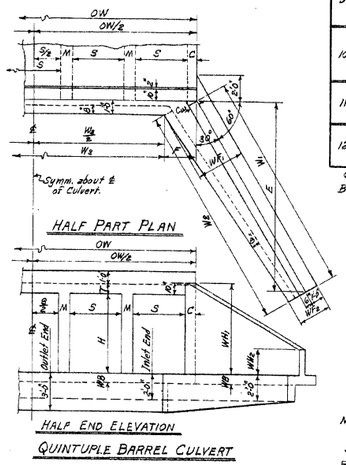
TRIPLE BARREL CULVERT



HALF PART PLAN

HALF END ELEVATION

QUADRUPLE BARREL CULVERT



HALF PART PLAN

HALF END ELEVATION

QUINTUPLE BARREL CULVERT

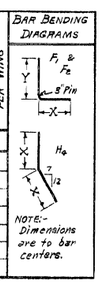
MEMBRANE:- A membrane waterproofing 12" wide, consisting of three mopings of waterproofing asphalt and two alternate layers of treated cotton fabric shall be applied to the back face of wing to cover the construction joints in wings.

BAR LIST FOR ONE WING - 4 REQUIRED

CLEAR HEIGHT	F1 BENT: In bottom of footing, bent up into back face of wing. One bar of each length.							F2 BENT: In bottom of footing, bent up into back face of wing. Alt. with F1 bars.						F3 STRAIGHT: Longitudinal in top of wing footing heel.			F4 STRAIGHT: Longitudinal in bottom of wing footing toe.		
H	SIZE	SPACING	No. REQD	LENGTHS VARY X MIN.	MAX.	Y MIN.	MAX.	SIZE	SPACING	No. REQD	LENGTH	X	Y	SIZE	No. REQD	LENGTH	SIZE	No. REQD	LENGTH
2'	#3	12"	8	1'-6"	3'-10"	0'-8"	1'-0"	—	—	—	—	—	—	#3	1	9'-8"	#3	2	8'-6"
3'	#3	12"	10	2'-2"	5'-2"	0'-10"	1'-9"	—	—	—	—	—	—	#3	1	12'-0"	#3	2	11'-0"
4'	#3	12"	13	2'-9"	6'-6"	0'-11"	1'-7"	—	—	—	—	—	—	#3	1	14'-4"	#3	3	13'-6"
5'	#3	12"	15	2'-11"	7'-10"	1'-1"	1'-11"	1'-11"	6'-0"	#3	12"	4	3'-6"	#3	1	16'-8"	#3	3	16'-0"
6'	#4	12"	17	3'-6"	9'-3"	1'-2"	2'-3"	2'-5"	7'-1"	#3	12"	4	4'-6"	#3	1	19'-0"	#3	3	18'-6"
7'	#4	12"	20	3'-9"	10'-9"	1'-3"	2'-9"	2'-7"	8'-1"	#4	12"	7	5'-6"	#4	1	21'-4"	#4	4	21'-0"
8'	#4	12"	22	4'-4"	12'-3"	1'-5"	3'-12"	3'-0"	9'-2"	#4	12"	10	6'-6"	#4	1	23'-8"	#4	4	23'-9"

CLEAR HEIGHT	H1 STRAIGHT: Horizontal in back face of wing.				H2 STRAIGHT: Horizontal in back face of wing. One bar of each length.					H3 STRAIGHT: In back face of wing at top - on slope.			H4 BENT: Dowels thru construction joint at headwall.					QUANTITY REINFORCING STEEL PER WING
H	SIZE	SPACING	No. REQD	LENGTH	SIZE	SPACING	No. REQD	LENGTHS VARY MAX.	MIN.	SIZE	No. REQD	LENGTH	SIZE	SPACING	No. REQD	LENGTH	X	LB.
2'	#3	12"	1	7'-2"	#3	12"	1	—	4'-0"	#3	1	7'-4"	#3	12"	2	2'-8"	1'-4"	27.0
3'	#3	12"	1	9'-6"	#3	12"	2	7'-6"	4'-0"	#3	1	9'-9"	#3	12"	3	2'-8"	1'-4"	41.1
4'	#3	12"	1	11'-10"	#3	12"	3	10'-11"	4'-0"	#3	1	12'-2"	#3	12"	4	2'-8"	1'-4"	63.7
5'	#3	12"	2	14'-2"	#3	12"	3	10'-11"	4'-0"	#3	1	14'-7"	#3	12"	5	2'-8"	1'-4"	89.5
6'	#3	12"	2	16'-6"	#3	12"	4	14'-6"	4'-0"	#3	1	17'-0"	#3	12"	6	2'-8"	1'-4"	145.8
7'	#3	12"	2	18'-9"	#4	12"	5	17'-9"	4'-0"	#4	1	19'-5"	#4	12"	7	3'-6"	1'-9"	283.7
8'	#4	12"	3	21'-1"	#4	12"	5	17'-9"	4'-0"	#4	1	21'-10"	#4	12"	8	3'-6"	1'-9"	356.4

BAR BENDING DIAGRAMS



NOTE:- Dimensions are to bar centers.

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

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

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS

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

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

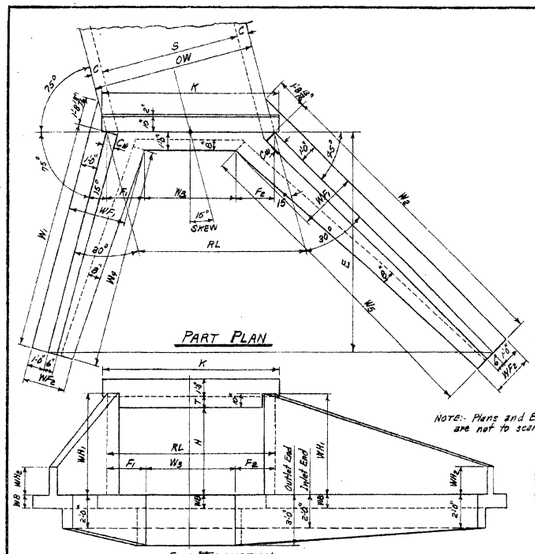
STANDARD DRAWING NO. W-X003-1

MYLAR (3)

Reshot 3-5-93

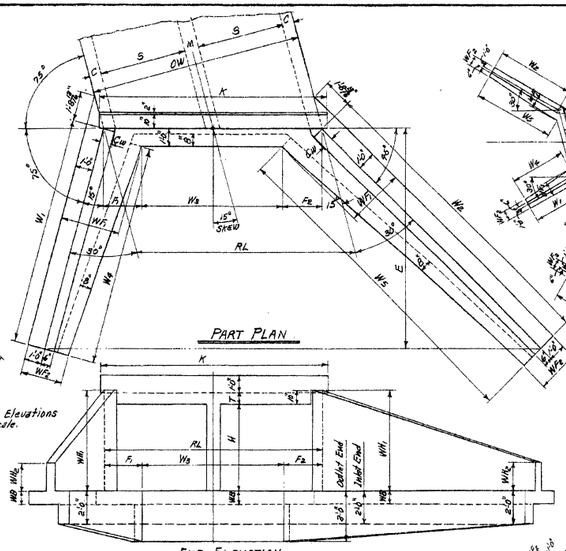
172

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



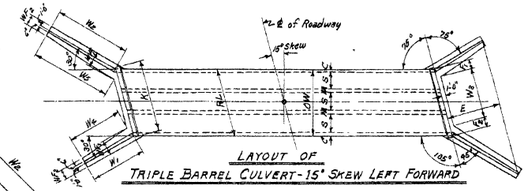
SINGLE BARREL CULVERT-15° SKEW RIGHT FORWARD

Details of Culvert with 15° Skew Left Forward is reversed, see Layout below.

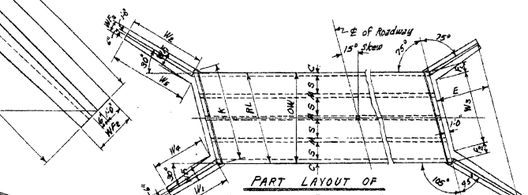


DOUBLE BARREL CULVERT-15° SKEW RIGHT FORWARD

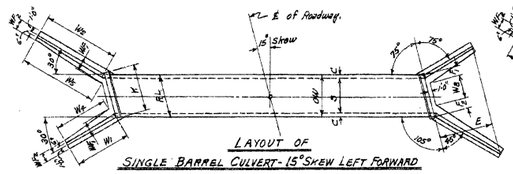
Details of Culvert with 15° Skew Left Forward is reversed, see Layout below.



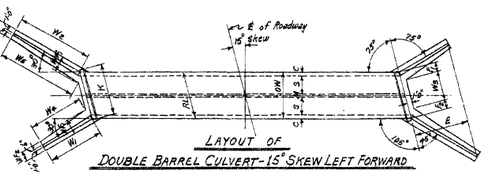
LAYOUT OF TRIPLE BARREL CULVERT-15° SKEW LEFT FORWARD



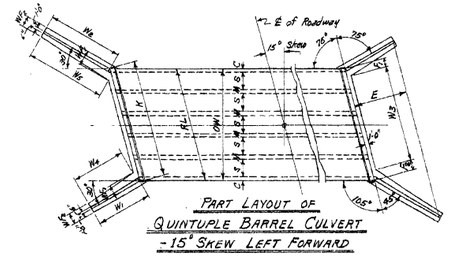
PART LAYOUT OF QUADRUPLE BARREL CULVERT -15° SKEW LEFT FORWARD



LAYOUT OF SINGLE BARREL CULVERT-15° SKEW LEFT FORWARD

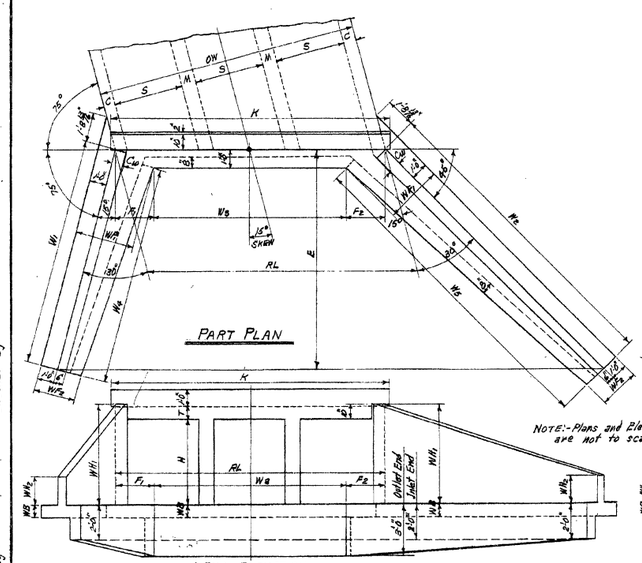


LAYOUT OF DOUBLE BARREL CULVERT-15° SKEW LEFT FORWARD



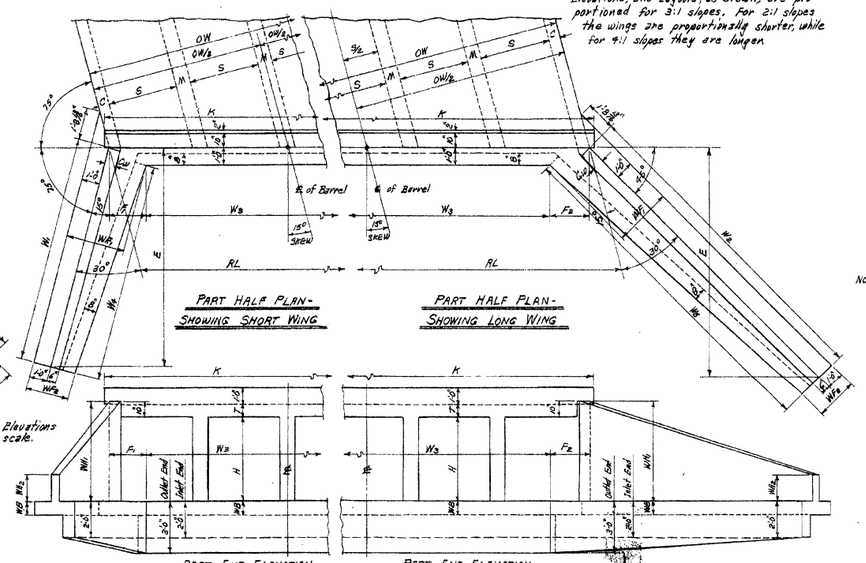
PART LAYOUT OF QUINTUPLE BARREL CULVERT -15° SKEW LEFT FORWARD

NOTE:- The length of the wings for the Plans, Elevations, and Layouts, as drawn, are proportioned for 3:1 slopes. For 2:1 slopes the wings are proportionally shorter, while for 4:1 slopes they are longer.



TRIPLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

Details of Culvert with 15° Skew Left Forward is reversed, see Layout at top center of sheet.



QUADRUPLE BARREL CULVERT- 15° SKEW RT. FWD.

Details of Culvert with 15° Skew Left Forward is reversed, see Layout at above center.

QUINTUPLE BARREL CULVERT- 15° SKEW RT. FWD.

Details of Culvert with 15° Skew Left Forward is reversed, see Layout above.

ROADWAY LENGTH RL — HEADWALL LENGTH K — APRON DIMENSION W_3

$RL = OW \times 1.035276$ — $K = RL + (6\frac{1}{2}^{2})$ — $W_3 = RL - (F_1 + F_2)$

USE WITH DRAWING No.	CLEAR SPAN S	CLEAR HEIGHT H	SUM OF FOOTING DIMENSIONS $F_1 \& F_2$	SINGLE BARREL CULVERT OW	RL	K	W_3	DOUBLE BARREL CULVERT OW	RL	K	W_3	TRIPLE BARREL CULVERT OW	RL	K	W_3	QUADRUPLE BARREL CULVERT OW	RL	K	W_3	QUINTUPLE BARREL CULVERT OW	RL	K	W_3
W-X152-1, W-X153-1 or W-X154-1 (FOR H=8'0" OR LESS)	4'	2'	2'-0"	5'-0"	5'-2 1/8"	5'-8 5/8"	3'-2 1/8"	9'-8"	10'-0"	10'-4 1/2"	8'-0"	14'-8"	14'-10"	15'-4 1/2"	12'-10"	19'-8"	19'-8"	20'-2 1/2"	17'-8"	23'-8"	24'-6"	25'-0 1/2"	22'-6"
		3'	2'-9 3/8"	5'-0"	"	"	2'-9 3/8"	9'-8"	"	"	7'-3 1/8"	14'-8"	"	"	12'-0"	19'-0"	"	"	16'-10 1/8"	23'-8"	"	"	21'-8 1/8"
		4'	3'-7 1/2"	5'-0"	"	"	1'-6 1/2"	9'-8"	"	"	6'-4 1/2"	14'-8"	"	"	11'-2 1/2"	19'-0"	"	"	16'-0 1/2"	23'-8"	"	"	20'-0 1/2"
		5'	4'-5 3/8"	5'-0"	"	"	0'-8 3/8"	9'-8"	"	"	5'-6 3/8"	14'-8"	"	"	10'-8 3/8"	19'-0"	"	"	15'-8 3/8"	23'-8"	"	"	20'-0 3/8"
		6'	5'-3 1/2"	5'-2"	5'-4 1/2"	5'-10 1/2"	0'-1"	9'-11"	10'-3 1/2"	10'-9 1/2"	5'-0"	14'-8"	15'-2 1/2"	15'-8 1/2"	9'-11"	19'-5"	20'-1 1/2"	20'-7 1/2"	14'-10"	24'-2"	25'-0 1/2"	25'-6 1/2"	19'-8"
	5'	3'	2'-9 3/8"	6'-0"	6'-2 1/2"	6'-9"	3'-6 3/8"	11'-8"	12'-1"	12'-7 1/2"	9'-3 1/8"	17'-8"	17'-11 1/8"	18'-5 1/8"	15'-1 1/2"	23'-0"	23'-3 1/8"	24'-9 1/8"	21'-0"	28'-8"	29'-8 1/8"	30'-2 1/8"	26'-10 1/8"
		4'	3'-7 1/2"	6'-0"	"	"	2'-7"	11'-8"	"	"	8'-3 1/8"	17'-8"	"	"	14'-3 1/8"	23'-0"	"	"	20'-2 1/8"	28'-8"	"	"	26'-0 1/8"
		5'	4'-5 3/8"	6'-0"	"	"	1'-9 3/8"	11'-8"	"	"	7'-7 1/8"	17'-8"	"	"	13'-6"	23'-0"	"	"	19'-4 1/8"	28'-8"	"	"	25'-2 1/8"
		6'	5'-3 1/2"	6'-2"	6'-4 1/2"	6'-11 1/2"	1'-1 1/2"	11'-11"	12'-4"	12'-10 1/2"	7'-10 1/2"	17'-8"	18'-3 1/2"	18'-10"	13'-0"	23'-5"	24'-2 1/2"	24'-9 1/2"	18'-11 1/2"	29'-2"	30'-2 1/2"	30'-8 1/2"	24'-11 1/2"
		7'	6'-3 3/8"	6'-8"	6'-5 3/8"	7'-0 3/8"	Ⓐ 0'	12'-1"	12'-6"	13'-0 1/2"	6'-0"	17'-11"	18'-6 1/8"	19'-1"	12'-0 1/2"	23'-9"	24'-7"	25'-1 1/2"	18'-1 1/8"	29'-7"	30'-7 1/2"	31'-2"	24'-1 1/2"
	6'	3'	2'-9 3/8"	7'-0"	7'-3"	7'-9 1/2"	4'-3 3/8"	13'-8"	14'-1 1/8"	14'-8 1/8"	11'-4"	20'-9"	21'-0 1/2"	21'-7"	18'-2 1/2"	27'-0"	27'-11 1/8"	28'-5 1/8"	25'-1 1/2"	33'-8"	34'-10 1/2"	35'-4 1/2"	32'-0 1/2"
		4'	3'-7 1/2"	7'-0"	"	"	3'-7 1/2"	13'-8"	"	"	10'-1 1/2"	20'-9"	"	"	17'-5"	27'-0"	"	"	24'-3 1/2"	33'-8"	"	"	31'-2 1/2"
		5'	4'-5 3/8"	7'-0"	"	"	2'-5 3/8"	13'-8"	"	"	9'-3 1/8"	20'-9"	"	"	16'-11 1/2"	27'-0"	"	"	23'-6"	33'-8"	"	"	30'-8 1/2"
		6'	5'-3 1/2"	7'-2"	7'-5"	7'-11 1/2"	2'-1 1/2"	13'-11"	14'-5"	14'-11 1/2"	9'-1 1/2"	20'-11"	21'-5 1/2"	22'-0 1/2"	16'-1 1/2"	27'-5"	28'-0 1/2"	28'-11"	23'-1 1/2"	34'-6"	35'-6 1/2"	35'-11"	30'-1 1/2"
		7'	6'-3 1/2"	7'-5"	7'-7"	8'-1 1/2"	1'-0"	14'-1"	14'-7"	15'-1 1/2"	8'-1 1/2"	21'-1"	21'-7"	22'-2 1/2"	15'-2"	27'-9"	28'-8"	29'-3 1/2"	22'-3"	34'-7"	35'-9 1/2"	36'-4"	29'-3 1/2"
		8'	7'-8 1/2"	7'-8"	7'-7 1/2"	8'-1 1/2"	Ⓐ 0'	14'-2"	14'-8"	15'-2 1/2"	6'-11 1/2"	21'-10"	21'-8 1/2"	22'-3 1/2"	14'-0"	27'-10"	28'-9 1/2"	29'-4 1/2"	21'-1"	34'-8"	35'-10 1/2"	36'-5"	28'-2"
	7'	4'	3'-7 1/2"	8'-0"	8'-3 1/2"	8'-9 1/2"	4'-7 1/2"	15'-8"	16'-2 1/2"	16'-9"	12'-7"	23'-8"	24'-1 1/2"	24'-8 1/2"	20'-6 1/2"	31'-0"	32'-1 1/2"	32'-7 1/2"	28'-3"	38'-8"	40'-0 1/2"	40'-6 1/2"	36'-9 1/2"
		5'	4'-5 3/8"	8'-0"	"	"	3'-1"	15'-8"	"	"	11'-3 1/8"	23'-8"	"	"	19'-8 1/2"	31'-0"	"	"	27'-7 1/2"	38'-8"	"	"	35'-7"
		6'	5'-3 1/2"	8'-2"	8'-5 1/2"	9'-0"	3'-2 1/2"	15'-11"	16'-5 1/2"	17'-0 1/2"	11'-2 1/2"	23'-8"	24'-6"	25'-0 1/2"	19'-2 1/2"	31'-5"	32'-6 1/2"	33'-0 1/2"	27'-3"	39'-2"	40'-6 1/2"	41'-1"	35'-3 1/2"
		7'	6'-3 1/2"	8'-3"	8'-6 1/2"	9'-11"	2'-0 1/2"	16'-1"	16'-7 1/2"	17'-2 1/2"	10'-2"	23'-11"	24'-7 1/2"	25'-3 1/2"	18'-3 1/2"	31'-9"	32'-10 1/2"	33'-5"	26'-4 1/2"	39'-7"	40'-11 1/2"	41'-6 1/2"	39'-4"
		8'	7'-8 1/2"	8'-7"	8'-7 1/2"	9'-2"	0'-11"	16'-5"	16'-8 1/2"	17'-3 1/2"	9'-0 1/2"	24'-0"	24'-10 1/2"	25'-4 1/2"	17'-1 1/2"	31'-10"	32'-11 1/2"	33'-6"	25'-3"	39'-10"	41'-0 1/2"	41'-7 1/2"	33'-7 1/2"
	8'	4'	3'-7 1/2"	9'-0"	9'-3 1/2"	9'-10 1/2"	5'-8 1/2"	17'-8"	18'-2 1/2"	18'-10"	14'-8"	26'-8"	27'-3 1/2"	27'-9 1/2"	23'-7 1/2"	35'-0"	36'-2 1/2"	36'-9 1/2"	32'-7 1/2"	43'-8"	45'-2 1/2"	45'-9"	41'-7"
		5'	4'-5 3/8"	9'-2"	9'-5 1/2"	10'-0 1/2"	5'-0 1/2"	17'-11"	18'-4 1/2"	19'-1"	14'-1 1/2"	26'-8"	27'-7 1/2"	28'-1 1/2"	23'-2"	35'-5"	36'-10"	37'-2 1/2"	32'-2 1/2"	44'-2"	45'-8 1/2"	46'-3 1/2"	41'-3 1/2"
		6'	5'-3 1/2"	9'-2"	"	"	4'-2 1/2"	17'-11"	"	"	13'-3 1/2"	26'-8"	"	"	22'-8"	35'-5"	"	"	31'-5 1/2"	44'-2"	"	"	40'-5 1/2"
		7'	6'-3 1/2"	9'-3"	9'-6 1/2"	10'-11"	3'-1"	18'-1"	18'-8 1/2"	19'-3"	12'-2 1/2"	26'-11"	27'-10 1/2"	28'-4 1/2"	21'-4 1/2"	35'-9"	37'-0 1/2"	37'-4 1/2"	30'-6 1/2"	44'-7"	46'-1 1/2"	46'-8 1/2"	39'-8"
		8'	7'-8 1/2"	9'-4"	9'-8"	10'-2"	1'-11 1/2"	18'-2"	18'-9 1/2"	19'-4 1/2"	11'-1 1/2"	27'-0"	27'-11 1/2"	28'-5 1/2"	20'-0 1/2"	35'-10"	37'-1 1/2"	37'-7 1/2"	29'-1 1/2"	44'-8"	46'-2 1/2"	46'-9"	38'-6 1/2"
	9'	5'	4'-5 3/8"	10'-2"	10'-6 1/2"	11'-0 1/2"	6'-1"	19'-11"	20'-7 1/2"	21'-2"	16'-2"	29'-8"	30'-8 1/2"	31'-3"	26'-3 1/2"	39'-5"	40'-9 1/2"	41'-4 1/2"	36'-4 1/2"	49'-2"	50'-7 1/2"	51'-3"	46'-5 1/2"
		6'	5'-3 1/2"	10'-3"	10'-7 1/2"	11'-1 1/2"	5'-0 1/2"	20'-1"	20'-7 1/2"	21'-2"	15'-2 1/2"	29'-11"	30'-9 1/2"	31'-4"	25'-3 1/2"	39'-9"	41'-1 1/2"	41'-8 1/2"	35'-0 1/2"	49'-7"	51'-1"	51'-10 1/2"	46'-0 1/2"
		7'	6'-3 1/2"	10'-3"	"	"	4'-1 1/2"	20'-1"	"	"	14'-3 1/2"	29'-11"	"	"	24'-3 1/2"	39'-9"	"	"	34'-1 1/2"	49'-7"	"	"	44'-10"
		8'	7'-8 1/2"	10'-4"	10'-8 1/2"	11'-2 1/2"	2'-11 1/2"	20'-8"	21'-1 1/2"	21'-7"	13'-2"	30'-0"	31'-0 1/2"	31'-7 1/2"	23'-4 1/2"	39'-10"	41'-2 1/2"	41'-9 1/2"	33'-6 1/2"	49'-8"	51'-5"	51'-11 1/2"	43'-3 1/2"
	10'	5'	4'-5 3/8"	11'-2"	11'-6 1/2"	12'-1 1/2"	7'-1 1/2"	21'-11"	22'-8 1/2"	23'-2 1/2"	18'-3"	32'-8"	33'-9 1/2"	34'-4 1/2"	29'-4 1/2"	43'-5"	44'-11 1/2"	45'-6"	40'-6"	56'-2"	58'-1"	58'-7 1/2"	51'-7 1/2"
		6'	5'-3 1/2"	11'-3"	11'-7 1/2"	12'-2 1/2"	6'-0 1/2"	22'-1"	22'-10 1/2"	23'-4 1/2"	17'-2 1/2"	32'-11"	34'-1"	34'-7 1/2"	28'-3 1/2"	43'-9"	45'-3 1/2"	45'-10"	40'-0 1/2"	56'-7"	58'-6"	57'-2 1/2"	51'-3"
		7'	6'-3 1/2"	11'-3"	"	"	5'-1 1/2"	22'-1"	"	"	16'-4 1/2"	32'-11"	"	"	27'-7"	43'-9"	"	"	38'-3 1/2"	56'-7"	"	"	50'-0 1/2"
		8'	7'-8 1/2"	11'-4"	11'-8 1/2"	12'-3 1/2"	4'-0 1/2"	22'-8"	23'-2 1/2"	23'-8 1/2"	15'-2 1/2"	33'-0"	34'-2"	34'-8 1/2"	26'-5"	43'-10"	45'-4 1/2"	45'-11"	37'-8"	56'-8"	58'-7 1/2"	57'-1 1/2"	48'-10 1/2"
	11'	6'	5'-3 1/2"	12'-4"	12'-8 1/2"	13'-3 1/2"	7'-1"	24'-2"	25'-2 1/2"	25'-6 1/2"	19'-3"	36'-0"	37'-3 1/2"	37'-9 1/2"	32'-0"	47'-10"	49'-4 1/2"	50'-0 1/2"	44'-3"	—	—	—	—
		7'	6'-3 1/2"	12'-4"	"	"	6'-3 1/2"	24'-2"	"	"	18'-6 1/2"	36'-0"	"	"	30'-7 1/2"	47'-10"	"	"	43'-0 1/2"	—	—	—	—
		8'	7'-8 1/2"	12'-4"	"	"	5'-0 1/2"	24'-2"	"	"	17'-3 1/2"	36'-0"	"	"	29'-4 1/2"	47'-10"	"	"	41'-3 1/2"	—	—	—	—
	12'	6'	5'-3 1/2"	13'-4"	13'-8 1/2"	14'-4 1/2"	8'-6 1/2"	26'-2"	27'-1"	27'-7 1/2"	21'-1"	39'-0"	40'-0 1/2"	40'-11"	35'-1 1/2"	51'-10"	53'-0"	54'-1"	48'-7"	—	—	—	—
		7'	6'-3 1/2"	13'-4"	"	"	7'-3 1/2"	26'-2"	"	"	20'-7 1/2"	39'-0"	"	"	33'-10 1/2"	51'-10"	"	"	47'-2"	—	—	—	—
		8'	7'-8 1/2"	13'-5"	"	"	6'-1"	26'-2"	"	"	19'-4 1/2"	39'-0"	"	"	32'-8"	51'-10"	"	"	45'-11 1/2"	—	—	—	—
W-X152-2, W-X153-2 or W-X154-2 (FOR H=9'0" & OVER)	7'	9'	8'-11 1/2"	8'-6"	8'-9 3/8"	9'-9"	Ⓐ 0'	16'-5"	17'-0"	17'-6 1/2"	8'-0 1/2"	26'-9"	25'-8 1/2"	25'-8 1/2"	16'-3"	32'-8"	33'-1 1/2"	33'-11"	24'-3 1/2"	40'-6"	41'-7"	42'-1 1/2"	32'-7 3/8"
	8'	9'	8'-11 1/2"	9'-6"	9'-10"	10'-9 1/2"	0'-10 3/8"	18'-5"	19'-0 1/2"	19'-7 1/2"	10'-1 1/2"	27'-9"	28'-9 1/2"	28'-10"	19'-9 1/2"	36'-8"	37'-6 1/2"	38'-0 1/2"	28'-7"	45'-2"	46'-3 1/2"	47'-2 1/2"	37'-3 1/2"
		10'	10'-2"	9'-8"	10'-0 1/2"	10'-6 1/2"	Ⓐ 0'	18'-8"	19'-3 1/2"	19'-10 1/2"	9'-2"	27'-8"	28'-7 1/2"	29'-2 1/2"	18'-5 1/2"	36'-8"	37'-11 1/2"	38'-6"	27'-7 1/2"	45'-8"	47'-2 1/2"	47'-9 1/2"	37'-1 1/2"
	9'	9'	8'-11 1/2"	10'-6"	10'-10 1/2"	11'-5"	1'-11 1/2"	20'-5"	21'-1 1/2"	21'-9 1/2"	12'-2 1/2"	30'-5"	31'-10 1/2"	32'-5 1/2"	22'-5 1/2"	40'-3"	41'-8"	42'-2 1/2"	32'-8 1/2"	50'-8"	51'-11 1/2"	52'-5 1/2"	43'-0"
		10'	10'-2"	10'-8"	11'-0 1/2"	11'-7"	0'-10 1/2"	20'-8"	21'-4 1/2"	21'-11 1/2"	11'-2 1/2"	30'-8"	32'-1 1/2"	32'-8 1/2"	21'-7"	40'-8"	42'-1 1/2"	42'-7 1/2"	31'-11 1/2"	50'-8"	52'-2"	53'-0"	42'-3 1/2"
		11'	11'-0 1/2"	10'-10"	11'-2 1/2"	11'-9"	Ⓐ 0'	20'-10"	21'-6 1/2"	22'-1 1/2"	10'-2 1/2"	30'-10"	32'-11"	33'-5"	20'-6 1/2"	40'-10"	42'-3 1/2"	42'-9 1/2"	30'-10 1/2"	50'-10"	52'-7"	53'-5"	41'-1 1/2"
	10'	9'	8'-11 1/2"	11'-6"	11'-10 1/2"	12'-5 1/2"	2'-11 1/2"	22'-5"	23'-1 1/2"	23'-9"	14'-2 1/2"	33'-8"	34'-7 1/2"	35'-0 1/2"	25'-8 1/2"	44'-5"	45'-9 1/2"	46'-4 1/2"	36'-10 1/2"	55'-2"	57'-1 1/2"	57'-7 1/2"	48'-2"
		10'	10'-2"	11'-8"	12'-1"	12'-7 1/2"	1'-1"	22'-8"	23'-5 1/2"	24'-0"	13'-8 1/2"	33'-8"	34'-10 1/2"	35'-3"	24'-8 1/2"	44'-5"	46'-1 1/2"	46'-7"	36'-1"	55'-8"	57'-7 1/2"	58'-1"	47'-5 1/2"
		11'	11'-0 1/2"	11'-10"	12'-2"	12'-9 1/2"	0'-10 1/2"	23'-10"	24'-7"	24'-12"	12'-2"	35'-10"	37'-1"	37'-6 1/2"	23'-7 1/2"	44'-10"	46'-5"	46'-11 1/2"	35'-0"	55'-10"	57'-11"	58'-6"	46'-5"
		12'	12'-7 1/2"	12'-0"	12'-5 1/2"	12'-11 1/2"	Ⓐ 0'	23'-8"	24'-9 1/2"	25'-4 1/2"	11'-2 1/2"	36'-0"	37'-3 1/2"	37'-9 1/2"	22'-7"	45'-0"	46'-7"	47'-1"	33'-11 1/2"	56'-0"	57'-11 1/2"	58'-6"	45'-9 1/2"
	11'	9'	8'-11 1/2"	12'-6"	12'-11 1/2"	13'-5 1/2"	4'-0"	24'-5"	25'-3 1/2"	25'-9 1/2"	16'-4"	36'-8"	37'-7 1/2"	38'-1 1/2"	28'-8"	46'-8"	48'-0 1/2"	48'-5 1/2"	39'-0 1/2"	—	—	—	—
		10'	10'-2"	12'-8"	13'-1 1/2"	13'-7 1/2"	2'-11 1/2"	24'-8"	25'-6 1/2"	26'-1"	15'-6 1/2"	36'-8"	37'-11 1/2"	38'-6"	27'-3 1/2"	46'-8"	48'-2 1/2"	48'-7"	38'-2 1/2"	—	—	—	—
		11'	11'-0 1/2"	12'-10"	13'-3 1/2"	13'-8"	1'-10 1/2"	24'-10"	25'-8 1/2"	26'-3"	14'-3 1/2"	36'-10"	38'-1 1/2"	38'-8"	26'-1"	46'-10"	48'-4 1/2"	48'-9"	37'-1"	—	—	—	—
		12'	12'-7 1/2"	13'-0"	13'-5 1/2"	13'-10"	0'-10 1/2"	25'-0"	25'-10 1/2"	26'-5"	13'-3 1/2"	37'-0"	38'-3 1/2"	38'-10"	25'-0 1/2"	47'-0"	48'-6"	49'-0"	35'-11 1/2"	—	—	—	—
	12'	9'	8'-11 1/2"	12'-8"	13'-1 1/2"	14'-4 1/2"	5'-0 1/2"	26'-5"	27'-1 1/2"	27'-10 1/2"	18'-5"	39'-9"	40'-8 1/2"	41'-3"	31'-3"	52'-3"	53'-7"	54'-3"	45'-1"	—	—	—	—
		10'	10'-2"	13'-8"	14'-1 1/2"	14'-10 1/2"	3'-11 1/2"	26'-8"	27'-7 1/2"	28'-1 1/2"	17'-5 1/2"	39'-8"	41'-1 1/2"	41'-7 1/2"	30'-10 1/2"	52'-8"	54'-1 1/2"	55'-0 1/2"	44'-1 1/2"	—	—	—	—
		11'	11'-0 1/2"	13'-10"	14'-3 1/2"	14'-10 1/2"	2'-11 1/2"	26'-10"	27'-9 1/2"	28'-3 1/2"	16'-0 1/2"	39'-10"	41'-3 1/2"	41'-9 1/2"	29'-10 1/2"	52'-10"	54'-3 1/2"	55'-2 1/2"	43'-3 1/2"	—	—	—	—
		12'	12'-7 1/2"	14'-0"	14'-5 1/2"	15'-0 1/2"	1'-10 1/2"	27'-0"	27'-11 1/2"	28'-6"	15'-0"	40'-0"	41'-4 1/2"	41'-11 1/2"	28'-9 1/2"	53'-0"	54'-10 1/2"	55'-4 1/2"	42'-3"	—	—	—	—

Ⓐ Special case for these boxes. See Detail 'A' and Table 'A' for revised values of F_1, F_2, W_3 and W_5, when apron width is more than 1'-0" and $W_3 = 0$. For Detail 'A' and Table 'A' for each slope, see Drawing Nos. W-X152-1, W-X152-2, or W-X153-1, W-X153-2, or W-X154-1, W-X154-2.

NOTE:- This drawing to be used in conjunction with Standard Wing Drawings For 15° Skews for each slope as listed below.

2:1 Slopes	3:1 Slopes	4:1 Slopes
W-X152-1 or W-X152-2	W-X153-1 or W-X153-2	W-X154-1 or W-X154-2.

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

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

CLASS S CONCRETE

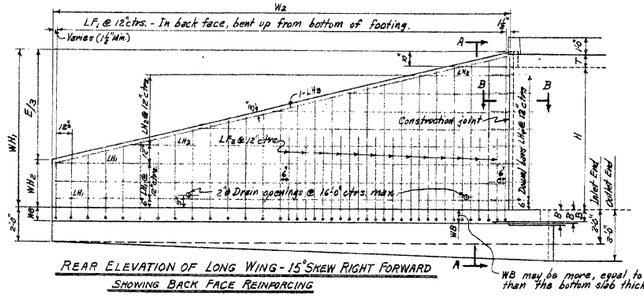
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF STANDARD WINGS
FOR
REINFORCED CONCRETE BOX CULVERTS
15° SKEW

4', 5', 6', 7', 8', 9', 10', 11' & 12' SPANS — 2:1, 3:1 & 4:1 SLOPES
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER H=2', 3', 4', 5', 6', 7', 8', 9', 10', 11' & 12'.

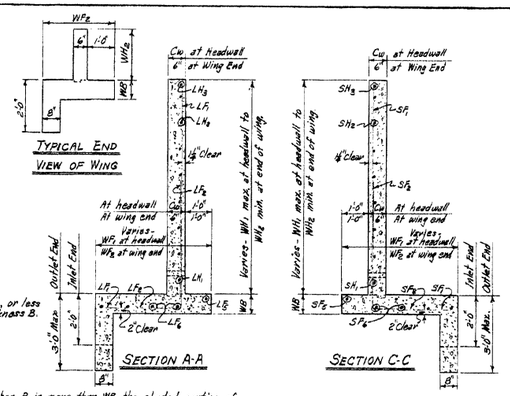
STANDARD DRAWING NO. W-X15

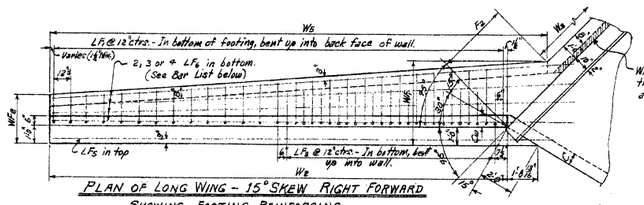
Designed by:- W.C.H. 5-22-63 Checked by:- 6-20-63
Traced by:- W.C.H. 6-13-63 Checked by:- J.E.M.
Quantities by:- Checked by:-

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



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

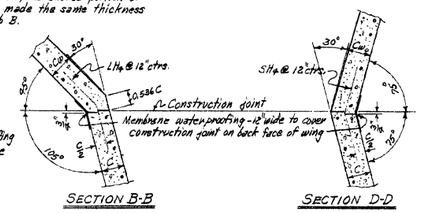




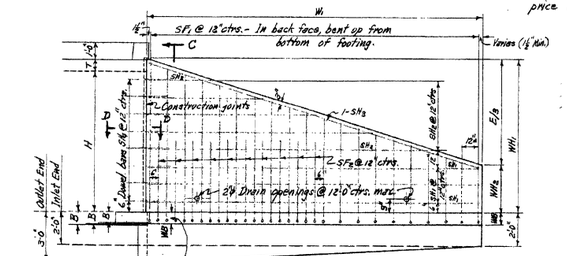
PLAN OF LONG WING - 15° SKEW RIGHT FORWARD
SHOWING FOOTING REINFORCING.

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

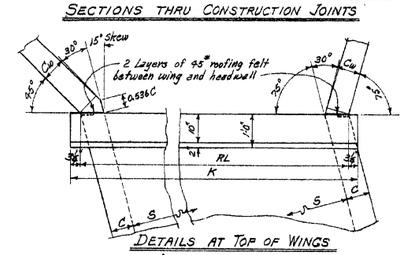
Note:- Payment for membrane waterproofing and roofing felt to be included in the price bid for Class S Concrete.

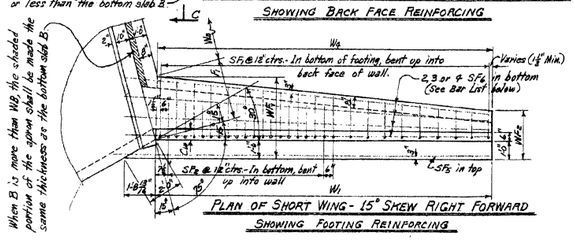


SECTIONS THRU CONSTRUCTION JOINTS



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





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

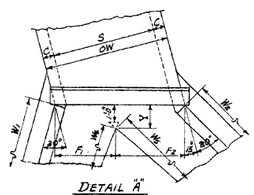


TABLE "A" - DIMENSIONS FOR DETAIL "A"

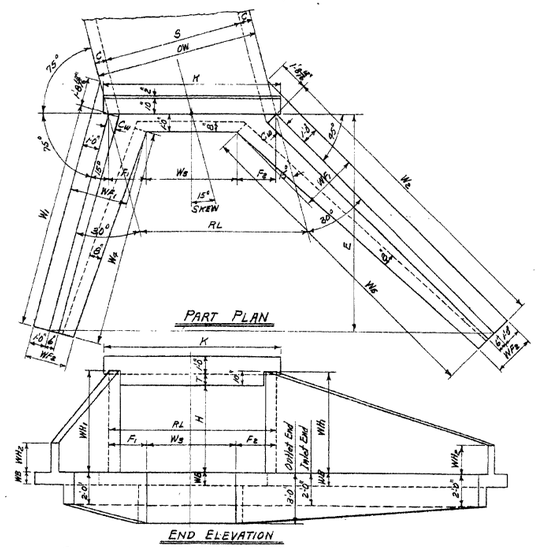
S	H	F1	F2	W4	W5	W3	Y
5'	7'	3'-0	3'-5½	16'-10⅝	25'-0⅝	0"	1'-0⅛
6'	8'	3'-6"	4'-1⅛	19'-0⅛	28'-3⅛	0"	1'-1"

REGULAR WING DIMENSIONS - 3:1 SLOPES

CLEAR HEIGHT OF BOX	THICKNESS OF WING AND FOOTING	WINGWALL HEIGHTS		WIDTHS OF WING FOOTINGS		FOOTING DIMENSION PARALLEL WITH HEADWALL		PERPENDICULAR DIST. FROM WING TO END OF WING	* QUANTITY PER WING			
		AT HEADWALL	AT END OF WING	AT HEADWALL	AT END OF WING	SHORT WING	LONG WING		LENGTHS OF WINGWALLS		INSIDE FOOTING DIMENSIONS	
H	WB	Cw	WH1	WH2	WF1	WF2	F1	F2	E	W1	W2	W4	W5
2'	7"	6"	2'-10"	0'-8	2'-4"	2'-0	1'-1⅜	0'-10⅝	6'-6"	6'-8⅜	9'-2⅝	6'-0⅝	9'-1⅝
3'	7"	6"	3'-10"	1'-0"	2'-8"	2'-1⅛	1'-5¼	1'-4⅜	8'-6"	8'-9¾	12'-0⅛	8'-2¾	12'-3⅜
4'	7"	6"	4'-10	1'-4"	3'-0	2'-3"	1'-9⅝	1'-10	10'-6"	10'-10⅝	14'-10⅛	10'-4⅝	15'-5⅛
5'	7'	6"	5'-10"	1'-8"	3'-4"	2'-4⅛	2'-1⅞	2'-3⅜	12'-6"	12'-11⅛	17'-8⅜	12'-6⅛	18'-7⅛
		7"	5'-10"	1'-8"	3'-4"	2'-4⅛	2'-1⅞	2'-3⅜	12'-6"	12'-11⅛	17'-8⅜	12'-6⅛	18'-7⅛
6'	8'	7"	6'-10"	2'-0"	3'-8"	2'-6"	2'-5⅜	2'-9⅝	14'-6"	14'-0⅝	20'-6"	14'-8⅝	21'-9"
		7½"	6'-10"	2'-0"	3'-8"	2'-6"	2'-5⅜	2'-9⅝	14'-6"	15'-0⅝	20'-6"	14'-8⅝	21'-9"
		8"	6'-10"	2'-0"	3'-8"	2'-6"	2'-5⅜	2'-9⅝	14'-6"	15'-0⅝	20'-6"	14'-8⅝	21'-9"
* 7'	8½"	7½"	7'-10"	2'-4"	4'-2"	2'-7½	3'-0⅛	3'-5⅝	16'-6"	17'-1"	23'-4"	16'-10⅝	25'-1"
		8"	7'-10"	2'-4"	4'-2"	2'-7½	3'-0⅛	3'-5⅝	16'-6"	17'-1"	23'-4"	16'-10⅝	25'-1"
* 8'	9"	8"	8'-10"	2'-8"	4'-8"	2'-9"	3'-4⅜	4'-2⅛	18'-6"	19'-1⅜	26'-2"	19'-1⅛	28'-5"

CLEAR HEIGHT OF BOX	THICKNESS OF WING AND FOOTING	* QUANTITY PER WING - CLASS S CONCRETE			
		INLET END		OUTLET END	
H	WB	SHORT WING	LONG WING	SHORT WING	LONG WING
		CU.YD.	CU.YD.	CU.YD.	CU.YD.
2'	7"	0.789	1.094	0.876	1.212
3'	7"	1.186	1.650	1.300	1.808
4'	7"	1.656	2.305	1.797	2.502
5'	7'	2.194	3.059	2.363	3.295
	7"	2.287	3.188	2.455	3.424
6'	8'	3.052	4.242	3.246	4.517
	7½"	3.114	4.329	3.309	4.605
	8"	3.177	4.417	3.371	4.693
* 7'	8½"	4.220	5.877		
	8"	4.079	5.675	4.301	5.981
* 8'	9"	5.111	7.111	5.360	7.470

* Quantity per wing does not include headwall or that portion of apron or footwall for the length W_3.
* See Table "A" for special values of F_1 & F_2 and W_4 & W_5 for Single 5'x7' and 6'x8' Box Culverts.



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

TYPICAL WING DETAILS

Note:- For remainder of General Plans and Elevations of Single, Double, Triple, Quadruple and Quintuple Span Culverts, see Std. Drawing No. W-X.15. For values of RL, K, and W_5 for each box, see the above Std. also.

MEMBRANE:- A membrane waterproofing 18" wide, consisting of three mappings of waterproofing asphalt and two alternate layers of treated cotton fabric, shall be applied to the back face of wing to cover the construction joints in wings.

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

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING FOOTING	● STEEL REINFORCING PER 4 WINGS	CLASS S CONCRETE - 4 WINGS: HEADWALLS, WINGWALLS, FOOTINGS, TOEWALLS AND APRONS				
					SINGLE BARREL CULVERT	DOUBLE BARREL CULVERT	TRIPLE BARREL CULVERT	QUADRUPLE BARREL CULVERT	QUINTUPLE BARREL CULVERT
S	H	Cw	WB	LB.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	CU.YD.
4'	2'	6"	7"	117	4.79	5.78	6.77	7.77	8.76
	3'	6"	7"	176	6.65	7.64	8.63	9.63	10.62
	4'	6"	7"	267	8.85	9.89	10.88	11.83	12.82
	5'	6"	7"	379	11.90	12.38	13.38	14.37	15.36
	6'	7"	8"	624	15.55	16.46	17.48	18.51	19.53
5'	3'	6"	7"	176	6.87	8.07	9.29	10.48	11.69
	4'	6"	7"	267	9.08	10.28	11.49	12.69	13.90
	5'	6"	7"	379	11.61	12.81	14.02	15.23	16.44
	6'	7"	8"	624	15.67	16.90	18.14	19.38	20.61
	7'	7½"	8½"	1210	20.11	21.36	22.62	23.88	25.14
6'	3'	6"	7"	176	7.09	8.52	9.92	11.34	12.78
	4'	6"	7"	267	9.29	10.73	12.13	13.56	14.98
	5'	6"	7"	379	11.83	13.26	14.67	16.10	17.53
	6'	7"	8"	624	15.89	17.35	18.79	20.25	21.70
	7'	7½"	8½"	1210	20.33	21.81	23.28	24.76	26.24
	8'	8"	9"	1533	25.54	27.05	28.53	30.02	31.50
7'	4'	6"	7"	267	9.52	11.18	12.81	14.47	16.09
	5'	6"	7'	379	12.05	13.72	15.35	17.01	18.63
	6'	7"	8"	624	16.12	17.80	19.45	21.13	22.78
	7'	7½"	8½"	1210	20.56	22.26	23.94	25.69	27.33
	8'	8"	9"	1533	25.80	27.50	29.20	30.90	32.60
8'	4'	6'	7"	267	9.75	11.65	13.51	15.41	17.23
	5'	7"	7"	379	12.76	14.68	16.55	18.47	20.31
	6'	7"	8"	624	16.39	18.26	20.14	22.06	23.90
	7'	7½"	8½"	1210	20.78	22.72	24.62	26.55	28.42
	8'	8"	9"	1533	26.03	27.94	29.86	31.80	33.71
9'	5'	7"	7"	379	12.99	15.15	17.25	19.40	21.45
	6'	7½"	8"	624	16.83	18.07	21.19	23.34	25.42
	7'	7½"	8½"	1210	21.01	23.19	25.31	27.48	29.54
	8'	8"	9"	1533	26.25	28.42	30.55	32.72	34.78
10'	5'	7'	7"	379	13.23	15.42	17.55	20.24	22.53
	6'	7½"	8"	624	17.19	19.54	21.89	24.20	26.56
	7'	7½"	8½"	1210	21.44	23.66	26.01	28.32	30.68
	8'	8"	9"	1533	26.48	28.88	31.25	33.56	35.92
11'	6'	8"	8"	624	17.67	20.39	22.92	25.48	——
	7'	8"	8½"	1210	21.88	24.55	27.13	29.69	——
	8'	8"	9"	1533	26.70	29.37	31.94	34.52	——
12'	6'	8"	8"	624	17.91	20.84	23.64	26.46	——
	7'	8"	8½"	1210	22.11	25.04	27.85	30.67	——
	8'	8"	9"	1533	26.93	29.86	32.67	35.49	——

● For reinforcing steel in headwalls and aprons, see Drawings listed below.

GENERAL NOTES:-

CONCRETE:- All concrete to be Class S, and shall be poured in the dry. All exposed corners to have ¾" chamfers.
REINFORCING STEEL:- Reinforcing steel to be deformed bars of intermediate or hard grade.
CONSTRUCTION JOINTS:- Construction joints between wingwall, footings and sidewalls shall be only where shown on plans.
SPECIFICATIONS:- Arkansas State Highway Commission Standard Specifications for Highway Construction and applicable Special Provisions.

UNIT STRESSES:-
Class S Concrete (n=10) 1200#/□"
Reinforcing Steel 20,000#/□"

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

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

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

CLEAR HEIGHT	WING LOCATION	SF1 & LF1 BENT: In bottom of footing, bent up into back face of wing. One bar of each length.						SF2 & LF2 BENT: In bottom of footing, bent up into back face of wing. Alt. with F1 bars.						SF3 & LF3 STRAIGHT: Longitudinal in top of wing footing heel.			SF4 & LF4 STRAIGHT: Longitudinal in bottom of wing footing toe.		
					LENGTHS VARY		X												
H	SHORT or LONG	SIZE	SPACING	NO. REQD	MIN.	MAX.	MIN.	MAX.	SIZE	SPACING	NO. REQD	LENGTH	X	Y	SIZE	NO. REQD	LENGTH	SIZE	NO. REQD	LENGTH
2'	Short	#3	12"	7	1'-7"	3'-11"	2'-8"	1'-0"	—	—	—	—	—	—	#3	1	9'-2"	#3	2	7'-10"
	Long	#3	12"	10	1'-7"	3'-11"	2'-8"	2'-0"	—	—	—	—	—	—	#3	1	11'-8"	#3	2	10'-10"
3'	Short	#3	12"	9	2'-2"	5'-8"	0'-10"	1'-4"	—	—	—	—	—	—	#3	1	11'-8"	#3	2	10'-0"
	Long	#3	12"	13	1'-11"	5'-2"	0'-10"	1'-3"	—	—	—	—	—	—	#3	1	14'-6"	#3	2	14'-0"
4'	Short	#3	12"	11	2'-7"	6'-7"	0'-4"	1'-8"	—	—	—	—	—	—	#3	1	13'-8"	#3	3	12'-2"
	Long	#3	12"	15	2'-6"	6'-6"	0'-1"	1'-7"	—	—	—	—	—	—	#3	1	17'-9"	#3	3	17'-2"
5'	Short	#3	12"	13	3'-1"	7'-11"	1'-7"	2'-0"	#3	12"	4	3'-6"	1'-1"	2'-6"	#3	1	15'-5"	#3	3	14'-9"
	Long	#3	12"	18	3'-0"	7'-10"	1'-7"	1'-11"	#3	12"	5	3'-6"	1'-1"	2'-6"	#3	1	20'-2"	#3	3	20'-6"
6'	Short	#4	12"	16	3'-4"	9'-4"	1'-4"	2'-6"	#3	12"	4	4'-6"	1'-4"	3'-3"	#3	1	17'-6"	#3	3	16'-6"
	Long	#4	12"	21	3'-5"	9'-3"	1'-2"	2'-5"	#3	12"	5	4'-6"	1'-4"	3'-3"	#3	1	23'-0"	#3	3	23'-6"
7'	Short	#4	12"	18	3'-9"	10'-10"	1'-3"	2'-10"	2'-7"	8'-1"	#4	12"	7	5'-6"	1'-7"	4'-0"	#4	1	19'-7"
	Long	#4	12"	24	3'-10"	10'-8"	1'-3"	2'-8"	2'-8"	8'-1"	#4	12"	9	5'-6"	1'-7"	4'-0"	#4	1	25'-10"
8'	Short	#4	12"	20	4'-9"	12'-5"	1'-6"	3'-4"	3'-0"	9'-2"	#4	12"	10	6'-6"	1'-10"	4'-9"	#4	1	21'-8"
	Long	#4	12"	27	4'-9"	12'-8"	1'-5"	3'-2"	3'-0"	9'-2"	#4	12"	13	6'-6"	1'-10"	4'-9"	#4	1	28'-3"

CLEAR HEIGHT	WING LOCATION	SH1 & LH1 STRAIGHT: Horizontal in back face of wing.				SH2 & LH2 STRAIGHT: Horizontal in back face of wing. One bar of each length.				SH3 & LH3 STRAIGHT: In back face of wing at top-on slope.			SH4 & LH4 BENT: Dowels thru construction joint at headwall.				BAR BENDING DIAGRAM	QUANTITY: REINFORCING STEEL PER WING - LBS.	
								LENGTHS VARY											
H	SHORT or LONG	SIZE	SPACING	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	LENGTH	MAX.	MIN.	SIZE	NO. REQD	LENGTH	SIZE	SPACING	NO. REQD	X	SHORT WING	LONG WING
2'	Short	#3	12'	1	6'-5"	#5	12"	1	—	3'-6"	#3	1	6'-10"	#3	12"	2	2'-8"	1'-9"	24.9	33.4
	Long	#3	12'	1	8'-11"	#5	12"	1	—	4'-8"	#3	1	9'-1"	#3	12"	2	"	"		
3'	Short	#3	12'	1	8'-6"	#5	12"	2	6'-7"	3'-6"	#3	1	9'-0"	#3	12"	3	"	"	37.7	50.3
	Long	#3	12'	1	11'-9"	#3	12"	2	8'-11"	4'-6"	#3	1	12'-0"	#3	12"	3	"	"		
4'	Short	#3	12'	1	10'-7"	#5	12"	3	9'-6"	3'-6"	#5	1	11'-2"	#3	12"	4	"	"	57.3	76.4
	Long	#3	12'	1	14'-7"	#3	12"	3	12'-2"	4'-6"	#3	1	14'-11"	#3	12"	4	"	"		
5'	Short	#3	12'	2	12'-6"	#3	12"	3	9'-8"	3'-6"	#3	1	13'-6"	#3	12"	5	"	"	81.1	108.4
	Long	#3	12'	2	17'-5"	#3	12"	3	13'-2"	4'-6"	#3	1	17'-10"	#3	12"	5	"	"		
6'	Short	#3	12"	4	14'-9"	#3	12"	2	12'-9"	3'-6"	#3	1	15'-6"	#3	12"	6	"	"	134.8	178.1
	Long	#3	12"	2	20'-3"	#3	12"	4	17'-5"	4'-6"	#3	1	20'-8"	#3	12"	6	2'-8"	1'-9"		
7'	Short	#4	12"	2	16'-11"	#4	12"	5	15'-10"	3'-6"	#4	1	17'-8"	#4	12"	7	3'-6"	1'-9"	259.5	345.2
	Long	#4	12"	2	23'-7"	#4	12"	5	21'-8"	4'-6"	#4	1	23'-8"	#4	12"	7	"	"		
8'	Short	#4	12"	3	18'-11"	#4	12"	5	15'-10"	3'-6"	#4	1	19'-10"	#4	12"	8	"	"	328.0	438.3
	Long	#4	12"	3	25'-11"	#4	12"	5	21'-8"	4'-6"	#4	1	26'-0"	#4	12"	8	3'-6"	1'-9"		

BAR BENDING DIAGRAM: SF3 & SF6, LF3 & LF6 (3" Min.); SH4 & LH4 (7, 12)

Note:- Dimensions are to bar centers.

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

Designed By:- W.C.H. 5-13-63 Checked By:-
Drawn By:- W.C.H. 6-20-63 Checked By:-
Quantities By:- W.C.H. 9-23-63 Checked By:-
Bars. 8-7-63

CLASS S CONCRETE

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

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

STANDARD DRAWING NO. W-X153-1

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

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

DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	"a" bars STRAIGHT In Top and Bottom Slabs of Barrel. SIZE	SPACING	No. REQ'D	LENGTH	"b" bars BENT - See Diagram. In Top and Bottom Slabs of Barrel. Alternate with "a" bars SIZE	SPACING	No. REQ'D	LENGTH	X	"d" bars STRAIGHT Longitudinal in Top Slab of Barrel SIZE	SPACING	No. REQ'D	LENGTH	"d1" bars STRAIGHT Longitudinal in Sidewalls SIZE	SPACING	No. REQ'D	LENGTH	"e" bars STRAIGHT Longitudinal in Bottom Slab of Barrel SIZE	SPACING	No. REQ'D	LENGTH	"f" bars STRAIGHT Verticals in Sidewalls SIZE	SPACING	No. REQ'D	LENGTH	"k" bars STRAIGHT 2 in Top of Headwalls and Aprons - Each. SIZE	No. REQ'D	LENGTH
0'-0" TO 5'-0" MAXIMUM	4' @ 4'	2'	#5	13"	112	4'-11"	#6	13"	110	6'-0"	4'-10"	#5	10½"	6	#4	12"	4	#4	12"	5	#4	12"	2'-11"	#5	8	5'-5"
		3'			112	4'-11"			110	6'-0"	4'-10"			6			6			5			4'-11"		8	5'-5"
		4'			112	4'-11"			110	6'-0"	4'-10"			6			8			5			6'-11"		8	5'-5"
		5'			112	4'-11"			110	6'-0"	4'-10"			6			10			5			8'-11"		8	5'-5"
		6'			112	5'-1"			110	6'-8"	5'-0"			6			12			5			10'-11"		8	5'-7"
	4' @ 5'	3'	#6	13"	112	5'-11"	#6	13"	110	7'-1"	5'-11"	#5	10½"	7	#4	12"	6	#4	12"	6	#4	12"	4'-6"	#6	8	6'-6"
		4'			112	5'-11"			110	7'-1"	5'-11"			7			8			6			5'-6"		8	6'-6"
		5'			112	5'-11"			110	7'-1"	5'-11"			7			10			6			6'-6"		8	6'-6"
		6'			112	6'-7"			110	7'-3"	6'-1"			7			12			6			7'-0"		8	6'-8"
		7'			112	6'-8"			110	7'-4"	6'-2"			7			14			6			8'-0"		8	6'-9"
	4' @ 6'	3'	#6	12"	120	7'-0"	#6	12"	118	8'-1"	6'-11"	#5	10½"	8	#4	12"	6	#4	12"	7	#4	12"	4'-1"	#6	8	7'-6"
		4'			120	7'-0"			118	8'-1"	6'-11"			8			8			7			5'-1"		8	7'-6"
		5'			120	7'-0"			118	8'-1"	6'-11"			8			10			7			6'-1"		8	7'-6"
		6'			120	7'-12"			118	8'-3"	7'-1"			8			12			7			7'-1"		8	7'-8"
		7'			120	7'-3"			118	8'-6"	7'-2"			8			14			7			8'-1"		8	7'-9"
		8'			120	7'-9"			118	8'-5"	7'-3"			8			16			7			9'-1"		8	7'-10"
	4' @ 7'	4'	#6	11"	132	8'-0"	#6	11"	130	9'-1"	7'-11"	#5	10½"	9	#4	12"	8	#4	12"	8	#4	12"	5'-2"	#6	8	8'-7"
		5'			132	8'-0"			130	9'-1"	7'-11"			9			10			8			6'-2"		8	8'-7"
		6'			132	8'-2"			130	9'-2"	8'-1"			9			12			8			7'-2"		8	8'-9"
		7'			132	8'-3"			130	9'-4"	8'-2"			9			14			8			8'-2"		8	8'-10"
		8'			132	8'-4"			130	9'-5"	8'-3"			9			16			8			9'-2"		8	8'-11"
		9'			132	8'-6"			130	9'-7"	8'-5"			9			18			8			10'-2"		8	9'-1"
	4' @ 8'	4'	#7	12"	120	9'-1"	#6	11"	118	10'-2"	9'-0"	#5	10"	11	#4	12"	8	#4	12"	9	#4	12"	5'-5"	#7	8	9'-3"
		5'			120	9'-3"			118	10'-4"	9'-2"			11			10			9			6'-3"		8	9'-3"
		6'			120	9'-3"			118	10'-4"	9'-2"			11			12			9			7'-6"		8	9'-9"
		7'			120	9'-4"			118	10'-5"	9'-3"			11			14			9			8'-6"		8	9'-10"
		8'			120	9'-5"			118	10'-6"	9'-4"			11			16			9			9'-6"		8	9'-11"
		9'			120	9'-7"			118	10'-8"	9'-6"			11			18			9			10'-6"		8	10'-1"
		10'			120	9'-9"			118	10'-10"	9'-8"			11			20			9			11'-6"		8	10'-3"
	4' @ 9'	5'	#7	11"	132	10'-3"	#6	11"	130	11'-9"	10'-2"	#5	10"	12	#4	12"	10	#4	12"	10	#4	12"	6'-5"	#7	8	10'-9"
		6'			132	10'-4"			130	11'-5"	10'-3"			12			12			10			7'-5"		8	10'-10"
		7'			132	10'-4"			130	11'-5"	10'-3"			12			14			10			8'-5"		8	10'-10"
		8'			132	10'-5"			130	11'-6"	10'-4"			12			16			10			9'-5"		8	10'-11"
		9'			132	10'-7"			130	11'-8"	10'-6"			12			18			10			10'-5"		8	11'-2"
		10'			132	10'-9"			130	11'-10"	10'-8"			12			20			10			11'-5"		8	11'-4"
		11'			132	10'-11"			130	12'-0"	10'-10"			12			22			10			12'-5"		8	11'-6"
	4' @ 10'	5'	#7	11"	120	11'-3"	#6	11"	118	12'-7"	11'-3"	#5	10"	13	#4	12"	10	#4	12"	11	#4	12"	6'-6"	#7	8	11'-10"
		6'			120	11'-4"			118	12'-8"	11'-4"			13			12			11			7'-6"		8	11'-8"
		7'			120	11'-6"			118	12'-8"	11'-4"			13			14			11			8'-6"		8	11'-11"
		8'			120	11'-5"			118	12'-9"	11'-5"			13			16			11			9'-6"		8	12'-0"
		9'			120	11'-8"			118	12'-11"	11'-7"			13			18			11			10'-6"		8	12'-2"
		10'			120	11'-10"			118	13'-1"	11'-9"			13			20			11			11'-6"		8	12'-4"
		11'			120	12'-0"			118	13'-3"	11'-11"			13			22			11			12'-6"		8	12'-6"
		12'			120	12'-2"			118	13'-5"	12'-1"			13			24			11			13'-6"		8	12'-8"
	4' @ 11'	6'	#7	11"	132	12'-6"	#7	11"	130	13'-9"	12'-5"	#5	9½"	15	#4	12"	12	#4	12"	12	#4	12"	7'-7"	#7	8	13'-0"
		7'			132	12'-6"			130	13'-9"	12'-5"			15			14			12			8'-7"		8	13'-0"
		8'			132	12'-6"			130	13'-9"	12'-5"			15			16			12			9'-7"		8	13'-0"
		9'			132	12'-8"			130	13'-11"	12'-7"			15			18			12			10'-7"		8	13'-2"
		10'			132	12'-10"			130	14'-1"	12'-9"			15			20			12			11'-7"		8	13'-4"
		11'			132	13'-0"			130	14'-3"	12'-11"			15			22			12			12'-7"		8	13'-7"
		12'			132	13'-2"			130	14'-5"	13'-1"			15			24			12			13'-7"		8	13'-9"
	4' @ 12'	6'	#8	12"	120	13'-6"	#7	12"	118	14'-10"	13'-6"	#5	9½"	16	#4	12"	12	#4	12"	13	#4	12"	7'-8"	#8	8	14'-1"
		7'			120	13'-6"			118	14'-10"	13'-6"			16			14			13			8'-8"		8	14'-1"
		8'			120	13'-6"			118	14'-10"	13'-6"			16			16			13			9'-8"		8	14'-1"
		9'			120	13'-8"			118	15'-0"	13'-8"			16			18			13			10'-8"		8	14'-3"
		10'			120	13'-10"			118	15'-2"	13'-10"			16			20			13			11'-8"		8	14'-5"
		11'			120	14'-0"			118	15'-4"	14'-0"			16			22			13			12'-8"		8	14'-7"
		12'			120	14'-2"			118	15'-6"	14'-2"			16			24			13			13'-8"		8	14'-9"

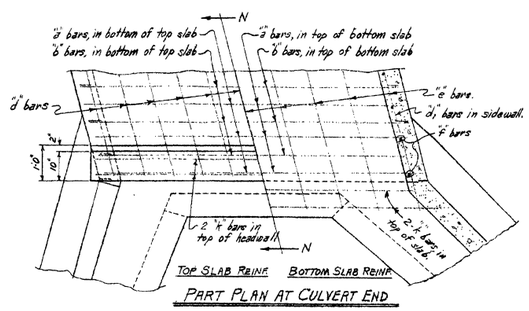
NOTE:- The "a" and "b" bars are to be placed parallel with the headwalls, spacing to be parallel with barrel.

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS	BENDING DIAGRAM Bars "b"
#6	3"	5"	1'-2"	K, Pin diam., X
#7	3½"	5¾"	1'-4"	

NOTE:- Dimensions are to centers of bars

DOWEL BARS FOR TWO HEADWALLS

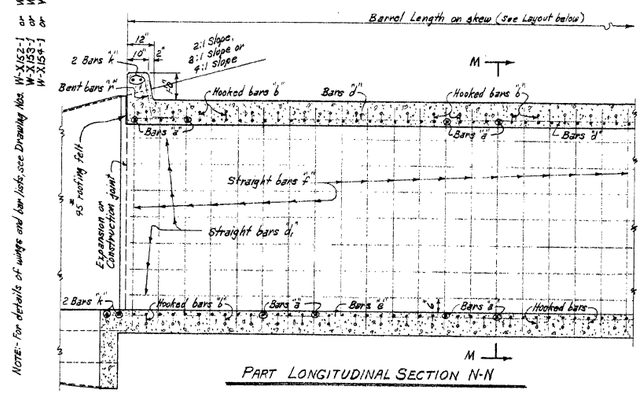
SPAN @	SIZE	SPACING	No. REQ'D	LENGTH	X	Bars "r" Dowel bars in headwalls
4'	#4	11¼"	12	2'-6"	1'-3"	
5'	#4	11¼"	14	2'-7"	1'-3½"	
6'	#4	11¼"	16	2'-8"	1'-4"	
7'	#4	11½"	18	2'-9"	1'-4½"	
8'	#4	11½"	20	2'-11"	1'-5½"	
9'	#4	11½"	22	3'-0"	1'-6"	
10'	#4	12"	24	3'-1"	1'-6½"	
11'	#4	12"	26	3'-2"	1'-7"	
12'	#4	12"	28	3'-3"	1'-7½"	



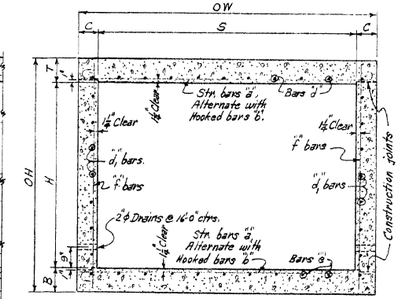
PART PLAN AT CULVERT END

DIMENSIONS / QUANTITIES

MAX. DESIGN DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	BARREL DIMENSIONS: SQ. FT. OF OPENING A	OVERALL WIDTH OW	THICKNESS OF TOP SLAB T	THICKNESS OF SIDEWALLS C	THICKNESS OF BOTTOM SLAB B	OVERALL HEIGHT OH	ROADWAY LENGTH RL	LENGTH OF HEADWALL K	UNIT QUANTITIES: CLASS S CONC. PER LIN. FT. OF BARREL CU.YD.	REINFORCING STEEL PER LIN. FT. OF BARREL LB.	ADDITIONAL PER LAP LB.	ADDITIONAL TWO HEADWALLS & APRONS LB.
5'-0"	4' @ 4'	2'	8	5'-0"	7"	6"	6½"	2'-1½"	5'-2⅛"	5'-8⅜"	0.282	42.27	17.95	71.92
		3'	12	5'-0"		6"		3'-1½"	"	"	0.319	44.94	19.62	71.92
		4'	16	5'-0"		6"		4'-1½"	"	"	0.356	47.62	21.29	71.92
		5'	20	5'-0"		6"		5'-1½"	"	"	0.394	50.29	22.96	71.92
		6'	24	5'-2"		7"		6'-1½"	5'-4⅜"	5'-10⅜"	0.474	53.74	24.63	73.31
	4' @ 5'	3'	15	6'-0"	7½"	6"	7"	3'-2½"	6'-2⅛"	6'-9"	0.380	56.71	22.19	110.28
		4'	20	6'-0"		6"		4'-2½"	"	"	0.417	59.38	23.84	110.28
		5'	25	6'-0"		6"		5'-2½"	"	"	0.454	62.05	25.53	110.28
		6'	30	6'-2"		7"		6'-2½"	6'-8⅜"	6'-11⅜"	0.535	65.45	27.20	112.28
		7'	35	6'-3"		7½"		7'-2½"	6'-9⅜"	7'-0⅜"	0.604	68.78	28.87	113.28
	4' @ 6'	3'	18	7'-0"	8"	6"	7½"	3'-3½"	7'-3"	7'-9⅜"	0.446	67.79	29.74	127.97
		4'	24	7'-0"		6"		4'-3½"	"	"	0.483	70.49	26.43	127.97
		5'	30	7'-0"		6"		5'-3½"	"	"	0.520	73.14	28.10	127.97
		6'	36	7'-2"		7"		6'-3½"	7'-5"	7'-11⅜"	0.602	76.81	29.77	129.98
		7'	42	7'-3"		7½"		7'-3½"	7'-6"	8'-0⅜"	0.671	79.98	31.44	130.98
		8'	48	7'-4"		8"		8'-3½"	7'-7⅜"	8'-1⅜"	0.746	83.97	33.11	131.98
	4' @ 7'	4'	28	8'-0"	8½"	6"	8½"	5'-3"	8'-3⅜"	8'-9⅜"	0.568	82.36	29.01	196.89
		5'	35	8'-0"		6"		6'-3"	"	"	0.605	85.63	30.69	196.89
		6'	42	8'-2"		7"		7'-3"	8'-5½"	9'-0"	0.688	89.40	32.35	198.89
		7'	49	8'-3"		7½"		8'-3"	8'-6⅜"	9'-1"	0.757	92.62	34.02	199.90
		8'	56	8'-4"		8"		9'-3"	8'-7⅜"	9'-2"	0.832	98.28	35.69	150.90
		9'	63	8'-6"		9"		10'-3"	8'-9⅜"	9'-4"	0.996	107.22	37.36	152.90
	4' @ 8'	4'	32	9'-0"	9½"	6"	9½"	5'-7"	9'-3⅜"	9'-10⅜"	0.676	97.69	33.32	207.70
		5'	40	9'-2"		7"		6'-7"	9'-5⅜"	10'-0⅜"	0.754	101.98	34.99	210.92
		6'	48	9'-2"		7"		7'-7"	"	"	0.797	106.15	36.66	210.92
		7'	56	9'-3"		7½"		8'-7"	9'-6⅜"	10'-1⅜"	0.847	107.92	38.33	211.79
		8'	64	9'-4"		8"		9'-7"	9'-8"	10'-2⅜"	0.942	113.17	40.00	213.15
		9'	72	9'-6"		9"		10'-7"	9'-10"	10'-4⅜"	1.057	122.28	41.67	215.87
		10'	80	9'-8"		10"		11'-7"	10'-0⅜"	10'-6⅜"	1.184	129.04	43.34	218.60
	4' @ 9'	5'	45	10'-2"	10"	7"	10"	6'-8"	10'-6⅜"	11'-0⅜"	0.844	117.30	37.56	233.23
		6'	54	10'-3"		7½"		7'-8"	10'-7⅜"	11'-1⅜"	0.910	120.62	39.23	236.60
		7'	63	10'-3"		7½"		8'-8"	"	"	0.957	123.29	40.90	239.40
		8'	72	10'-4"		8"		9'-8"	10'-8⅜"	11'-2⅜"	1.033	129.18	42.57	285.96
		9'	81	10'-4"		9"		10'-8"	10'-10⅜"	11'-5"	1.148	138.38	44.24	240.05
		10'	90	10'-5"		10"		11'-8"	11'-0⅜"	11'-5"	1.276	145.66	45.91	242.77
		11'	99	10'-6"		11"		12'-8"	11'-2⅜"	11'-5"	1.916	152.58	47.58	245.50
	4' @ 10'	5'	50	11'-2"	11"	7"	11"	6'-9½"	11'-6⅜"	12'-1⅜"	0.957	133.70	40.13	257.43
		6'	60	11'-3"		7½"		7'-9½"	11'-7⅜"	12'-2⅜"	1.024	137.06	41.80	258.99
		7'	70	11'-3"		7½"		8'-9½"	"	"	1.071	139.73	43.47	258.99
		8'	80	11'-4"		8"		9'-9½"	11'-8⅜"	12'-3⅜"	1.147	145.62	45.14	260.35
		9'	90	11'-6"		9"		10'-9½"	11'-10⅜"	12'-5⅜"	1.263	155.33	46.81	263.08
		10'	100	11'-8"		10"		11'-9½"	12'-1"	12'-7⅜"	1.391	162.30	48.48	265.80
		11'	110	11'-10"		11"		12'-9½"	12'-3"	12'-9⅜"	1.532	170.12	50.15	268.53
		12'	120	12'-0"		12"		13'-9½"	12'-5⅜"	12'-11⅜"	1.685	182.08	51.82	271.25
	4' @ 11'	6'	66	12'-4"	11½"	8"	11½"	7'-10½"	12'-9⅜"	13'-3⅜"	1.153	158.87	46.12	283.61
		7'	77	12'-4"		8"		8'-10½"	"	"	1.202	161.55	47.79	283.61
		8'	88	12'-4"		8"		9'-10½"	"	"	1.252	166.78	49.46	288.61
		9'	99	12'-6"		9"		10'-10½"	12'-11⅜"	13'-5⅜"	1.368	176.31	51.13	286.33
		10'	110	12'-8"		10"		11'-10½"	13'-1⅜"	13'-7⅜"	1.497	183.42	52.80	289.06
		11'	121	12'-10"		11"		12'-10½"	13'-3⅜"	13'-10"	1.638	191.38	54.47	293.15
		12'	132	13'-0"		12"		13'-10½"	13'-5⅜"	14'-0"	1.792	203.51	56.14	295.87
	4' @ 12'	6'	72	13'-4"	12"	8"	12"	8'-0"	13'-9⅜"	14'-4"	1.284	176.47	48.63	378.98
		7'	84	13'-4"		8"		9'-0"	"	"	1.333	179.14	50.34	378.98
		8'	96	13'-4"		8"		10'-0"	"	"	1.383	184.42	52.03	378.98
		9'	108	13'-6"		9"		11'-0"	13'-11⅜"	14'-6⅜"	1.500	194.12	53.70	382.54
		10'	120	13'-8"		10"		12'-0"	14'-1⅜"	14'-8⅜"	1.630	201.34	55.37	386.10
		11'	132	13'-10"		11"		13'-0"	14'-3⅜"	14'-10⅜"	1.772	209.45	57.04	389.66
		12'	144	14'-0"		12"		14'-0"	14'-5⅜"	15'-0⅜"	1.926	221.72	58.71	393.22

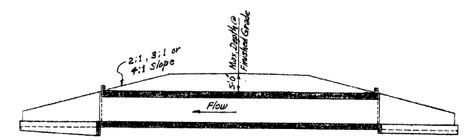


PART LONGITUDINAL SECTION N-N

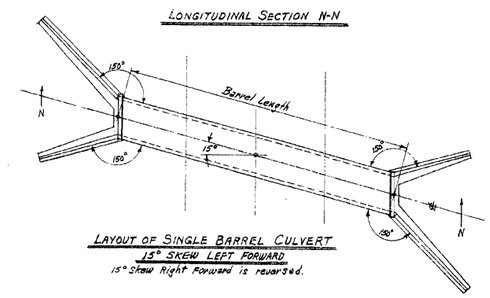


TYPICAL SECTION M-M

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



LONGITUDINAL SECTION N-N



LAYOUT OF SINGLE BARREL CULVERT
15° SKEW LEFT FORWARD
15° Skew Right Forward is reversed.

GENERAL NOTES:-

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

REINFORCING STEEL:- Reinforcing to be deformed bars of intermediate or hard grade.

BAR LAP:- In computing the quantities of steel from the tables add one lap for each additional 38'-0" length of barrel over 32'-0". Lap longitudinal bars 30 diameters.

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

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

DESIGN LIVE LOAD
H20-S16 LOADING A.A.S.H.O. 1961
AND
SPECIAL MILITARY LOADING
Two 24,000 Lb. Axles @ 4'-0" ctrs.

UNIT STRESSES:-
Class S Concrete (n=10) 1200#/□"
Reinforcing Steel 20,000#/□"

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

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS
FOR
REINFORCED CONCRETE BOX CULVERTS
15° SKEW

4',5',6',7',8',9',10',11'&12' SPANS 2:1, 3:1 OR 4:1 SLOPES
SINGLES UNDER 5'-0" COVER

STANDARD DRAWING NO. R-115X-0

Designed By:- W.C.H. 1-23-63 Checked By:- R.M.S. 5-8-63
Drawn By:- W.C.H. 8-14-63 Checked By:- F.M.S. 10-7-63
Quantities By:- W.C.H. 8-21-63 Checked By:- R.G. 12-10-63

RESHOT 3-5-93

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

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

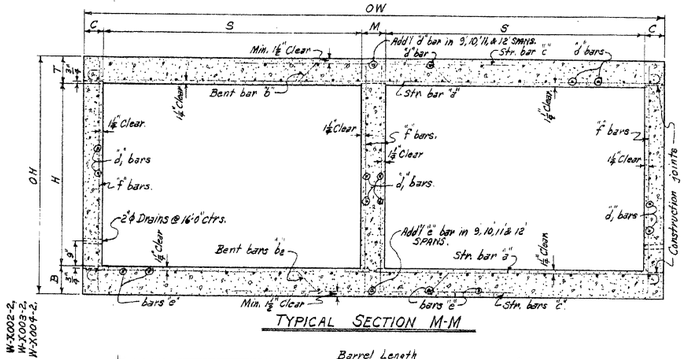
DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	"a" bars STRAIGHT In Top and Bottom Slab of Barrel. 2 Add'l in Apron and Headwall.-Each. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	"b" bars BENT - See Diagram below. In Bottom of Top Slab bent up over Division Wall - hooked. Alternate with "a" and "c" bars. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	X	Y	Z	"b2" bars BENT - See Diagram below. In Top of Bottom Slab bent down under Division Wall - hooked. Alternate with "a" and "c" bars. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	X	Y	Z	"c" bars STRAIGHT In Top and Bottom Slab of Barrel. Alternate with "b" and "b2" bars. SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH
0'-0" TO 5'-0" MAXIMUM.	2 @ 4'	2'	#5	12"	128	128	9'-5"	#5	12"	59	59	10'-6"	0'-3"	2'-2½"	3'-9"	#5	12"	59	59	10'-6"	0'-2½"	2'-3½"	3'-9"	#5	12"	120	120	6'-8"			16			
		3'			128	128	9'-5"			59	59	10'-6"	0'-3"	2'-2½"	3'-9"			59	59	10'-6"	0'-2½"	2'-3½"	3'-9"			120	120	6'-8"			14			8
		4'			128	128	9'-5"			59	59	10'-6"	0'-3"	2'-2½"	3'-9"			59	59	10'-6"	0'-2½"	2'-3½"	3'-9"			120	120	6'-8"			14			12
		5'			128	128	9'-5"			59	59	10'-6"	0'-3"	2'-2½"	3'-9"			59	59	10'-6"	0'-2½"	2'-3½"	3'-9"			120	120	6'-8"			14			16
		6'			128	128	9'-8"			59	59	10'-9"	0'-3"	2'-3½"	3'-5"			59	59	10'-9"	0'-2½"	2'-3½"	3'-5"			120	120	6'-9"			14			20
																																		24
	2 @ 5'	3'	#6	12"	128	128	11'-5"	#5	12"	59	59	12'-7"	0'-3½"	2'-5½"	4'-1"	#5	12"	59	59	12'-6"	0'-3"	2'-5½"	4'-1"	#6	12"	120	120	5'-8"			16			12
		4'			128	128	11'-5"			59	59	12'-7"	0'-3½"	2'-5½"	4'-1"			59	59	12'-6"	0'-3"	2'-5½"	4'-1"			120	120	5'-8"			16			16
		5'			128	128	11'-5"			59	59	12'-7"	0'-3½"	2'-5½"	4'-1"			59	59	12'-6"	0'-3"	2'-5½"	4'-1"			120	120	5'-8"			16			20
		6'			128	128	11'-8"			59	59	12'-10"	0'-3½"	2'-6½"	4'-2"			59	59	12'-9"	0'-3"	2'-6½"	4'-2"			120	120	5'-9"			16			24
		7'			128	128	11'-10"			59	59	13'-0"	0'-3½"	2'-7½"	4'-2½"			59	59	12'-11"	0'-3"	2'-10½"	4'-2½"			120	120	5'-10"			16			28
	2 @ 6'	3'	#6	11"	140	140	13'-5"	#5	11"	65	65	14'-7"	0'-4"	3'-0½"	4'-10"	#5	11"	65	65	14'-7"	0'-4"	3'-0½"	4'-10"	#6	11"	132	132	6'-8"			18			12
		4'			140	140	13'-5"			65	65	14'-7"	0'-4"	3'-0½"	4'-10"			65	65	14'-7"	0'-4"	3'-0½"	4'-10"			132	132	6'-8"			18			16
		5'			140	140	13'-5"			65	65	14'-7"	0'-4"	3'-0½"	4'-10"			65	65	14'-7"	0'-4"	3'-0½"	4'-10"			132	132	6'-8"			18			20
		6'			140	140	13'-8"			65	65	14'-10"	0'-4"	3'-1½"	4'-11"			65	65	14'-10"	0'-4"	3'-1½"	4'-11"			132	132	6'-9"			18			24
		7'			140	140	13'-10"			65	65	15'-0"	0'-4"	3'-2½"	4'-11½"			65	65	15'-0"	0'-4"	3'-2½"	4'-11½"			132	132	6'-10"			18			28
		8'			140	140	13'-11"			65	65	15'-1"	0'-4"	3'-2½"	5'-0"			65	65	15'-1"	0'-4"	3'-2½"	5'-0"			132	132	6'-10"			18			32
	2 @ 7'	4'	#6	12"	128	128	15'-5"	#6	12"	59	59	16'-9"	0'-4½"	3'-5"	5'-7"	#6	12"	59	59	16'-9"	0'-4½"	3'-5"	5'-7"	#5	11½"	120	120	7'-8"			20			12
		5'			128	128	15'-5"			59	59	16'-9"	0'-4½"	3'-5"	5'-7"			59	59	16'-9"	0'-4½"	3'-5"	5'-7"			120	120	7'-8"			20			16
		6'			128	128	15'-6"			59	59	17'-0"	0'-4½"	3'-6"	5'-8"			59	59	17'-0"	0'-4½"	3'-6"	5'-8"			120	120	7'-9"			20			20
		7'			128	128	15'-10"			59	59	17'-2"	0'-4½"	3'-7"	5'-8½"			59	59	17'-2"	0'-4½"	3'-7"	5'-8½"			120	120	7'-10"			20			24
		8'			128	128	15'-11"			59	59	17'-3"	0'-4½"	3'-7"	5'-9"			59	59	17'-3"	0'-4½"	3'-7"	5'-9"			120	120	7'-10"			20			28
		9'			128	128	16'-2"			59	59	17'-6"	0'-4½"	3'-8"	5'-10"			59	59	17'-6"	0'-4½"	3'-8"	5'-10"			120	120	7'-11"			20			36
	2 @ 8'	4'	#6	11"	140	140	17'-5"	#6	11"	65	65	18'-10"	0'-5"	3'-10"	6'-4"	#6	11"	65	65	18'-10"	0'-5"	3'-10"	6'-4"	#5	11½"	132	132	8'-8"			22			12
		5'			140	140	17'-8"			65	65	19'-1"	0'-5"	3'-11"	6'-5"			65	65	19'-1"	0'-5"	3'-11"	6'-5"			132	132	8'-9"			23			16
		6'			140	140	17'-8"			65	65	19'-1"	0'-5"	3'-11"	6'-5"			65	65	19'-1"	0'-5"	3'-11"	6'-5"			132	132	8'-9"			23			20
		7'			140	140	17'-10"			65	65	19'-3"	0'-5"	4'-0"	6'-5½"			65	65	19'-3"	0'-5"	4'-0"	6'-5½"			132	132	8'-10"			23			24
		8'			140	140	17'-11"			65	65	19'-4"	0'-5"	4'-0"	6'-6"			65	65	19'-4"	0'-5"	4'-0"	6'-6"			132	132	8'-10"			23			28
		9'			140	140	18'-2"			65	65	19'-7"	0'-5"	4'-1"	6'-7"			65	65	19'-7"	0'-5"	4'-1"	6'-7"			132	132	8'-11"			23			36
		10'			140	140	18'-5"			65	65	19'-10"	0'-5"	4'-2"	6'-8"			65	65	19'-10"	0'-5"	4'-2"	6'-8"			132	132	9'-0"			23			40
	2 @ 9'	5'	#6	11"	140	140	19'-8"	#6	11"	65	65	21'-1"	0'-5½"	4'-4"	7'-2"	#6	11"	65	65	21'-1"	0'-5½"	4'-5½"	7'-2"	#5	11½"	132	132	9'-9"	2 @ 30'-6" for 60'-0" Length Barrel (1'-9" Lap)	2 @ 30'-6" for 60'-0" Length Barrel (1'-3" Lap)	26	#4	12"	240	240	6'-3"	2 @ 31'-6" for 60'-0" Length Barrel (1'-3" Lap)	20
		6'			140	140	19'-10"			65	65	21'-3"	0'-5½"	4'-5"	7'-2½"			65	65	21'-3"	0'-5½"	4'-5½"	7'-2½"			132	132	9'-10"			26			25
		7'			140	140	19'-10"			65	65	21'-3"	0'-5½"	4'-5"	7'-2½"			65	65	21'-3"	0'-5½"	4'-5½"	7'-2½"			132	132	9'-10"			26			28
		8'			140	140	19'-11"			65	65	21'-4"	0'-5½"	4'-5"	7'-3"			65	65	21'-4"	0'-5½"	4'-5½"	7'-3"			132	132	9'-10"			26			32
		9'			140	140	20'-2"			65	65	21'-7"	0'-5½"	4'-6"	7'-4"			65	65	21'-7"	0'-5½"	4'-5½"	7'-4"			132	132	9'-11"			26			36
		10'			140	140	20'-5"			65	65	21'-10"	0'-5½"	4'-7"	7'-5"			65	65	21'-10"	0'-5½"	4'-6½"	7'-5"			132	132	10'-0"			26			40
		11'			140	140	20'-7"			65	65	22'-0"	0'-5½"	4'-7"	7'-6"			65	65	22'-0"	0'-5½"	4'-6½"	7'-6"			132	132	10'-0"			26			44
	2 @ 10'	5'	#7	12"	128	128	21'-8"	#6	12"	59	59	23'-2"	0'-6½"	4'-8"	7'-11"	#6	12"	59	59	23'-2"	0'-6½"	4'-8"	7'-11"	#5	11½"	120	120	10'-9"			28	#4	12"	240	240	6'-4"			20
		6'			128	128	21'-10"			59	59	23'-4"	0'-6"	4'-10"	7'-11½"			59	59	23'-4"	0'-6½"	4'-9"	7'-11½"			120	120	10'-10"			28			24
		7'			128	128	21'-10"			59	59	23'-4"	0'-6"	4'-10"	7'-11½"			59	59	23'-4"	0'-6½"	4'-9"	7'-11½"			120	120	10'-10"			28			28
		8'			128	128	21'-11"			59	59	23'-5"	0'-6"	4'-10"	8'-0"			59	59	23'-5"	0'-6½"	4'-9"	8'-0"			120	120	10'-10"			28			32
		9'			128	128	22'-2"			59	59	23'-8"	0'-6"	4'-11"	8'-1"			59	59	23'-8"	0'-6½"	4'-10"	8'-1"			120	120	10'-11"			28			36
		10'			128	128	22'-5"			59	59	23'-11"	0'-6"	5'-0"	8'-2"			59	59	23'-11"	0'-6½"	4'-11"	8'-2"			120	120	11'-0"			28			40
		11'			128	128	22'-7"			59	59	24'-1"	0'-6"	5'-0"	8'-3"			59	59	24'-1"	0'-6½"	4'-11"	8'-3"			120	120	11'-0"			28			44
		12'			128	128	22'-9"			59	59	24'-3"	0'-6"	5'-0"	8'-4"			59	59	24'-3"	0'-6½"	4'-11"	8'-4"			120	120	11'-0"			28			48
	2 @ 11'	6'	#7	12"	128	128	23'-11"	#6	12"	59	59	25'-5"	0'-6½"	5'-3"	8'-9"	#6	12"	59	59	25'-4"	0'-7½"	5'-1"	8'-9"	#5	11½"	120	120	11'-10"			30	#4	12"	240	240	7'-6"			24
		7'			128	128	23'-11"			59	59	25'-5"	0'-6½"	5'-3"	8'-9"			59	59	25'-4"	0'-7½"	5'-1"	8'-9"			120	120	11'-10"			30			28
		8'			128	128	23'-11"			59	59	25'-5"	0'-6½"	5'-3"	8'-9"			59	59	25'-4"	0'-7½"	5'-1"	8'-9"			120	120	11'-10"			30			32
		9'			128	128	24'-2"			59	59	25'-8"	0'-6½"	5'-4"	8'-10"			59	59	25'-8"	0'-7½"	5'-2"	8'-10"			120	120	11'-11"			30			36
		10'			128	128	24'-5"			59	59	25'-11"	0'-6½"	5'-5"	8'-11"			59	59	26'-0"	0'-7½"	5'-3"	8'-11"			120	120	12'-0"			30			40
		11'			128	128	24'-7"			59	59	26'-1"	0'-6½"	5'-5"	9'-0"			59	59	26'-2"	0'-7½"	5'-3"	9'-0"			120	120	12'-0"			30			44
		12'			128	128	24'-9"			59	59	26'-3"	0'-6½"	5'-5"	9'-1"			59	59	26'-4"	0'-7½"	5'-3"	9'-1"			120	120	12'-0"			30			48
	2 @ 12'	6'	#7	12"	140	140	25'-11"	#6	11"	65	65	27'-5"	0'-7"	5'-8"	9'-6"	#6	11"	65	65	27'-7"	0'-8½"	5'-5"	9'-6"	#5	11½"	132	132	12'-10"			32	#4	12"	240	240	7'-7"			24
		7'			140	140	25'-11"			65	65	27'-5"	0'-7"	5'-8"	9'-6"			65	65	27'-7"	0'-8½"	5'-5"	9'-6"			132	132	12'-10"			32			28
		8'			140	140	25'-11"			65	65	27'-5"	0'-7"	5'-8"	9'-6"			65	65	27'-7"	0'-8½"	5'-5"	9'-6"			132	132	12'-10"			32			32
		9'			140	140	26'-2"			65	65	27'-8"	0'-7"	5'-9"	9'-7"			65	65	27'-10"	0'-8½"	5'-6"	9'-7"			132	132	12'-11"			32			36
		10'			140	140	26'-5"			65	65	27'-11"	0'-7"	5'-10"	9'-8"			65	65	28'-1"	0'-8½"	5'-7"	9'-8"			132	132	13'-0"			32			40
		11'			140	140	26'-7"			65	65	28'-1"	0'-7"	5'-10"	9'-9"			65	65	28'-3"	0'-8½"	5'-7"	9'-9"			132	132	13'-0"			32			44
		12			140	140	26'-9"			65	65	28'-3"	0'-7"	5'-10"	9'-10"			65	65	28'-5"	0'-8½"	5'-7"	9'-10"			132	132	13'-0"			32			48

DIMENSIONS

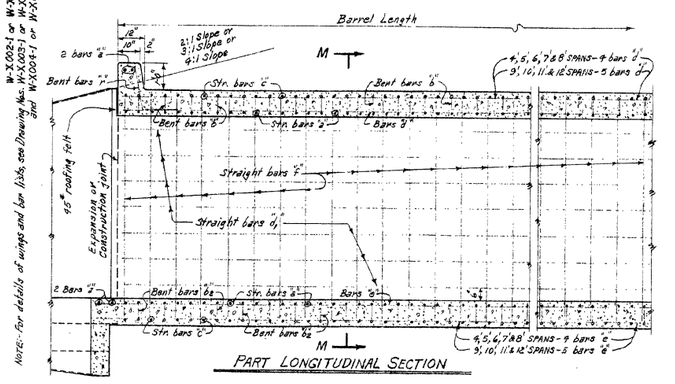
MAX. DESIGN DEPTH OF COVER D	CLEAR SPANS S	CLEAR HEIGHT H	SAFE OPENING A	OVERALL WIDTH OW	THICKNESS OF TOP SLAB T	THICKNESS OF SIDEWALLS C	THICKNESS OF DIVISION WALL M	THICKNESS OF BOTTOM SLAB B	OVERALL HEIGHT OH
5'-0"	2 @ 4'	2'	16"	9'-8"	6½"	6"	8"	6"	3'-0½"
		3'	24"	9'-8"		6"	8"		4'-0½"
		4'	32"	9'-8"		6"	8"		5'-0½"
		5'	40"	9'-8"		6"	8"		6'-0½"
		6'	48"	9'-11"		7"	9"		7'-0½"
	2 @ 5'	3'	30"	11'-8"	7"	6"	8"	6½"	4'-1½"
		4'	40"	11'-8"		6"	8"		5'-1½"
		5'	50"	11'-8"		6"	8"		6'-1½"
		6'	60"	11'-11"		7"	9"		7'-1½"
		7'	70"	12'-1"		7½"	10"		8'-1½"
	2 @ 6'	3'	36"	13'-8"	7½"	6"	8"	7½"	4'-5"
		4'	48"	13'-8"		6"	8"		5'-5"
		5'	60"	13'-8"		6"	8"		6'-5"
		6'	72"	13'-11"		7"	9"		7'-5"
		7'	84"	14'-1"		7½"	10"		8'-5"
		8'	96"	14'-2"		8"	10"		9'-5"
	2 @ 7'	4'	56"	15'-8"	8"	6"	8"	8"	5'-9"
		5'	70"	15'-8"		6"	8"		6'-9"
		6'	84"	15'-11"		7"	9"		7'-9"
		7'	98"	16'-1"		7½"	10"		8'-9"
		8'	112"	16'-2"		8"	10"		9'-9"
		9'	126"	16'-5"		9"	11"		10'-9"
	2 @ 8'	4'	64"	17'-8"	8½"	6"	8"	8½"	5'-5"
		5'	80"	17'-11"		7"	9"		6'-5"
		6'	96"	17'-11"		7"	9"		7'-5"
		7'	112"	18'-1"		7½"	10"		8'-5"
		8'	128"	18'-2"		8"	10"		9'-5"
		9'	144"	18'-5"		9"	11"		10'-5"
		10'	160"	18'-8"		10"	12"		11'-5"
	2 @ 9'	5'	90"	19'-11"	9½"	7"	9"	9"	6'-6½"
		6'	108"	20'-1"		7½"	10"		7'-6½"
		7'	126"	20'-1"		7½"	10"		8'-6½"
		8'	144"	20'-2"		8"	10"		9'-6½"
		9'	162"	20'-5"		9"	11"		10'-6½"
		10'	180"	20'-8"		10"	12"		11'-6½"
		11'	198"	20'-10"		11"	12"		12'-6½"
	2 @ 10'	5'	100"	21'-11"	10"	7"	9"	10"	6'-7½"
		6'	120"	22'-1"		7½"	10"		7'-7½"
		7'	140"	22'-1"		7½"	10"		8'-7½"
		8'	160"	22'-2"		8"	10"		9'-7½"
		9'	180"	22'-5"		9"	11"		10'-7½"
		10'	200"	22'-8"		10"	12"		11'-7½"
		11'	220"	22'-10"		11"	12"		12'-7½"
		12'	240"	23'-0"		12"	12"		13'-7½"
	2 @ 11'	6'	132"	24'-2"	10½"	8"	10"	11"	7'-9"
		7'	154"	24'-2"		8"	10"		8'-9"
		8'	176"	24'-2"		8"	10"		9'-9"
		9'	198"	24'-5"		9"	11"		10'-9"
		10'	220"	24'-8"		10"	12"		11'-9"
		11'	242"	24'-10"		11"	12"		12'-9"
		12'	264"	25'-0"		12"	12"		13'-9"
	2 @ 12'	6'	144"	26'-2"	11"	8"	10"	11½"	7'-10½"
		7'	168"	26'-2"		8"	10"		8'-10½"
		8'	192"	26'-2"		8"	10"		9'-10½"
		9'	216"	26'-5"		9"	11"		10'-10½"
		10'	240"	26'-8"		10"	12"		11'-10½"
		11'	264"	26'-10"		11"	12"		12'-10½"
		12'	288"	27'-0"		12"	12"		13'-10½"

QUANTITIES

MAX. DESIGN DEPTH OF COVER D	CLEAR SPANS S	CLEAR HEIGHT H	UNIT QUANTITIES: CLASS S CONC. PER LIN. FT. OF BARREL CU.YD.	REINFORCING STEEL: PER LIN. FT. OF BARREL LB.	ADDITIONAL: PER LAP LB.	ADDITIONAL: TWO HEADWALLS & WINGS LB.
5'-0"	2 @ 4'	2'	0.496	88.15	42.71	189.56
		3'	0.558	93.49	46.05	189.56
		4'	0.620	98.84	49.39	189.56
		5'	0.682	104.18	52.73	189.56
		6'	0.809	110.74	56.07	191.65
	2 @ 5'	3'	0.671	123.34	51.19	198.64
		4'	0.733	128.68	54.53	198.64
		5'	0.795	134.03	57.87	198.64
		6'	0.922	140.89	61.21	201.64
		7'	1.044	147.34	64.55	203.65
	2 @ 6'	3'	0.818	158.50	56.34	233.58
		4'	0.880	163.85	59.68	233.58
		5'	0.941	169.19	63.02	238.58
		6'	1.070	166.20	66.36	236.59
		7'	1.192	172.74	69.70	238.59
		8'	1.298	183.36	73.04	239.59
	2 @ 7'	4'	1.021	178.15	64.83	268.97
		5'	1.082	183.49	68.17	268.97
		6'	1.212	190.59	71.51	271.97
		7'	1.334	197.19	74.85	273.98
		8'	1.440	207.89	78.19	274.98
		9'	1.616	225.25	81.53	277.98
	2 @ 8'	4'	1.174	210.37	71.71	309.80
		5'	1.295	217.63	75.05	307.81
		6'	1.366	222.97	78.39	307.81
		7'	1.489	229.48	81.73	309.81
		8'	1.628	239.97	85.07	310.81
		9'	1.772	258.08	88.41	312.82
		10'	1.947	271.07	91.75	316.82
	2 @ 9'	5'	1.977	239.37	82.77	346.42
		6'	1.594	246.08	86.11	347.43
		7'	1.671	251.43	89.45	347.43
		8'	1.778	256.26	92.79	348.43
		9'	1.956	279.95	96.13	351.43
		10'	2.152	292.37	99.47	354.43
		11'	2.328	306.86	102.81	356.44
	2 @ 10'	5'	1.694	279.64	87.32	478.99
		6'	1.792	286.50	91.26	482.71
		7'	1.869	291.85	94.60	482.71
		8'	1.976	302.77	97.94	484.08
		9'	2.155	320.74	101.28	488.16
		10'	2.332	333.99	104.62	492.25
		11'	2.529	348.01	107.96	494.98
		12'	2.718	370.23	111.30	497.70
	2 @ 11'	6'	2.048	309.36	96.41	536.03
		7'	2.128	314.70	99.75	536.03
		8'	2.208	325.12	103.09	536.03
		9'	2.388	343.25	106.43	534.12
		10'	2.586	356.67	109.77	538.21
		11'	2.764	370.67	113.11	540.93
		12'	2.954	393.05	116.45	542.66
	2 @ 12'	6'	2.299	353.31	101.55	576.93
		7'	2.379	362.65	104.89	576.93
		8'	2.459	363.12	108.23	576.93
		9'	2.690	387.52	111.57	580.52
		10'	2.840	401.07	114.91	584.60
		11'	3.018	415.31	118.25	587.33
		12'	3.208	437.88	121.59	590.05

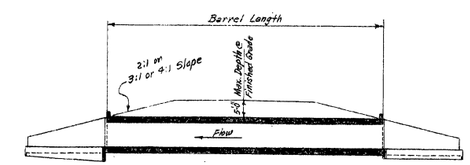


TYPICAL SECTION M-M



PART LONGITUDINAL SECTION

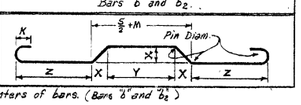
NOTE:- For details of wings and bar lists, see Drawing Nos. W-X002-1, W-X002-2, W-X003-1, W-X003-2, and W-X004-1 or W-X004-2.



LONGITUDINAL SECTION

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS
#5	2⅝"	4½"	0'-11½"
#6	3"	5"	1'-2"

BENDING DIAGRAM FOR Bars "b" and "b2".

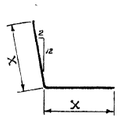


NOTE:- Dimensions are to centers of bars. (Bars "b" and "b2")

DOWEL BARS FOR TWO HEADWALLS

2 SPANS @	SIZE	SPACING	NO. REQ'D	LENGTH	X
4'	#4	12"	20	2'-5"	1'-2⅝"
5'	#4	12"	24	2'-6"	1'-3"
6'	#4	12"	28	2'-7"	1'-3⅜"
7'	#4	12"	32	2'-8"	1'-4"
8'	#4	12"	36	2'-9"	1'-4⅝"
9'	#4	12"	40	2'-10"	1'-5"
10'	#4	12"	46	2'-11"	1'-5⅜"
11'	#4	12"	50	3'-0"	1'-6"
12'	#4	12"	54	3'-1"	1'-6⅝"

Bars "r" Dowel bars in Headwalls.



GENERAL NOTES:-

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

REINFORCING STEEL:- Reinforcing to be deformed bars of intermediate or hard grade.

BAR LAP:- In computing the quantities of steel from the tables add one lap for each additional 33'-0" length of barrel over 32'-6". Lap longitudinal bars 30 diameters.

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

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

DESIGN LIVE LOAD

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

AND

SPECIAL MILITARY LOADING

Two 24,000 Lb. Axles @ 4'-0" ctrs.

UNIT STRESSES:-

Class S Concrete (n=10) 1200 #/□"

Reinforcing Steel 20,000 #/□"

NOTE:- This drawing to be used in conjunction with Standard Wing Drawing Nos. W-X003-1 or W-X003-2 and W-X004-1 or W-X004-2. Also Drawing Nos. W-X002-1 or W-X002-2.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS

FOR

REINFORCED CONCRETE BOX CULVERTS

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

DOUBLES — UNDER 5'-0" COVER

STANDARD DRAWING NO. R-200X-0.

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