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.		080340	1	187

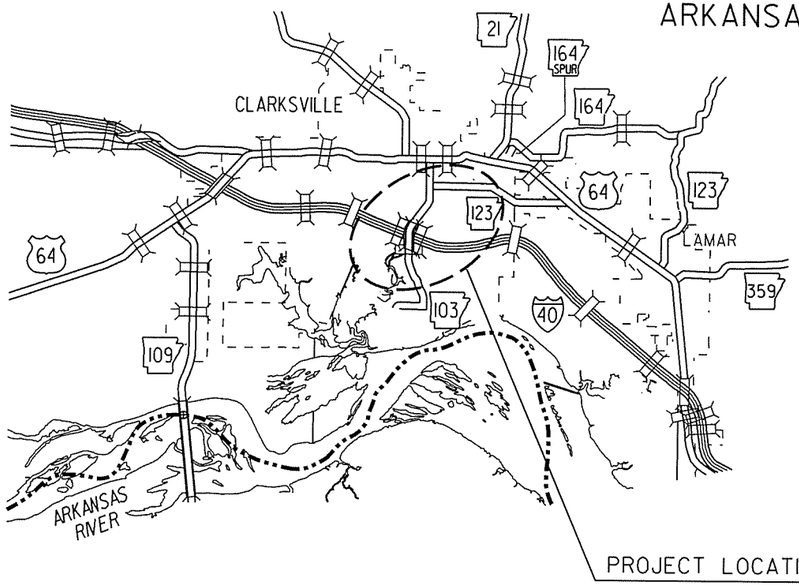
(2) MARKET ST.-I-40 WB RAMPS (CLARKSVILLE)(S)

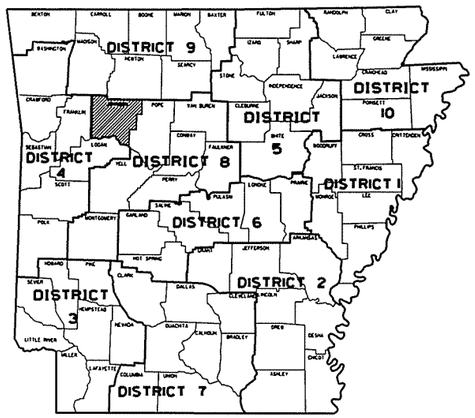
ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

MARKET ST.-I-40 WB RAMPS (CLARKSVILLE) (S)

JOHNSON COUNTY
ROUTE 103 SECTION 0
F.A.P. NO. EBE-9089(6)

JOB 080340



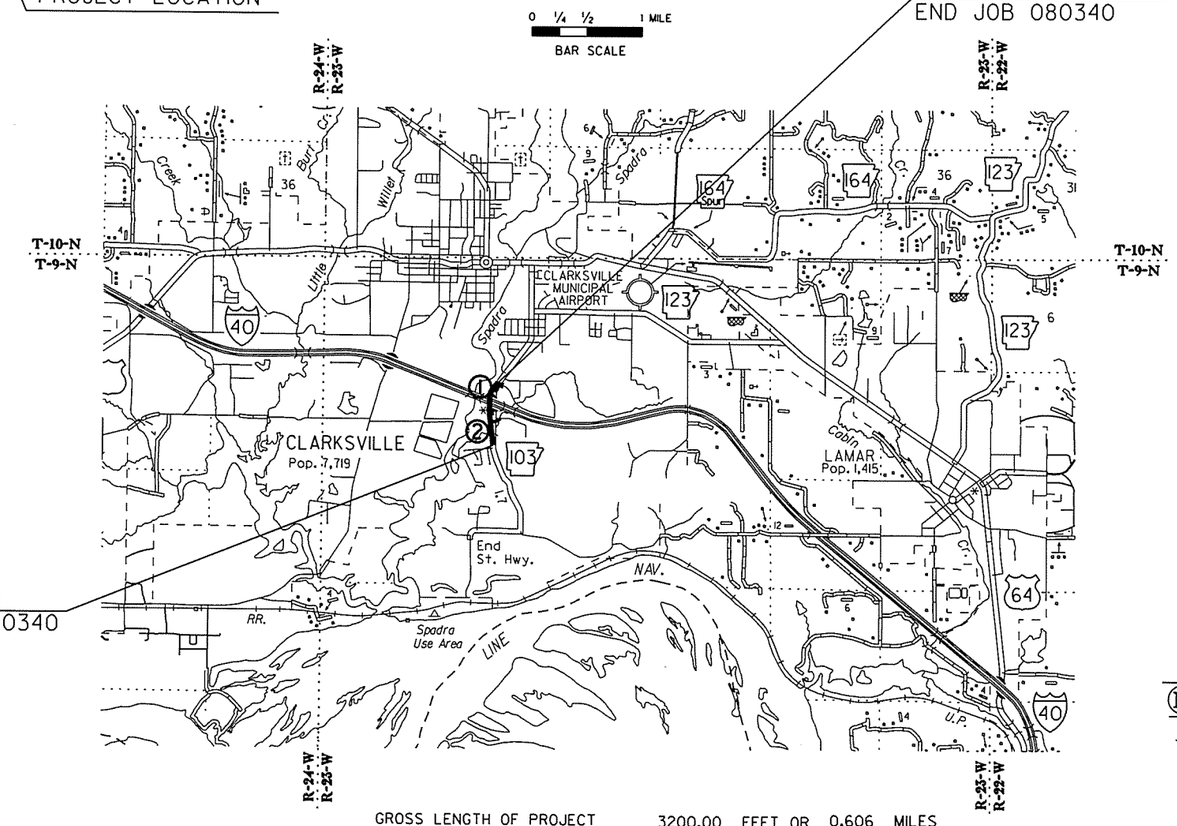


ARK. HWY. DIST. NO. 8

STRUCTURES OVER 20'-0" SPAN

(1) BR. END STA. 110+12.93
BRIDGE NO. 07270
230' CONTINUOUS COMPOSITE PLATE GIRDER
UNIT (115', 115')
58'-0" CLEAR ROADWAY
232'-3⅛" BRIDGE LENGTH
BR. END STA. 112+45.20

(2) STA. 99+54 - IN PLACE
DBL. 10' x 10' x 64' R.C. BOX CULV'T.
RETAIN AND EXTEND R.C. BOX 30' LT. AND
28' RT. @ 15° RT. FWD. SKEW
TO A COMPLETED LENGTH OF 122'
WITH 3:1 WINGS LT. & RT.
SPAN = 22'-8"
Q25 = 1491 C.F.S. D.A. = 1.82 SQ.MI.



DESIGN TRAFFIC DATA

DESIGN YEAR	2033
2013 ADT	15000
2033 ADT	20000
2033 DHV	2200
TRUCKS	3%
DESIGN SPEED	40 MPH

GROSS LENGTH OF PROJECT		3200.00	FEET OR	0.606	MILES
NET	ROADWAY	2945.07		0.558	
NET	BRIDGES	254.93		0.048	
NET	PROJECT	3200.00		0.606	

P.E. 080340
NON-PART.

BEGINNING OF PROJECT
LATITUDE = N 35°26'49"
LONGITUDE = W 93°27'56"

MID POINT OF PROJECT
LATITUDE = N 35°27'27"
LONGITUDE = W 93°27'45"

END OF PROJECT
LATITUDE = N 35°27'20"
LONGITUDE = W 93°27'51"

APPROVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 3917
FRANK VOZEL

10/24/13
DEPUTY DIRECTOR
AND CHIEF ENGINEER

8/28/2013
R080340.DGN

INDEX OF SHEETS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	2	187

(2) INDEX OF SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-15-14

SHEET NO.	TITLE	BRIDGE NO.	DRWG.NO.	DATE
1	TITLE SHEET			
2	INDEX OF SHEETS			
3	GOVERNING SPECIFICATIONS AND GENERAL NOTES			
4 - 9	TYPICAL SECTIONS OF IMPROVEMENT			
10 - 12	SPECIAL DETAILS			
13 - 18	TEMPORARY EROSION CONTROL DETAILS			
19 - 28	MAINTENANCE OF TRAFFIC			
29 - 33	QUANTITIES			
34	SCHEDULE OF BRIDGE QUANTITIES	07270	53346	
35 - 36	SUMMARY OF QUANTITIES AND REVISIONS			
37 - 42	SURVEY CONTROL DETAILS			
43 - 49	PLAN AND PROFILE SHEETS			
50	SYSTEM MAP			
51	SUMMARY OF SIGNALIZATION QUANTITIES			
52	TRAFFIC SIGNAL NOTES			
53 - 82	SIGNALIZATION PLAN SHEETS			
83	SIGNING SUMMARY AND SIGNING QUANTITIES			
84	SIGN PLACEMENT SHEET			
85	LAYOUT OF OVERPASS S.H. 103 OVER I-40 (SHEET 1 OF 2)	07270	53347	
86	LAYOUT OF OVERPASS S.H. 103 OVER I-40 (SHEET 2 OF 2)	07270	53348	
87	DETAILS OF STAGE CONSTRUCTION	07270	53349	
88	DETAILS OF MECHANICALLY STABILIZED EARTH WALLS (SHEET 1 OF 2)	07270	53350	
89	DETAILS OF MECHANICALLY STABILIZED EARTH WALLS (SHEET 2 OF 2)	07270	53351	
90	DETAILS OF BENT 1	07270	53352	
91	COMMON DETAILS OF BENTS 1 AND 3 (SHEET 1 OF 2)	07270	53353	
92	COMMON DETAILS OF BENTS 1 AND 3 (SHEET 2 OF 2)	07270	53354	
93	DETAILS OF TRANSITIONAL APPROACH RAILING	07270	53355	
94	DETAILS OF BENT 2 (SHEET 1 OF 3)	07270	53356	
95	DETAILS OF BENT 2 (SHEET 2 OF 3)	07270	53357	
96	DETAILS OF BENT 2 (SHEET 3 OF 3)	07270	53358	
97	DETAILS OF BENT 3	07270	53359	
98	DETAILS OF 230'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 1 OF 6)	07270	53360	
99	DETAILS OF 230'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 2 OF 6)	07270	53361	
100	DETAILS OF 230'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 3 OF 6)	07270	53362	
101	DETAILS OF 230'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 4 OF 6)	07270	53363	
102	DETAILS OF 230'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 5 OF 6)	07270	53364	
103	DETAILS OF 230'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT (SHEET 6 OF 6)	07270	53365	
104	DETAILS OF ELASTOMERIC BEARINGS	07270	53366	
105	DETAILS OF METAL BRIDGE RAILING	07270	53367	
106	DETAILS OF BRIDGE MOUNTED SIGN STRUCTURE	BM 040-36-03	53367A	
107	EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS		1888A	4-10-03
108	DETAILS FOR DUMPED RIPRAP AND FILTER BLANKET AND DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES		1891F	4-10-03
109	DETAILS OF STANDARD TYPE D BRIDGE NAME PLATES		2387	1-16-14
110	DETAILS OF CONCRETE RIPRAP AND MISCELLANEOUS DETAILS OF STEEL PILINGS		14995A	4-10-03
111	DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS		14991	4-10-03
112	CONCRETE DITCH PAVING		CDP-1	11-17-10
113	CURBING DETAILS		CG-1	11-29-07
114	DETAILS OF DRIVEWAYS & ISLANDS		DR-1	11-29-07
115	FLARED END SECTION		FES-1	10-18-96
116	FLARED END SECTION		FES-2	10-18-96
117	DETAILS OF DROP INLETS & JUNCTION BOXES		FPC-9	11-16-01
118	DETAILS OF DROP INLETS (TYPE C)		FPC-9E	8-22-02
119	DETAILS OF DROP INLET (TYPE MO)		FPC-9M	8-22-02
120	PRECAST CONCRETE BOX CULVERTS		PBC-1	12-15-11
121	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING		PCC-1	12-15-11
122	METAL PIPE CULVERT FILL HEIGHTS & BEDDING		PCM-1	12-15-11
123	PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)		PCP-1	12-15-11
124	PLASTIC PIPE CULVERT (PVC F949)		PCP-2	12-15-11
125	PAVEMENT MARKING DETAILS		PM-1	9-12-13
126	PERMANENT PAVEMENT MARKING ON ACCESS CONTROLLED ROADWAYS		PM-2	9-12-13
127	DETAILS OF PIPE UNDERDRAIN		PU-1	4-10-03
128	REINFORCED CONCRETE BOX CULVERT DETAILS		RCB-1	7-26-12
129	EXCAVATION PAY LIMITS, BACKFILL, & SOLID SODDING FOR BOX CULVERTS		RCB-2	11-20-03
130	METHOD OF EXTENDING EXISTING R.C. BOX CULVERTS		RCB-3	10-12-95
131	LOOP DETECTOR INSTALLATION		SD-4	9-12-13
132	CONTROLLER CABINET UTILITY DRAWER		SD-5	9-12-13
133	HEAVY DUTY PULL BOX		SD-6	9-12-13
134	SPAN WIRE ASSEMBLY WOOD POLE		SD-7	9-12-13
135	SIGNAL HEAD PLACEMENT		SD-8	9-12-13
136	SERVICE POINT		SD-9	9-12-13
137	STEEL POLE WITH MAST ARM		SD-11	9-12-13
138	TABLES AND METHOD OF SUPERELEVATION FOR TWO-WAY TRAFFIC		SE-2	10-18-96
139	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-1	12-15-11
140	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-2	9-12-13
141	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION		TC-3	10-15-09
142	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER		TC-4	10-15-09
143	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION-TEMPORARY PRECAST BARRIER		TC-5	10-15-09
144	TEMPORARY EROSION CONTROL DEVICES		TEC-1	12-15-11
145	TEMPORARY EROSION CONTROL DEVICES		TEC-2	6-02-94
146	TEMPORARY EROSION CONTROL DEVICES		TEC-3	11-03-94
147	WHEELCHAIR RAMPS NEW CONSTRUCTION AND ALTERATIONS		WR-1	11-10-05
148	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS		W-X003-2	12-31-62
149	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS		W-X15	6-13-63
150	DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS		W-X153-2	6-06-63
151	DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS		R-200X-X2	1-14-63
152	DETAILS OF STANDARD BARREL SECTIONS FOR REINFORCED CONCRETE BOX CULVERTS		R-215X-2	10-30-63
153 - 187	CROSS SECTIONS			

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

R080340.DGN 1/15/14

INDEX OF SHEETS

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.		080340	3	187

(2) GOVERNING SPECS. AND GENERAL NOTES

GOVERNING SPECIFICATIONS

ARKANSAS STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2003, AND THE FOLLOWING SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS:

NUMBER	TITLE
ERRATA_____	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273__	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273__	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273__	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273__	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273__	SUPPLEMENT - WAGE RATE DETERMINATION
100-2_____	MANUAL FOR ASSESSING SAFETY HARDWARE (MASH)
102-1_____	BIDDING REQUIREMENTS AND CONDITIONS
103-1_____	DETERMINATION OF DBE PARTICIPATION
105-1_____	CONSTRUCTION CONTROL MARKINGS
105-2_____	EQUIPMENT AND MATERIAL STORAGE ON BRIDGE STRUCTURES
105-3_____	CONTROL OF WORK
107-1_____	WORKER VISIBILITY
108-1_____	LIQUIDATED DAMAGES
110-1_____	PROTECTION OF WATER QUALITY AND WETLANDS
303-1_____	AGGREGATE BASE COURSE
404-1_____	PRODUCTION VERIFICATION OF ASPHALT CONCRETE HOT MIX
404-2_____	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
409-1_____	MINERAL AGGREGATES
410-3_____	DENSITY TESTING FOR ACHM LEVELING COURSES AND BOND BREAKERS
411-1_____	ASPHALT CONCRETE COLD PLANT MIX
600-1_____	WATER FOR VEGETATION
603-1_____	MAINTENANCE OF TRAFFIC
604-1_____	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
604-2_____	INSPECTION OF TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
606-1_____	PIPE CULVERTS FOR SIDE DRAINS
606-2_____	PIPE CULVERTS
620-1 _____	MULCH COVER
711-1_____	CONCRETE PULL BOX
714-1_____	DESIGN AND MATERIAL REQUIREMENTS FOR TRAFFIC SIGNAL MAST ARMS AND POLES
715-1_____	DESIGN AND MATERIAL REQUIREMENTS FOR TRAFFIC SIGNAL PEDESTAL POLES
718-2_____	REFLECTORIZED PAINT PAVEMENT MARKINGS
719-2_____	THERMOPLASTIC PAVEMENT MARKING MATERIAL
723-1_____	GENERAL REQUIREMENTS FOR SIGNS
804-1_____	INSTALLATION OF DOWEL BARS AND TIE BARS
JOB 080340__	ARCHITECTURAL FINISH
JOB 080340__	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 080340__	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 080340__	CABINET DRAWER ASSEMBLY
JOB 080340__	CLOSED LOOP TRAFFIC SYSTEM
JOB 080340__	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 080340__	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
JOB 080340__	COORDINATION OF WORK
JOB 080340__	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 080340__	DRILLED SHAFT FOUNDATIONS
JOB 080340__	EDGE CARD VIDEO PROCESSOR
JOB 080340__	ELECTRICAL CONDUCTORS FOR LUMINAIRES
JOB 080340__	ELECTRICAL CONDUCTORS-IN-CONDUIT
JOB 080340__	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 080340__	HIGH PERFORMANCE PAVEMENT MARKING
JOB 080340__	LED COUNTDOWN PEDESTRIAN SIGNAL HEAD
JOB 080340__	LED TRAFFIC SIGNAL HEAD
JOB 080340__	LUMINAIRE ASSEMBLY (CUTOFF TYPE)
JOB 080340__	MAINTENANCE OF TRAFFIC
JOB 080340__	MANDATORY USE OF INTERNET BIDDING
JOB 080340__	NESTING SITES OF MIGRATORY BIRDS
JOB 080340__	PARTNERING REQUIREMENTS
JOB 080340__	PLASTIC PIPE
JOB 080340__	PROSECUTION AND PROGRESS
JOB 080340__	RELOCATION OF TRAFFIC SIGNAL HEAD
JOB 080340__	REMOVAL AND DISPOSAL OF IMPACT ATTENUATION BARRIERS
JOB 080340__	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT
JOB 080340__	RETAINING WALLS
JOB 080340__	SERVICE POINT ASSEMBLY (TRAFFIC CONTROL DEVICES)
JOB 080340__	SHORING
JOB 080340__	SILICONE JOINT SEALANT
JOB 080340__	SITE USE (A + C METHOD)
JOB 080340__	SOIL STABILIZATION
JOB 080340__	SPECIAL SAFETY REQUIREMENTS FOR BRIDGES
JOB 080340__	STEEL SIGN STRUCTURES
JOB 080340__	STORM WATER POLLUTION PREVENTION PLAN
JOB 080340__	STREET NAME SIGN (MAST ARM MOUNTED)
JOB 080340__	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 080340__	TEMPORARY IMPACT ATTENUATION BARRIER
JOB 080340__	TEXTURED COATING FINISH
JOB 080340__	TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
JOB 080340__	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)
JOB 080340__	TRANSITIONAL APPROACH RAILING
JOB 080340__	UTILITY ADJUSTMENTS
JOB 080340__	VALUE ENGINEERING
JOB 080340__	VIDEO DETECTOR (COLOR)
JOB 080340__	VIDEO DETECTOR RELOCATION
JOB 080340__	WARM MIX ASPHALT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
1-13-14

GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
5. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
6. THIS PROJECT IS COVERED UNDER A SECTION 404 NATIONWIDE 23 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2003, FOR PERMIT REQUIREMENTS.
7. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
8. 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.

12/12/2012

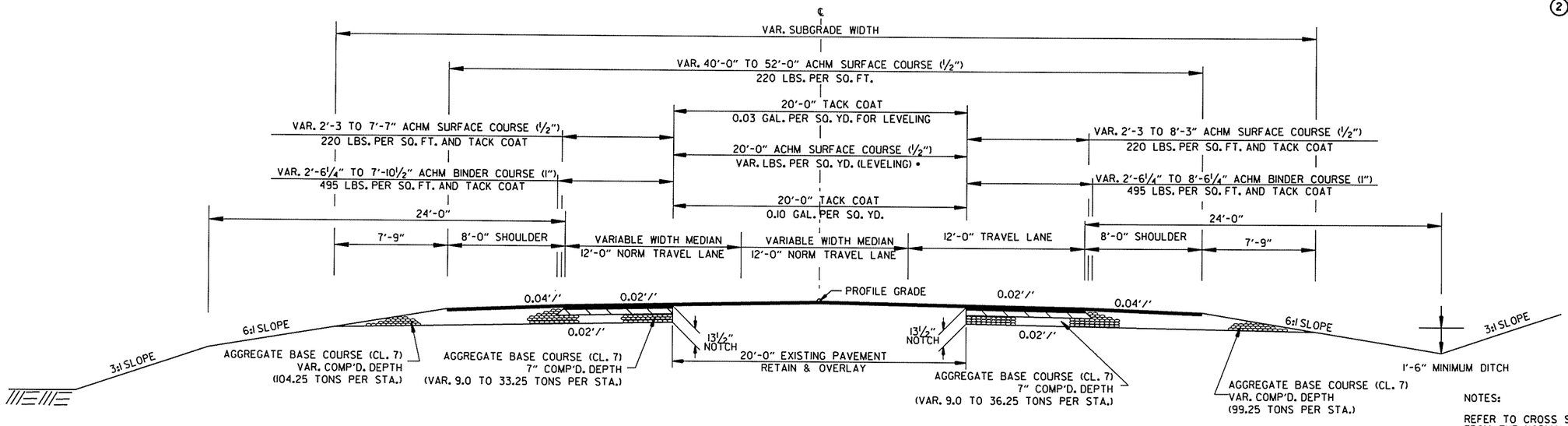
R080340.DGN

GOVERNING SPECIFICATIONS AND GENERAL NOTES

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.		080340	4	187

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13



OPEN SHOULDER
2 LANE VAR. WIDTH- HWY. 103
STA. 91+00.00 - STA. 94+00.00

•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

NOTES:

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

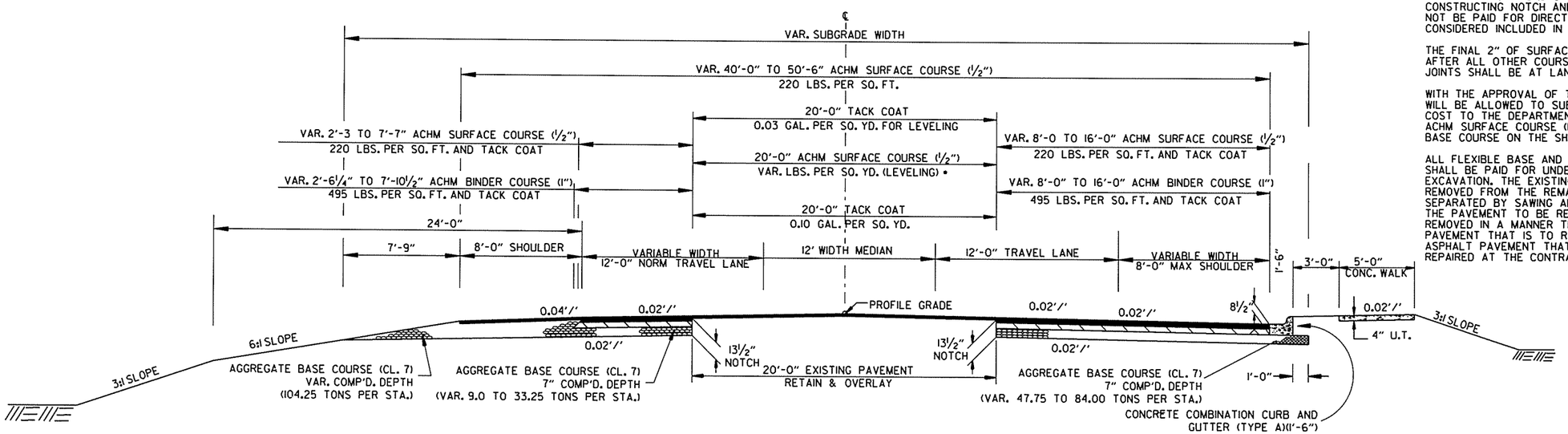
THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE.

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.

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

ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 UNCLASSIFIED EXCAVATION. 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.



OPEN SHOULDER
3 LANE VAR. WIDTH- HWY. 103
STA. 94+00.00 - STA. 94+81.37

•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

8/27/2013

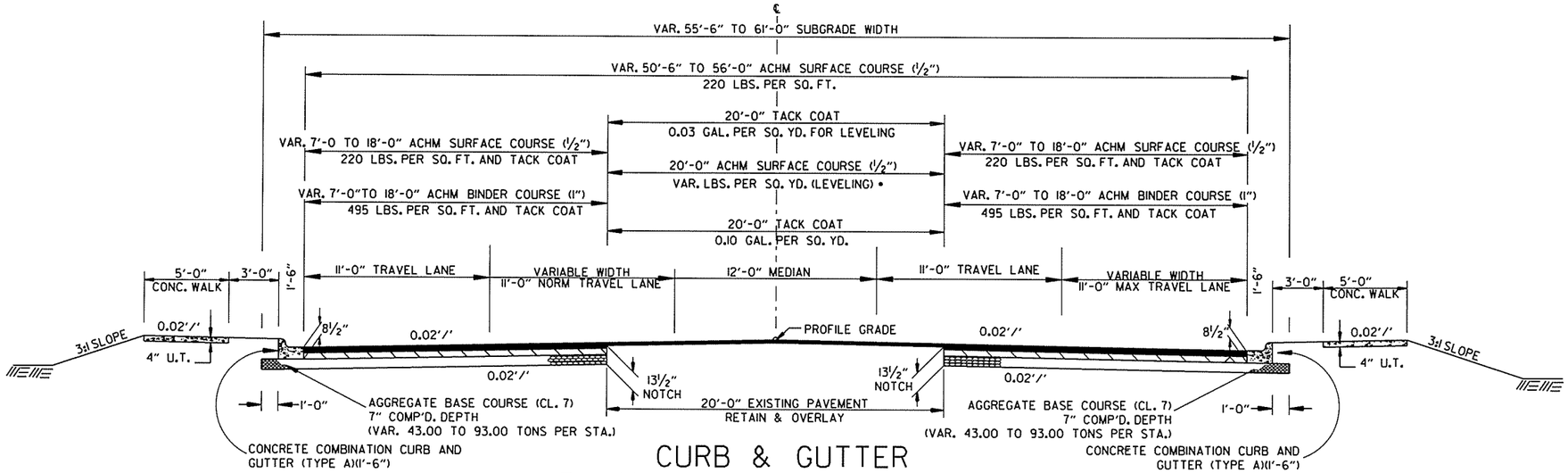
R080340.DGN

TYPICAL SECTIONS OF IMPROVEMENT

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.		080340	5	187

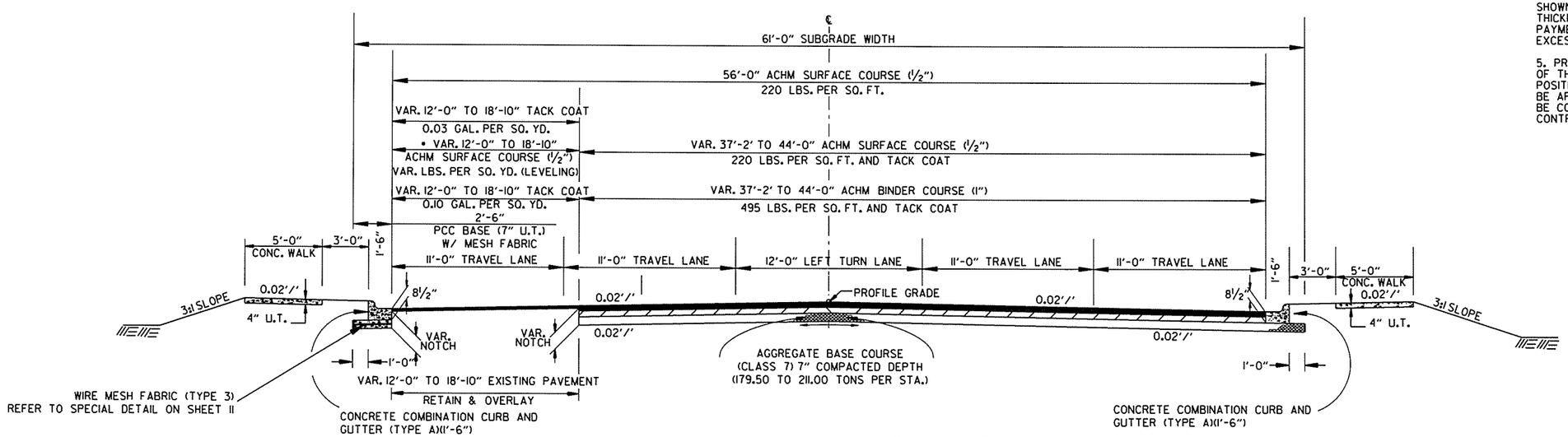
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13



CURB & GUTTER
5 LANE VAR. WIDTH- HWY. 103
STA. 94+81.37 - STA. 95+75.00

•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER



CURB & GUTTER
5 LANE NOTCH AND WIDEN - HWY. 103
STA. 95+75.00 - STA. 108+00.00
STA. 113+50.00 - STA. 115+90.21

•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

NOTES:

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

2. 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.

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

4. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

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

8/27/2013

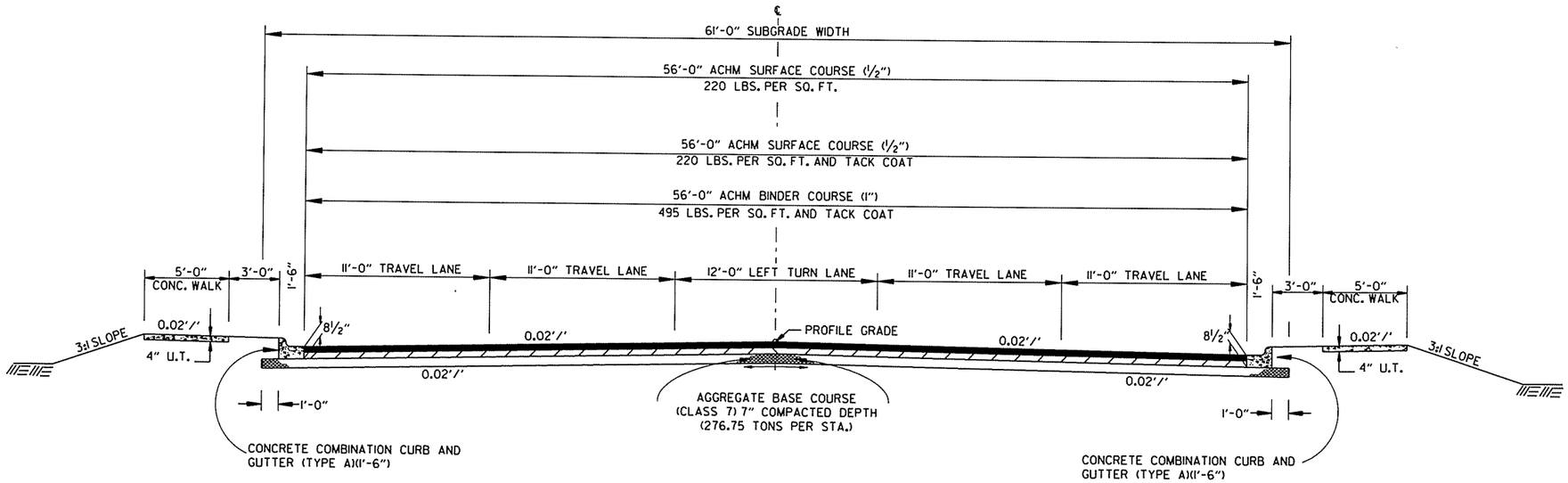
R080340.DGN

TYPICAL SECTIONS OF IMPROVEMENT

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.		080340	6	187

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13



CURB & GUTTER
5 LANE FULL DEPTH - HWY. 103
STA. 108+00.00 - STA. 110+12.93
STA. 112+45.20 - STA. 113+50.00

NOTES:

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

2. 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.

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

4. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

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

8/27/2013

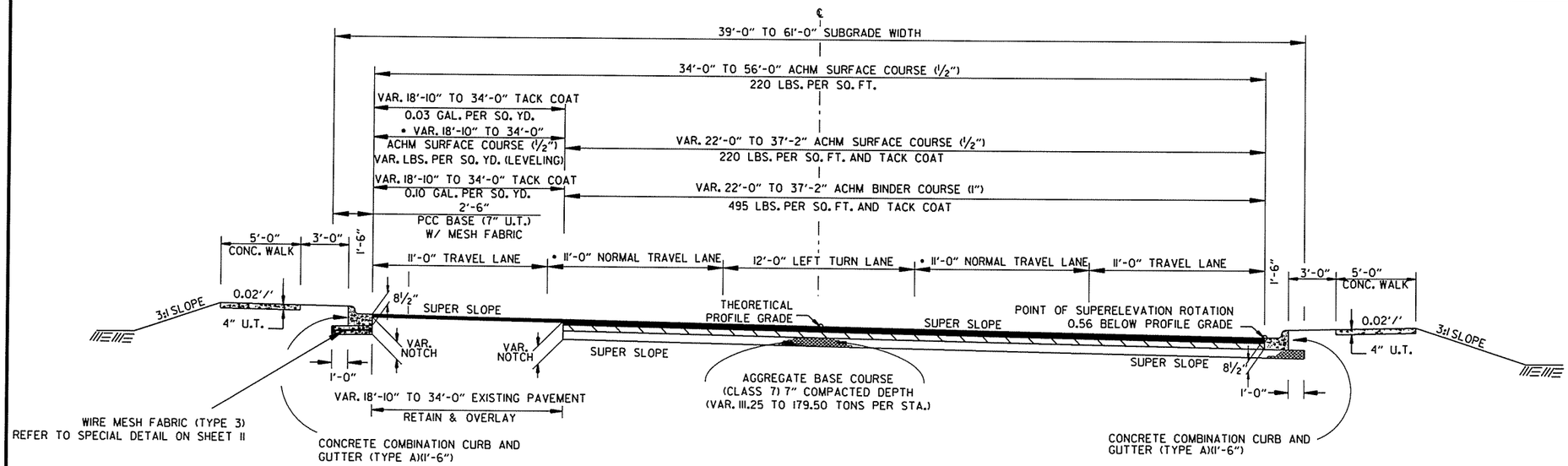
R080340.DGN

TYPICAL SECTIONS OF IMPROVEMENT

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.		080340	7	187

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-29-13



CURB & GUTTER
5 LANE NOTCH AND WIDEN SUPER- HWY. 103
STA. 115+90.21 - STA. 121+30.00

• LANE VARIES 11'-0" @ STA. 118+55.00 TO 0'-0" @ STA. 121+30.00

•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

NOTES:

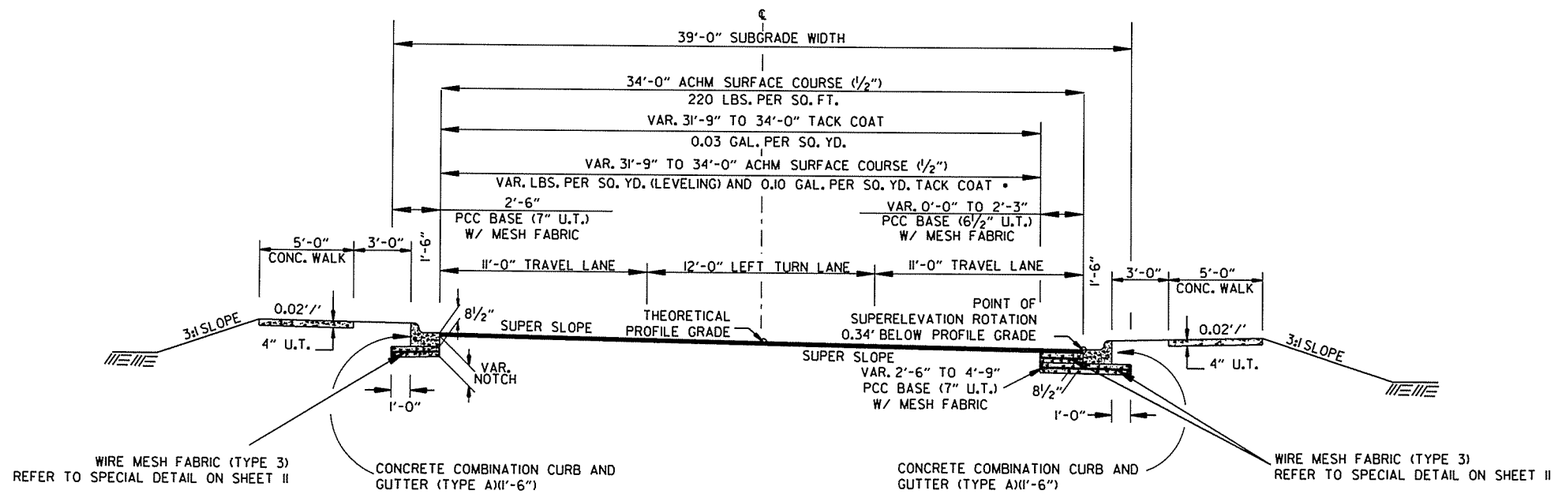
1. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

2. 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.

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

4. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

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



CURB & GUTTER
3 LANE NOTCH AND WIDEN SUPER- HWY. 103
STA. 121+30.00 - STA. 122+00.00

•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

8/27/2013

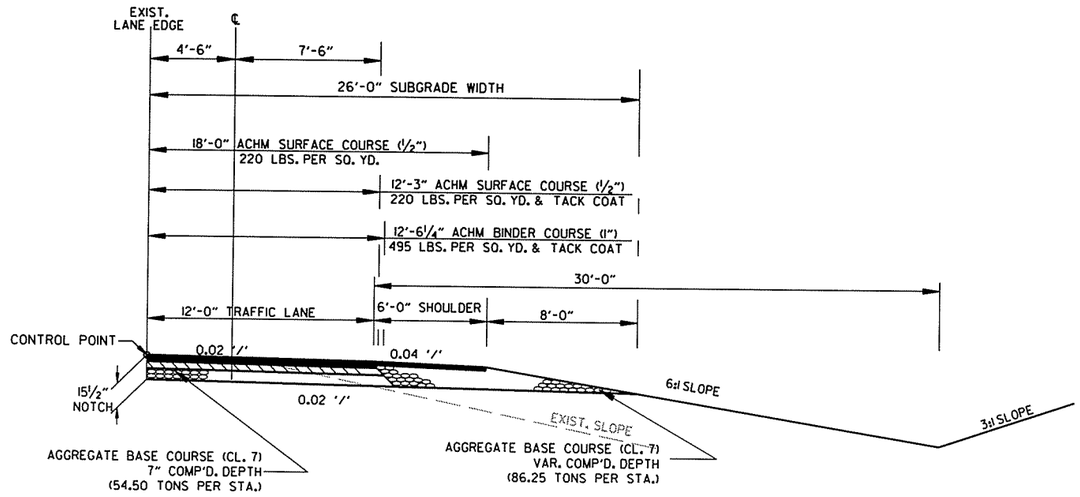
R080340.DGN

TYPICAL SECTIONS OF IMPROVEMENT

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.		080340	8	187

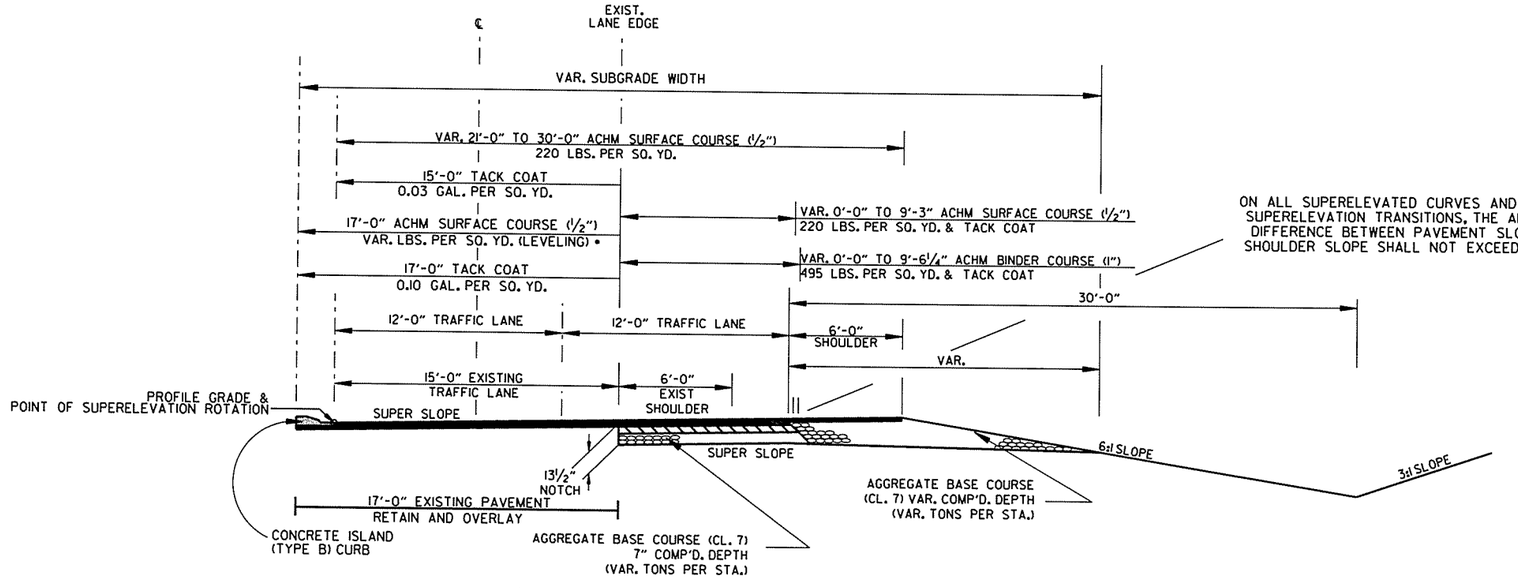
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13



INTERSTATE 40 OPEN SHOULDER
SHOWN IN DIRECTION OF TRAVEL
UNDER THE OVERPASS

STA. 3098+20.00 - STA. 3102+71.37



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

•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

INTERSTATE 40 WB EXIT RAMP
SHOWN IN DIRECTION OF TRAVEL

STA. 3097+38.88 - STA. 3098+20.83 (RADIUS WIDENING SECTION)
STA. 3098+20.83 - STA. 3099+06.54 (2 LANES NORMAL SECTION)
STA. 3099+06.54 - STA. 3101+54.24 (SINGLE LANE TO 2 LANES TAPER SECTION)

NOTES:

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

2. 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.

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

4. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

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

8/27/2013

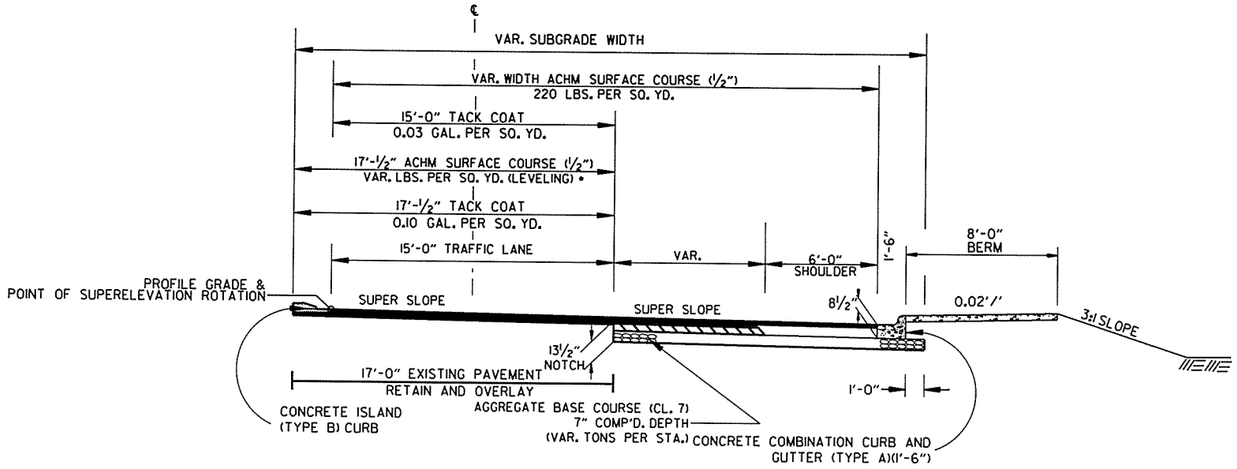
R080340.DGN

TYPICAL SECTIONS OF IMPROVEMENT

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.		080340	9	187

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13



INTERSTATE 40 ENTRANCE AND EXIT RAMPS
NOTCH WIDENING FOR RADIUS
SHOWN IN DIRECTION OF TRAVEL

STA. 3112+51.40 - STA. 3114+08.67 (EASTBOUND EXIT)
STA. 3111+27.21 - STA. 3112+71.99 (EASTBOUND ENTRANCE)
STA. 3107+61.17 - STA. 3109+01.32 (WESTBOUND ENTRANCE)

•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

NOTES:

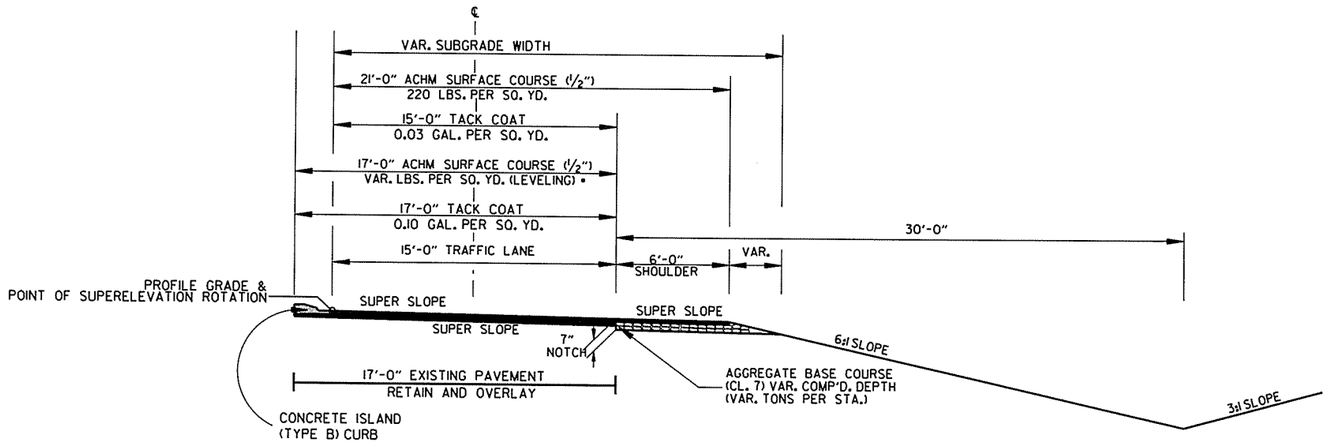
1. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

2. 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.

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

4. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

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



INTERSTATE 40 ENTRANCE AND EXIT RAMPS OVERLAY
SHOWN IN DIRECTION OF TRAVEL

STA. 3111+00.00 - STA. 3112+51.40 (EASTBOUND EXIT)
STA. 3112+71.99 - STA. 3114+36.69 (EASTBOUND ENTRANCE)
STA. 3105+47.64 - STA. 3107+61.17 (WESTBOUND ENTRANCE)

•TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

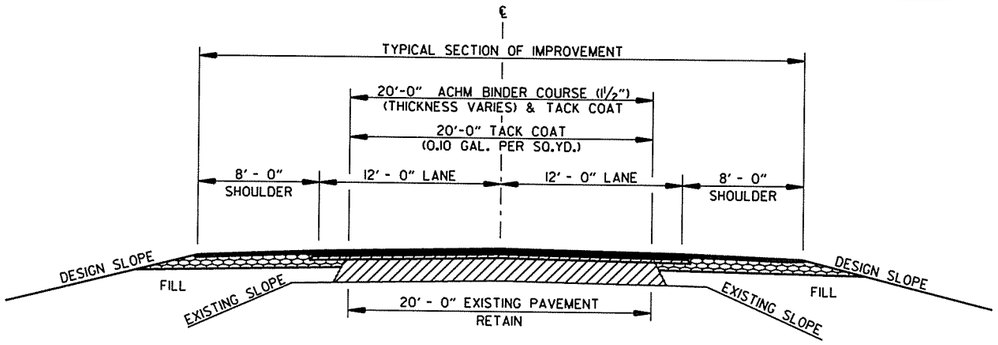
8/27/2013

R080340.DGN

TYPICAL SECTIONS OF IMPROVEMENT

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.		080340	10	187

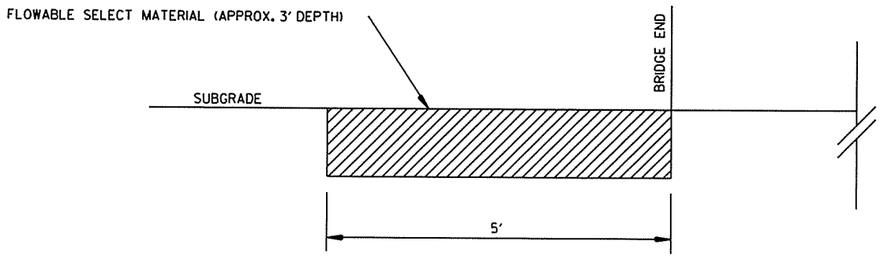
(2) SPECIAL DETAILS



METHOD OF RAISING GRADE

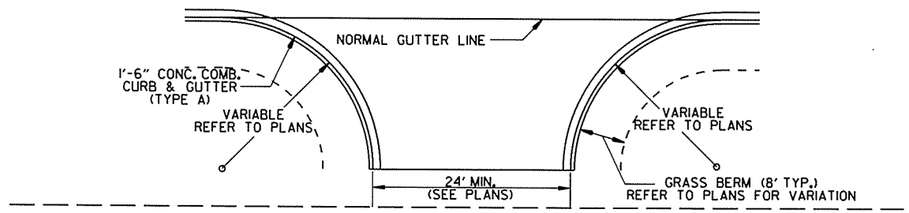
NOTES:

1. THIS DETAIL TO BE USED ONLY IF AND WHERE DIRECTED BY THE ENGINEER.
2. QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.
3. IN LOCATIONS WHERE THE DISTANCE BETWEEN THE PROPOSED SUBGRADE AND THE EXISTING ASPHALT ROADWAY IS MORE THAN ONE FOOT, SCARIFICATION OF THE EXISTING ASPHALT ROADWAY WILL BE REQUIRED AS STATED IN SECTION 210, SUBSECTION 210.09 OF THE STANDARD SPECIFICATIONS, EDITION OF 2003.



FLOWABLE SELECT MATERIAL AT BRIDGE ENDS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13



DETAIL OF CURB & GUTTER TURNOUTS ASPHALT STREETS & FRONTAGE ROADS

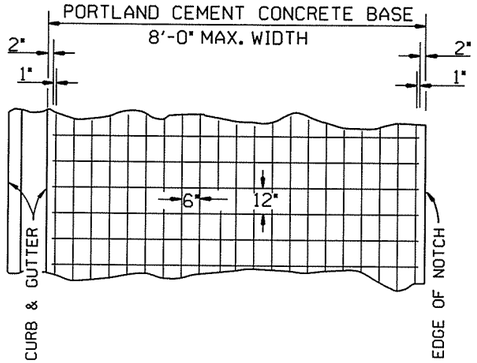
NOTE:
PAVEMENT STRUCTURE FOR STATE HIGHWAYS TO BE SAME AS MAIN LANES

R080340.DGN 7/1/2013

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.		080340	11	187

(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

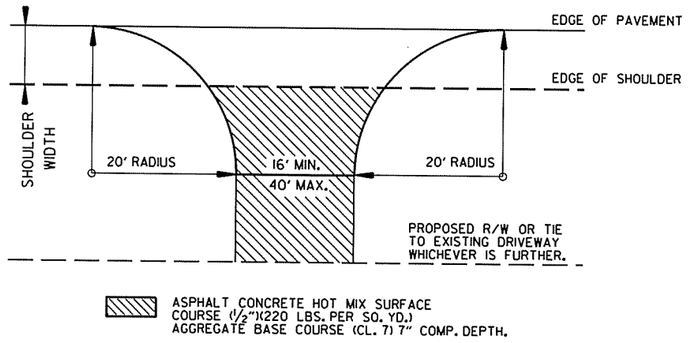


DETAIL OF REINFORCING STEEL FOR PAVEMENT (MESH FABRIC TYPE 3)

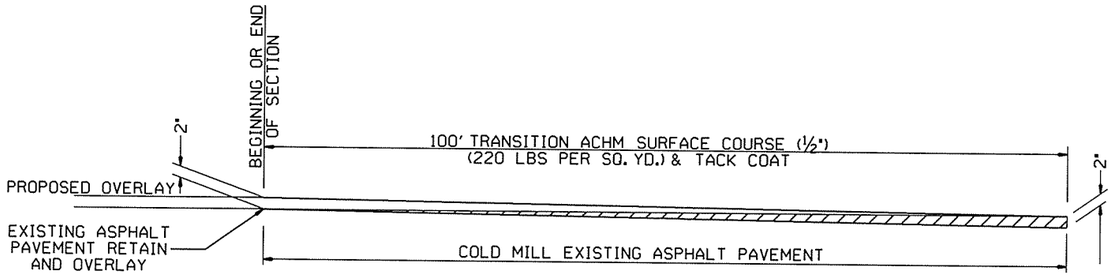
6" X 12" MESH FABRIC (TYPE 3) (W5.5 X W2.9) = 4.26 LBS./SQ.YD.

NOTES:

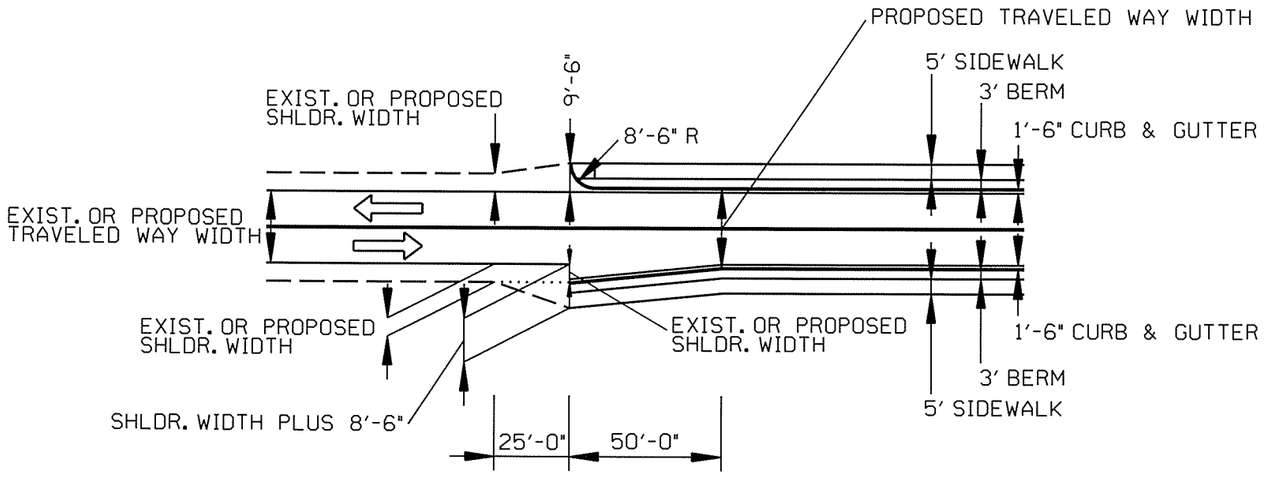
1. LAP MESH FABRIC MIN. 12" LONGITUDINALLY AND MIN. 6" TRANSVERSELY.
2. MESH FABRIC IS NOT REQUIRED WHEN WIDTH OF PORTLAND CEMENT CONCRETE BASE IS LESS THAN 12".
3. MESH FABRIC (TYPE 3) WILL NOT BE PAID FOR DIRECTLY, BUT FULL COMPENSATION THEREFORE WILL BE CONSIDERED INCLUDED IN THE CONTRACT PRICE BID PER SQ. YD. FOR PORTLAND CEMENT CONCRETE BASE (6½" & 7" U.T.).



DETAIL FOR DRIVEWAY TURNOUTS



DETAIL FOR TRANSITIONS



TRANSITION FROM OPEN SHOULDER TO CURB & GUTTER SECTION

7/1/2013

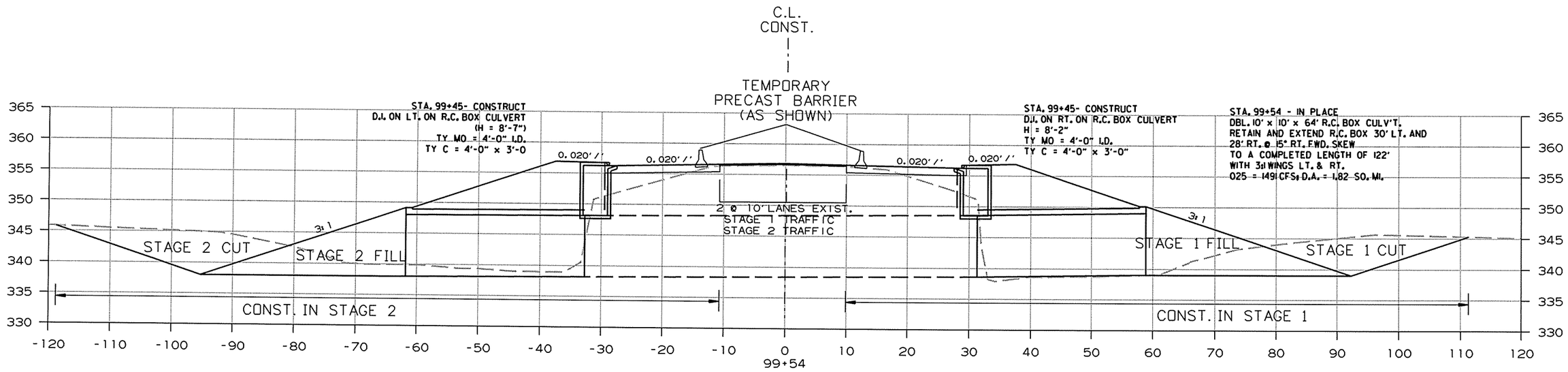
R080340.DGN

SPECIAL 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.		080340	12	187

(2) SPECIAL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13



R. C. BOX CULVERT AT STA. 99+54
STAGE CONSTRUCTION

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

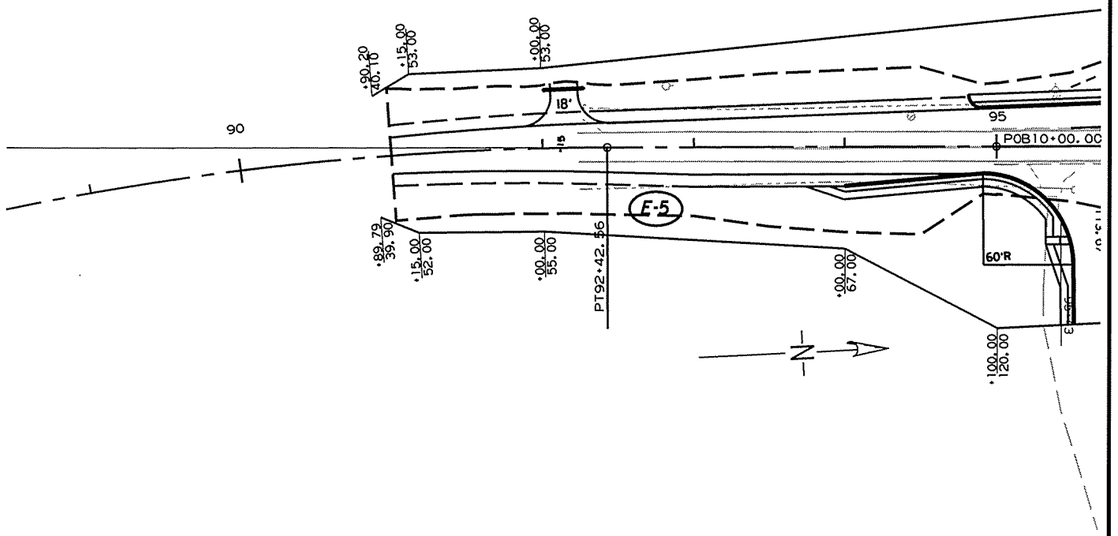
7/1/2013

R080340.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.		080340	13	187

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-30-13



E-7 DROP INLET SILT FENCE

E-11 SILT FENCE

E-5 SAND BAG DITCH CHECK

→ DRAINAGE FLOW INDICATOR

REVISION BOX

DATE OF REVISION	REVISION

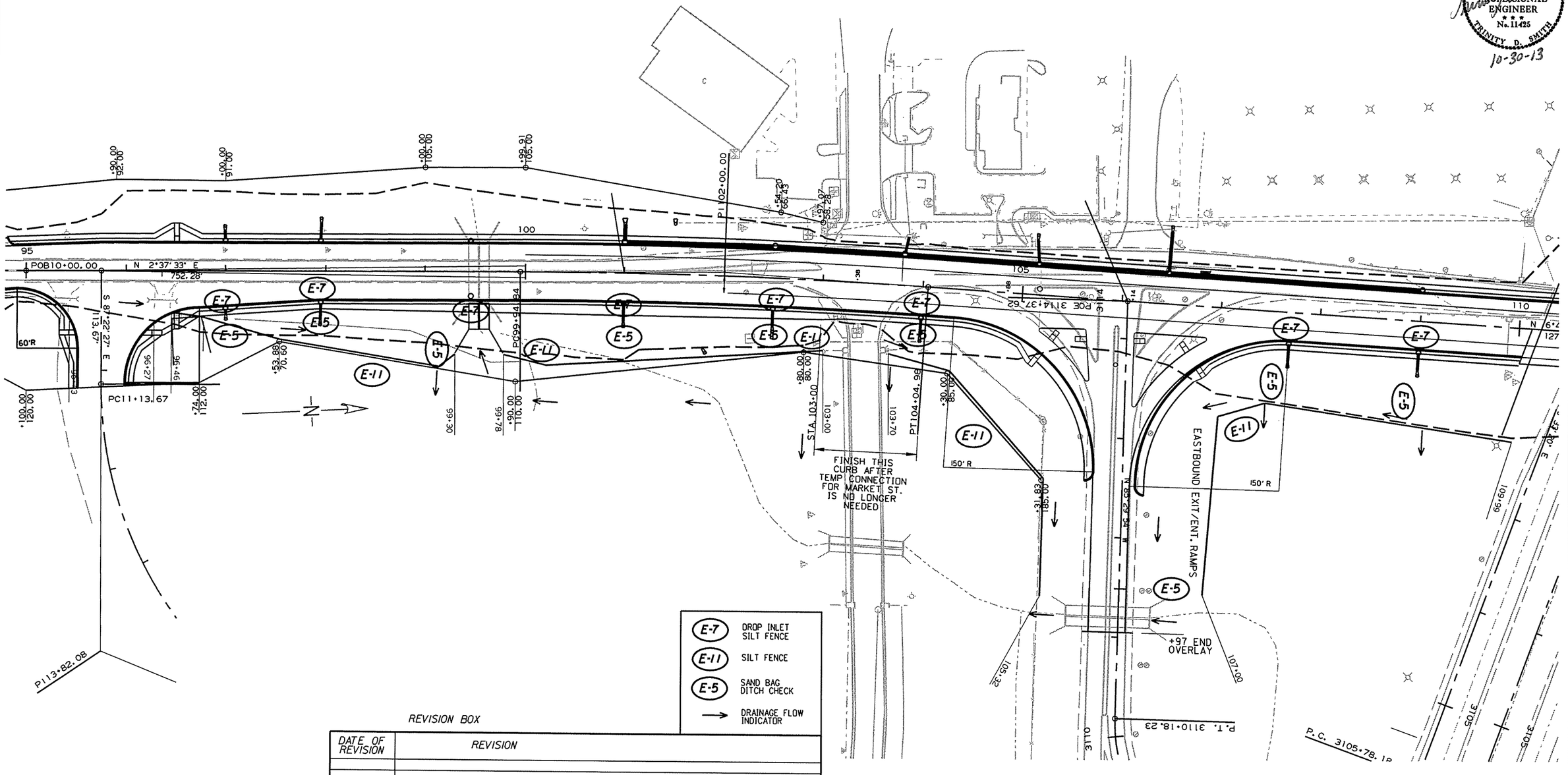
r080340mol.dgn temp erosion plans 8/2/12

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
				6	ARK.			
				JOB NO.		080340	14	187

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-30-13



REVISION BOX

DATE OF REVISION	REVISION

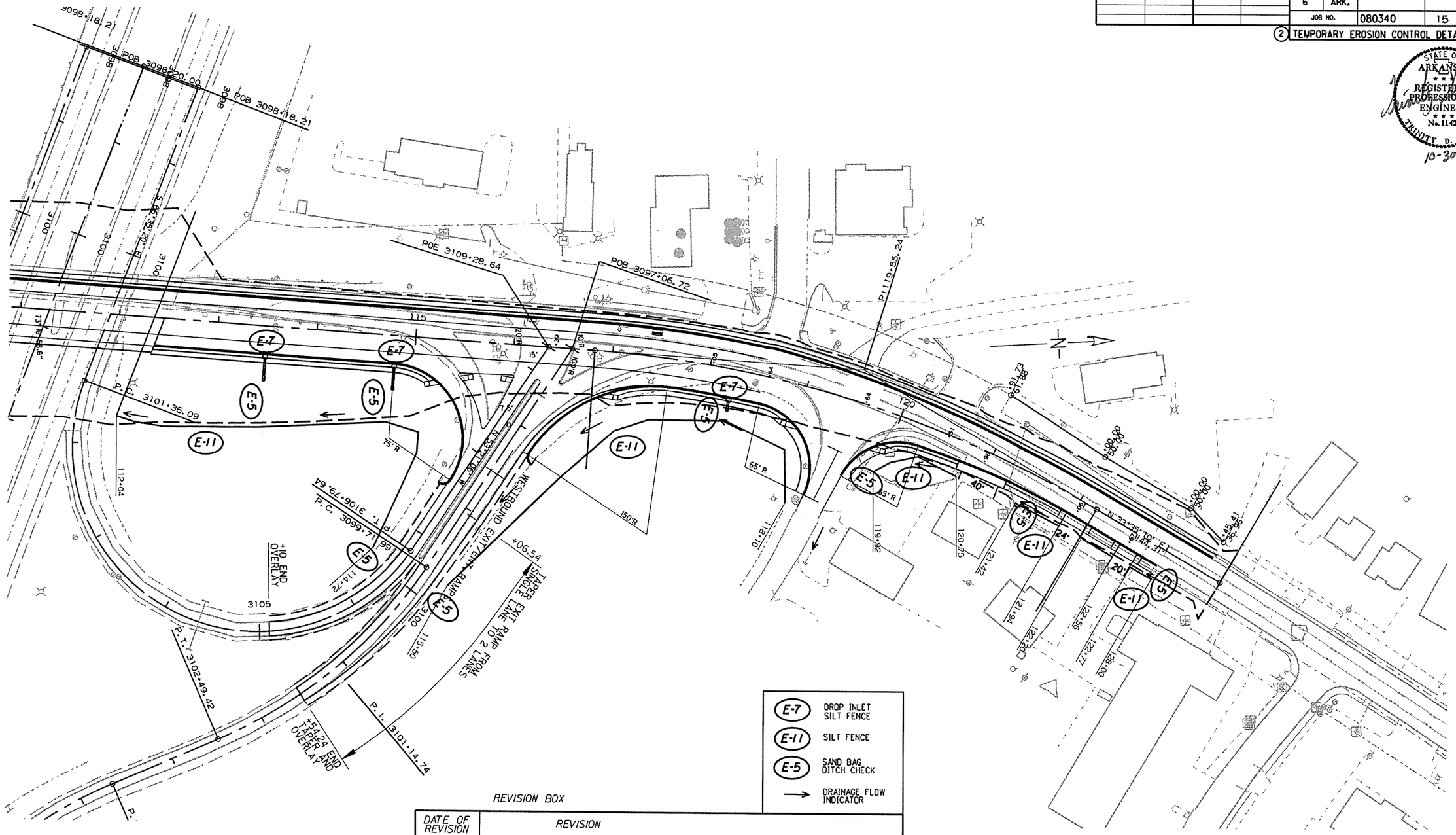
TEMPORARY EROSION CONTROL DETAILS
STAGE I

r080340mot.dgn temp erosion plans 8/2/12

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.		080340	15	187

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-30-13



REVISION BOX

DATE OF REVISION	REVISION

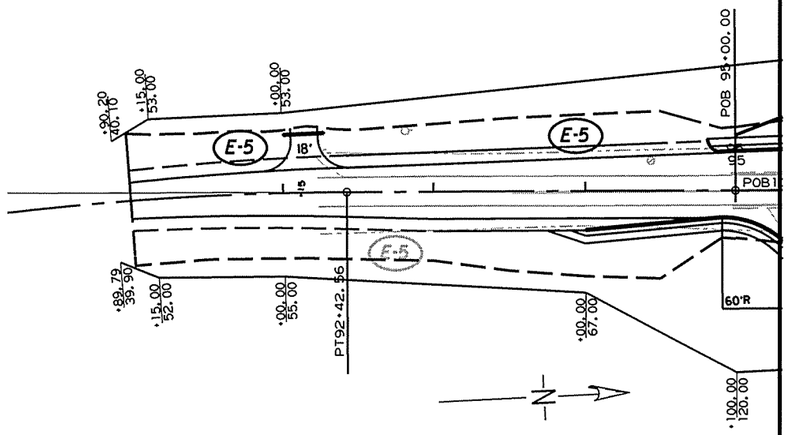
r080340mot.dgn temp erosion plans 8/2/12

TEMPORARY EROSION CONTROL DETAILS STAGE I

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.		080340	16	187

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-30-13



E-7 DROP INLET SILT FENCE
E-11 SILT FENCE
E-5 SAND BAG DITCH CHECK
DRAINAGE FLOW INDICATOR

REVISION BOX

DATE OF REVISION	REVISION

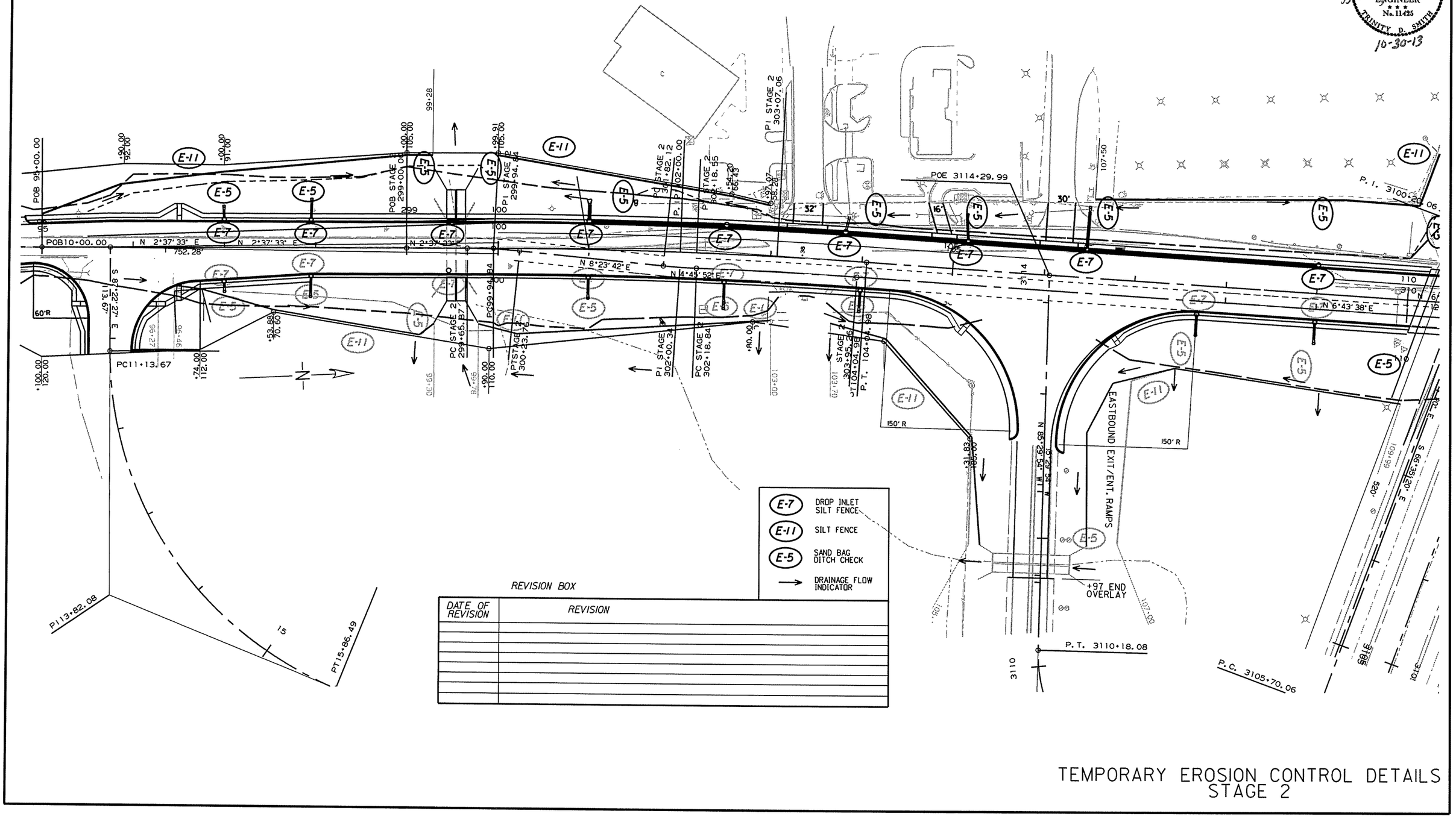
r080340mol.dgn temp erosion plans 8/2/12

TEMPORARY EROSION CONTROL DETAILS 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.		080340	17	187

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-30-13



E-7 DROP INLET SILT FENCE
E-11 SILT FENCE
E-5 SAND BAG DITCH CHECK
→ DRAINAGE FLOW INDICATOR

REVISION BOX

DATE OF REVISION	REVISION

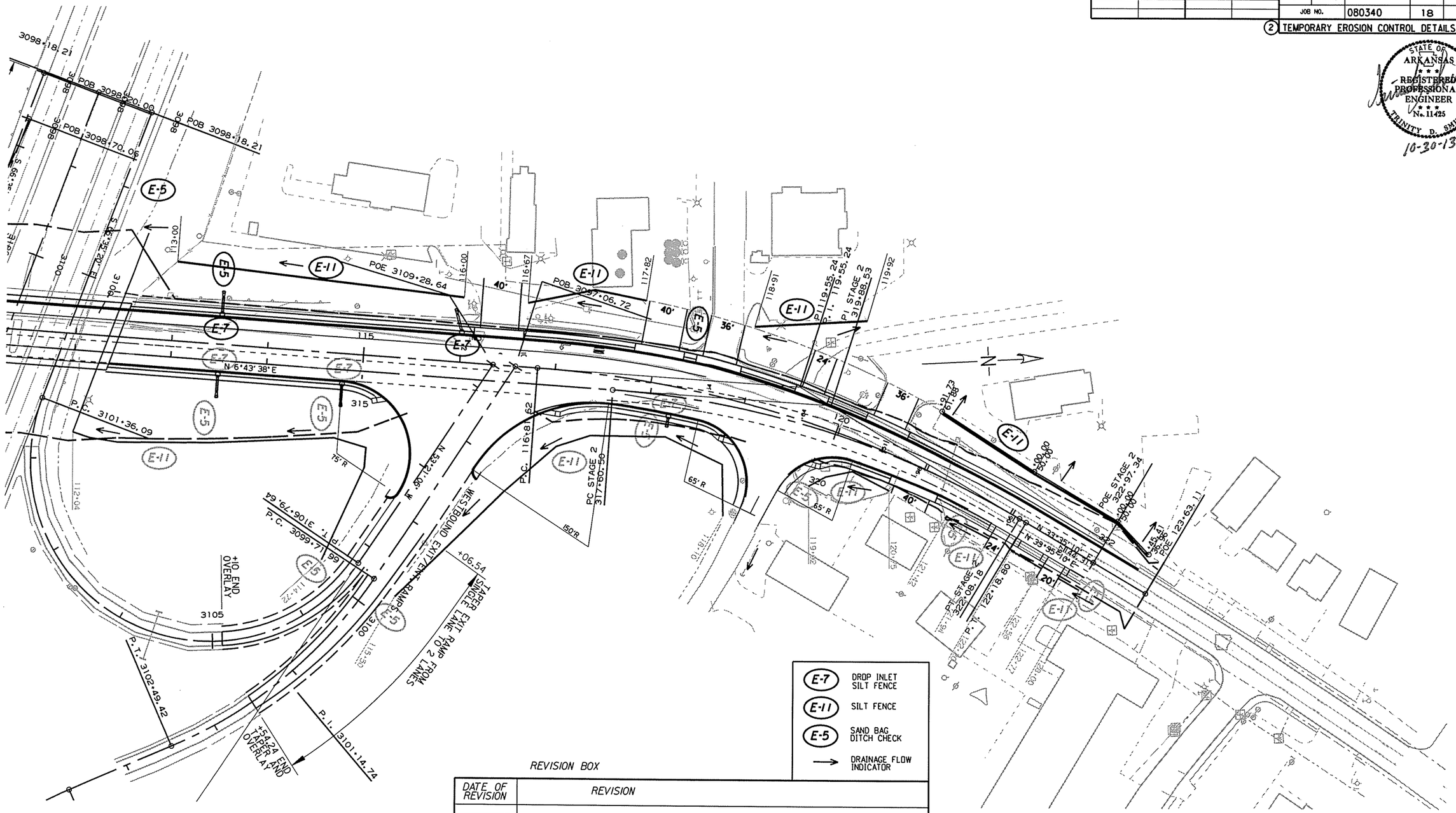
r080340mot.dgn temp erosion plans 8/2/12

TEMPORARY EROSION CONTROL DETAILS 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.		080340	18	187

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-30-13



E-7	DROP INLET SILT FENCE
E-11	SILT FENCE
E-5	SAND BAG DITCH CHECK
→	DRAINAGE FLOW INDICATOR

REVISION BOX

DATE OF REVISION	REVISION

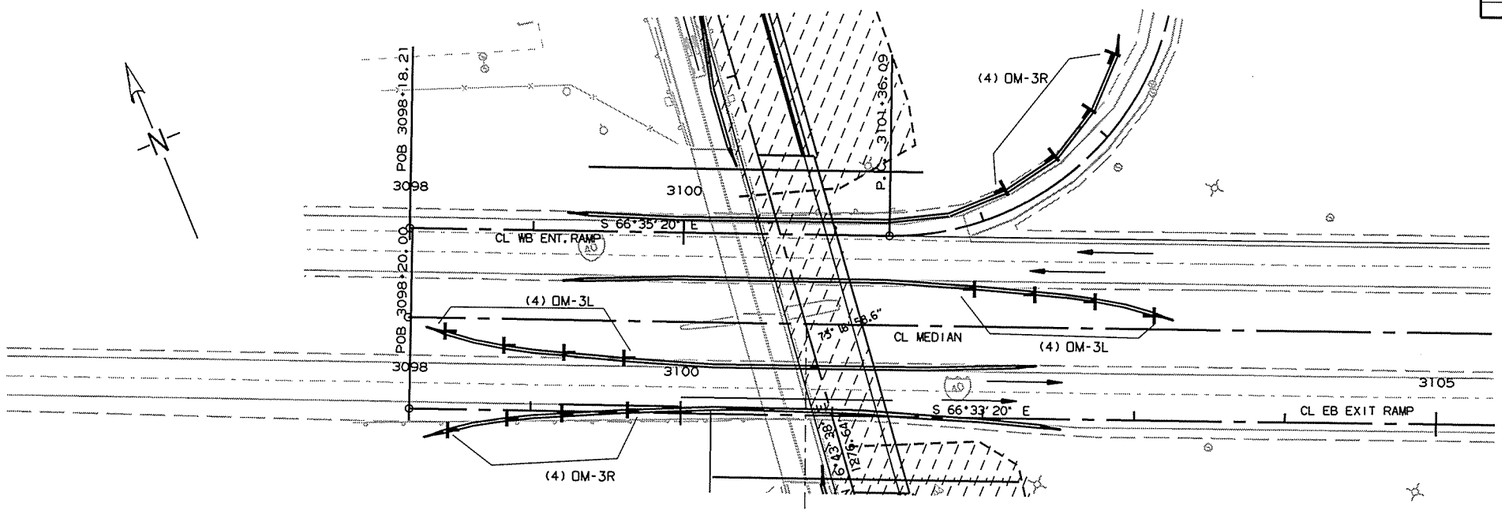
TEMPORARY EROSION CONTROL DETAILS STAGE 2

r080340mot.dgn temp erosion plans 8/2/12

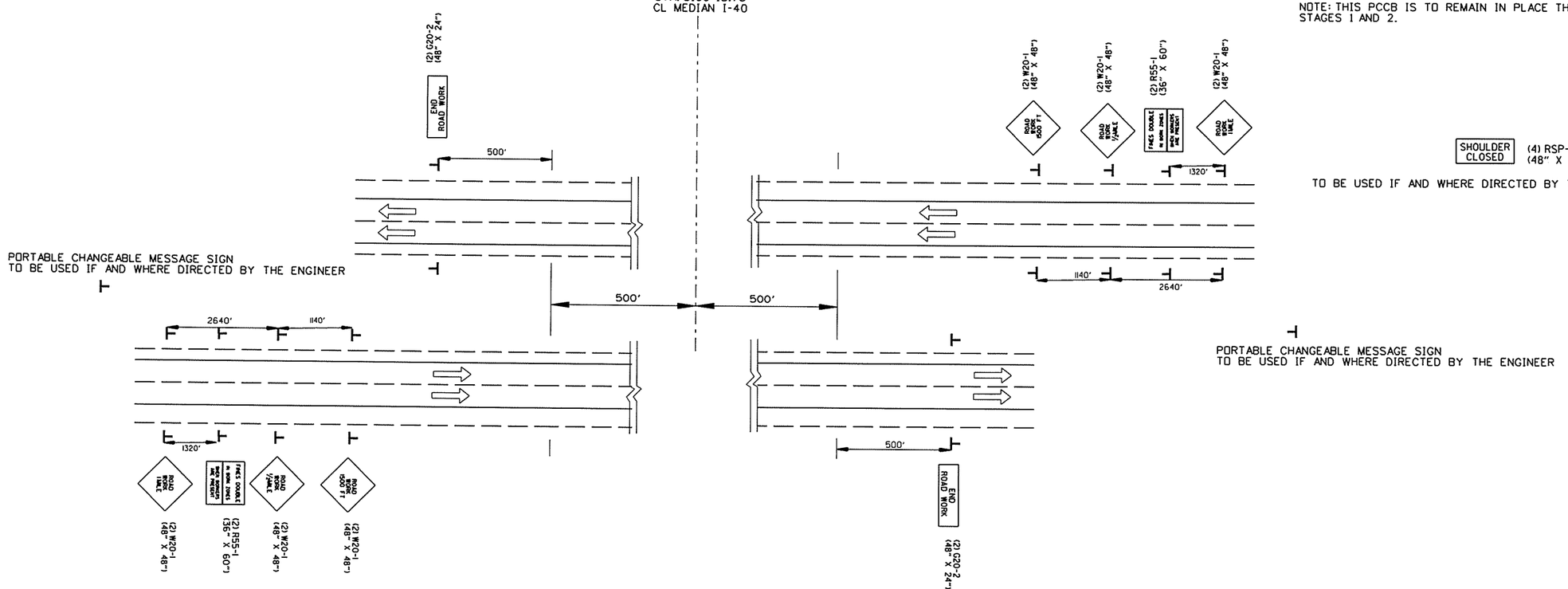
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	19	187

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-30-13



STA. 3100+18.75
CL MEDIAN I-40



STAGE 1:
FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER

WESTBOUND ENTRANCE RAMP OUTSIDE SHOULDER
CL WB ENTRANCE RAMP STA. 3099+23 - STA. 3103+49 = 426 LIN.FT.
THIS INCLUDES (2) SPECIAL END UNITS
WESTBOUND LANES MEDIAN SHOULDER
CL MEDIAN STA. 3099+23 - STA. 3103+27 = 406 LIN.FT.
THIS INCLUDES (2) SPECIAL END UNITS
EASTBOUND LANES MEDIAN SHOULDER
CL MEDIAN STA. 3098+29 - STA. 3102+35 = 406 LIN.FT.
THIS INCLUDES (2) SPECIAL END UNITS
EASTBOUND EXIT RAMP OUTSIDE SHOULDER
CL EB EXIT RAMP STA. 3098+29 - STA. 3102+35 = 406 LIN.FT.
THIS INCLUDES (2) SPECIAL END UNITS

NOTE: THIS PCCB IS TO REMAIN IN PLACE THROUGH STAGES 1 AND 2.

ADVANCE SIGNS ON INTERSTATE 40
ALL STAGES

MAINTENANCE OF TRAFFIC

r080340_MOT.dgn mot sheets7/19/12

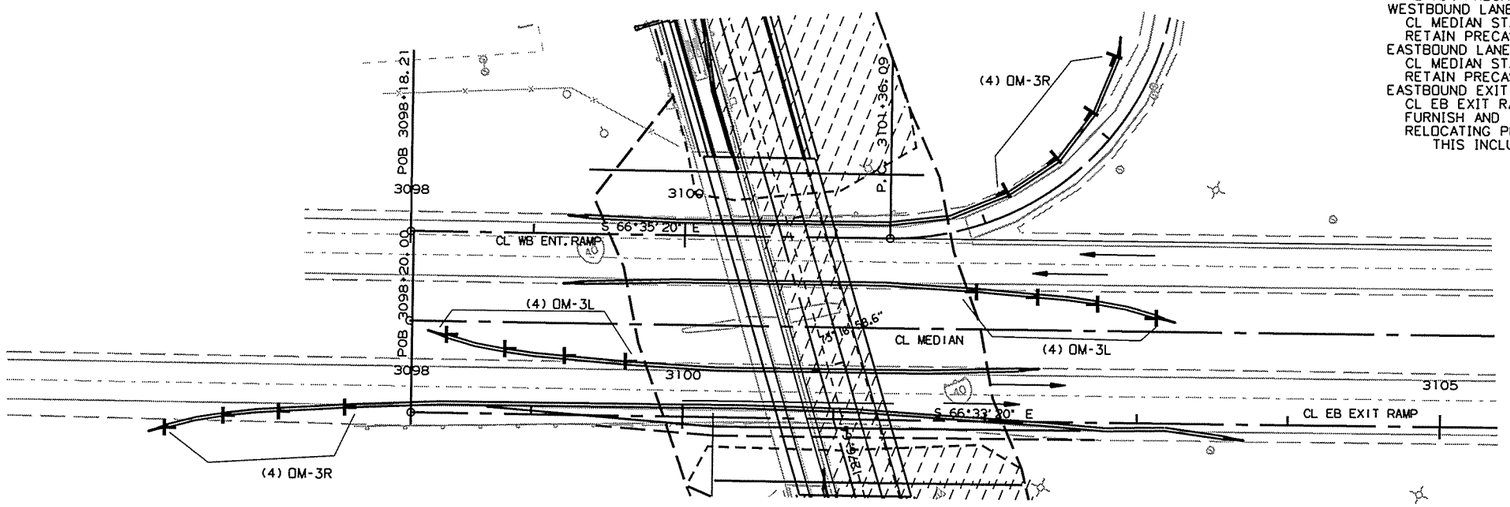
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	19A	187

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-30-13

RAMP EXTENSION:
PRECAST CONCRETE BARRIER

WESTBOUND ENTRANCE RAMP OUTSIDE SHOULDER
CL WB ENTRANCE RAMP STA. 3099+23 - STA. 3103+49
RETAIN PRECAST BARRIER
WESTBOUND LANES MEDIAN SHOULDER
CL MEDIAN STA. 3099+23 - STA. 3103+27
RETAIN PRECAST BARRIER
EASTBOUND LANES MEDIAN SHOULDER
CL MEDIAN STA. 3098+29 - STA. 3102+35
RETAIN PRECAST BARRIER
EASTBOUND EXIT RAMP OUTSIDE SHOULDER
CL EB EXIT RAMP STA. 3096+07 - STA. 3103+53
FURNISH AND INSTALL 340 LIN.FT.
RELOCATING PRECAST BARRIER 406 LIN.FT.
THIS INCLUDES (2) SPECIAL END UNITS



RAMP EXTENSION

REMOVAL OF PERMANENT PAVEMENT MARKINGS
CENTERLINE EASTBOUND LANES
STA. 3097+50 - STA. 3102+78 = 132 LIN.FT.

REMOVABLE PAVEMENT MARKINGS
OUTSIDE EDGE LINE AND CENTERLINE EASTBOUND LANES
STA. 3097+50 - STA. 3102+78 = 660 LIN.FT.

CONSTRUCTION PAVEMENT MARKINGS
CENTERLINE EASTBOUND LANES
STA. 3097+50 - STA. 3102+78 = 132 LIN.FT.

SEE SHEET 26 FOR FINAL STRIPPING

AFTER RAMP EXTENSION:
PRECAST CONCRETE BARRIER

WESTBOUND ENTRANCE RAMP OUTSIDE SHOULDER
CL WB ENTRANCE RAMP STA. 3099+23 - STA. 3103+49
RETAIN PRECAST BARRIER
WESTBOUND LANES MEDIAN SHOULDER
CL MEDIAN STA. 3099+23 - STA. 3103+27
RETAIN PRECAST BARRIER
EASTBOUND LANES MEDIAN SHOULDER
CL MEDIAN STA. 3098+29 - STA. 3102+35
RETAIN PRECAST BARRIER
EASTBOUND EXIT RAMP OUTSIDE SHOULDER
CL EB EXIT RAMP STA. 3096+07 - STA. 3103+53
RELOCATING PRECAST BARRIER 406 LIN.FT.
THIS INCLUDES (2) SPECIAL END UNITS

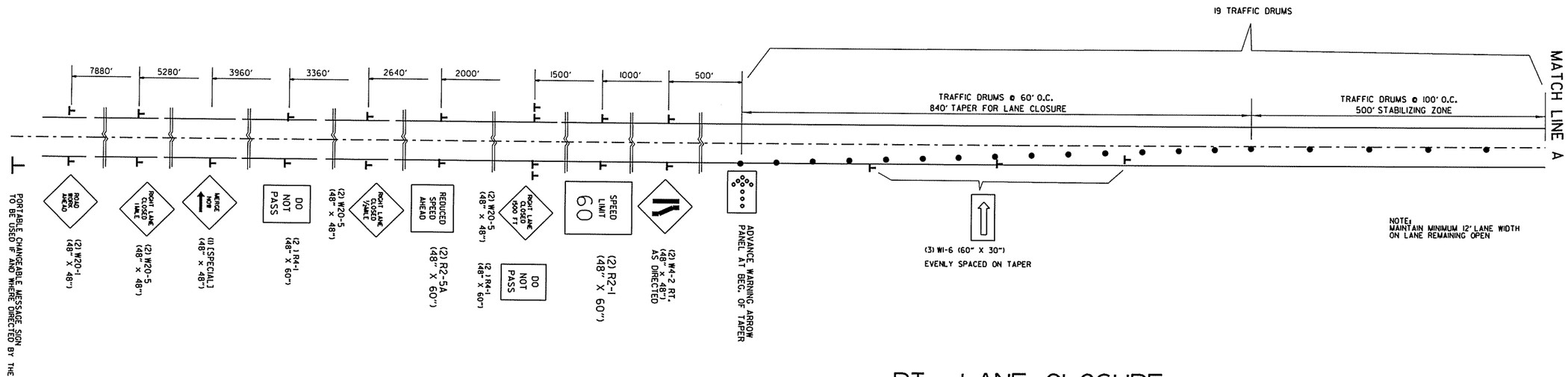
NOTE: REFER TO SP "MAINTENANCE OF TRAFFIC" FOR RAMP EXTENSION CONSTRUCTION

r080340_MOT.dgn mot sheets7/19/12

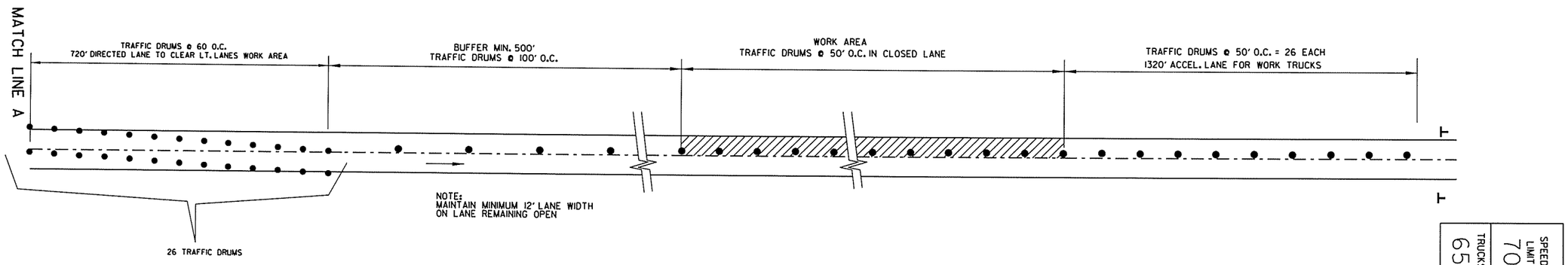
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	198	187

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-30-13



RT. LANE CLOSURE



DIVERSION FOR LT. LANE WORK ZONE

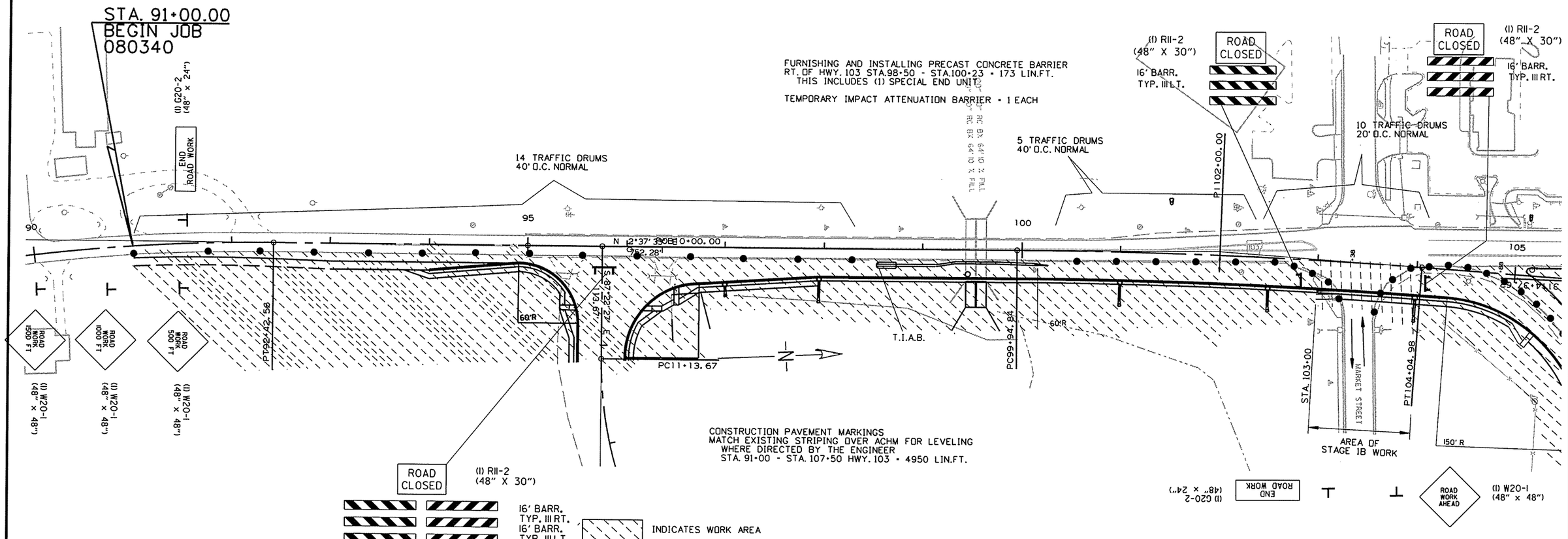
MAINTENANCE OF TRAFFIC LANE CLOSURE

IOWA WEAVE MODIFICATION 7/10/13

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.		080340	20	187

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-30-13



STAGE 1 OPERATIONS

PLACE PRECAST CONC. BARRIER ON SHOULDERS OF I-40 FOR BRIDGE PIER CONSTRUCTION.
PLACE PRECAST CONC. BARRIER RT. OF HWY. 103 AT BOX CULVERT STA. 99+54.
EXTEND BOX CULVERT RT. AND BEGIN CONSTRUCTION OF RT. SIDE OF NEW BRIDGE.

PLACE CONSTRUCTION PAVEMENT MARKINGS ON EXISTING HWY. 103 AS NEEDED OVER LEVELING AND GRADE-ADJUSTMENT ACHM.

WIDEN RT. AND CONSTRUCT RT. SIDE OF NEW ALIGNMENT OF HWY. 103.

REMOVE PORTIONS OF CURB ISLANDS BETWEEN ENTRANCE & EXIT RAMPS BOTH DIRECTIONS AS SHOWN ON PLANS.
PLACE CONSTRUCTION PAVEMENT MARKINGS ON RAMPS AS NEEDED OVER GRADE-ADJUSTMENT ACHM.

MARKET ST. RELOCATION

STAGE 1A
CONSTRUCT TURNOUT FOR RELOCATION OF MARKET ST.
MAINTAIN MARKET ST. TRAFFIC ON EXISTING TURNOUT.

STAGE 1B
WHEN CITY HAS FINISHED THE RELOCATION OF MARKET ST. AND SWITCHED TRAFFIC ONTO NEW ALIGNMENT, RELOCATE TRAFFIC DRUMS, TYPE III BARRICADE, AND R11-2 SIGNS TO BLOCK OLD MARKET ST. TURNOFF.

FINISH PAVEMENT & CURB STA. 94+00 - STA. 104+05 RT.

MAINTENANCE OF TRAFFIC STAGE 1

r080340_MOT.dgn mot sheets7/19/12

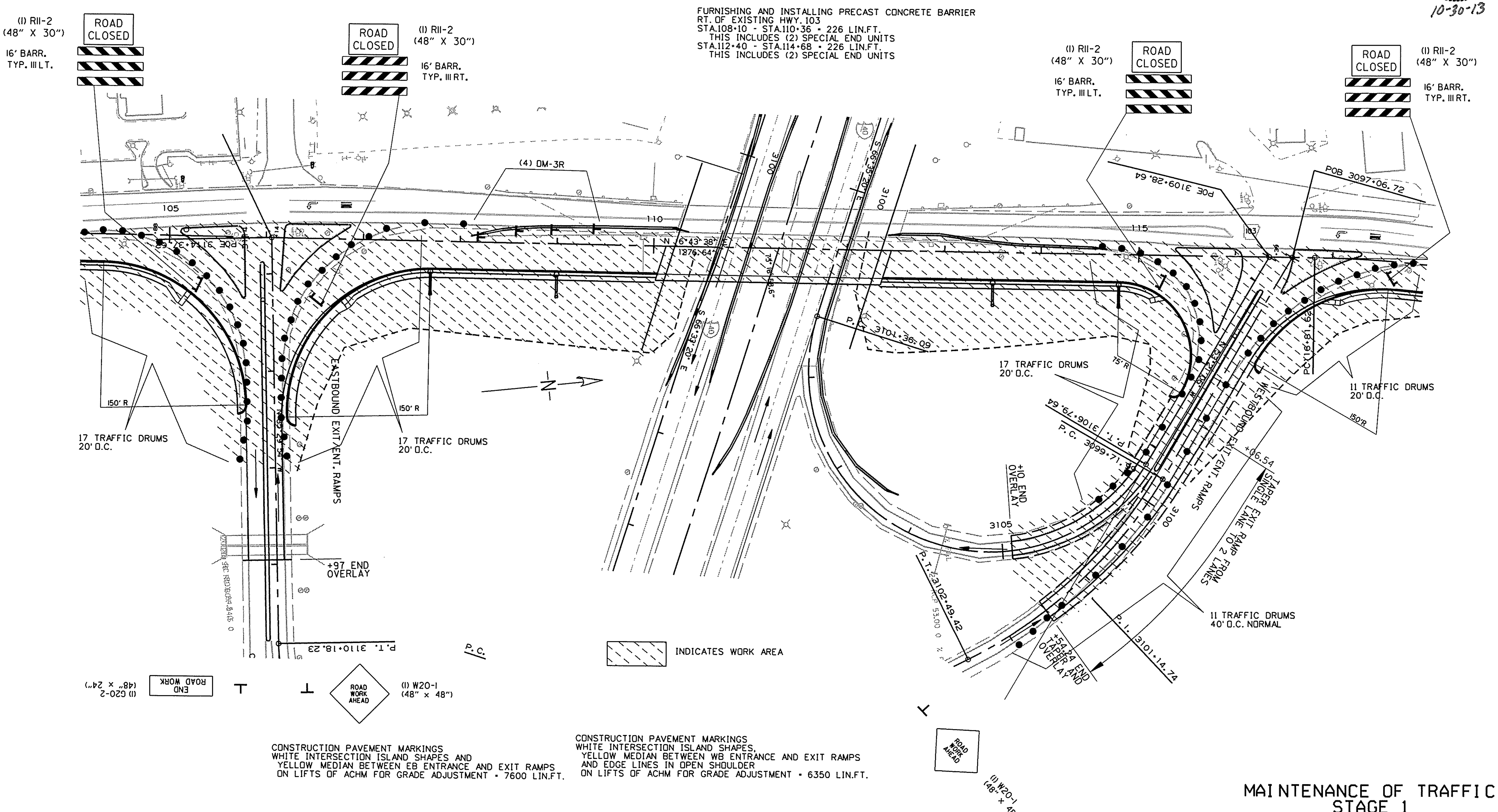
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	21	187

(2) MAINTENANCE OF TRAFFIC

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

10-30-13

FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER
RT. OF EXISTING HWY. 103
STA.108+10 - STA.110+36 = 226 LIN.FT.
THIS INCLUDES (2) SPECIAL END UNITS
STA.112+40 - STA.114+68 = 226 LIN.FT.
THIS INCLUDES (2) SPECIAL END UNITS



CONSTRUCTION PAVEMENT MARKINGS
WHITE INTERSECTION ISLAND SHAPES AND
YELLOW MEDIAN BETWEEN EB ENTRANCE AND EXIT RAMPS
ON LIFTS OF ACHM FOR GRADE ADJUSTMENT = 7600 LIN.FT.

CONSTRUCTION PAVEMENT MARKINGS
WHITE INTERSECTION ISLAND SHAPES,
YELLOW MEDIAN BETWEEN WB ENTRANCE AND EXIT RAMPS
AND EDGE LINES IN OPEN SHOULDER
ON LIFTS OF ACHM FOR GRADE ADJUSTMENT = 6350 LIN.FT.

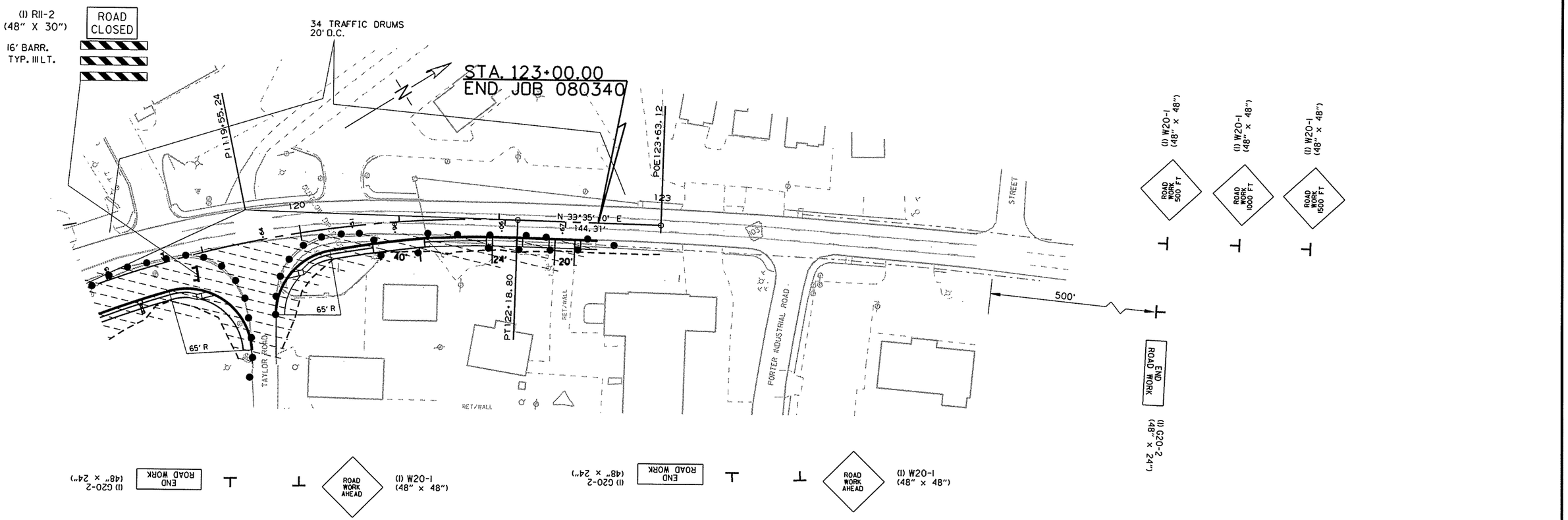
MAINTENANCE OF TRAFFIC STAGE 1

r080340_MOT.dgn mot sheets7/19/12

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.		080340	22	187

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-30-13



CONSTRUCTION PAVEMENT MARKINGS
MATCH EXISTING STRIPING OVER ACHM FOR LEVELING
STA. 114+50 - STA. 123+00 HWY. 103 - 1984 LIN.FT.

INDICATES WORK AREA

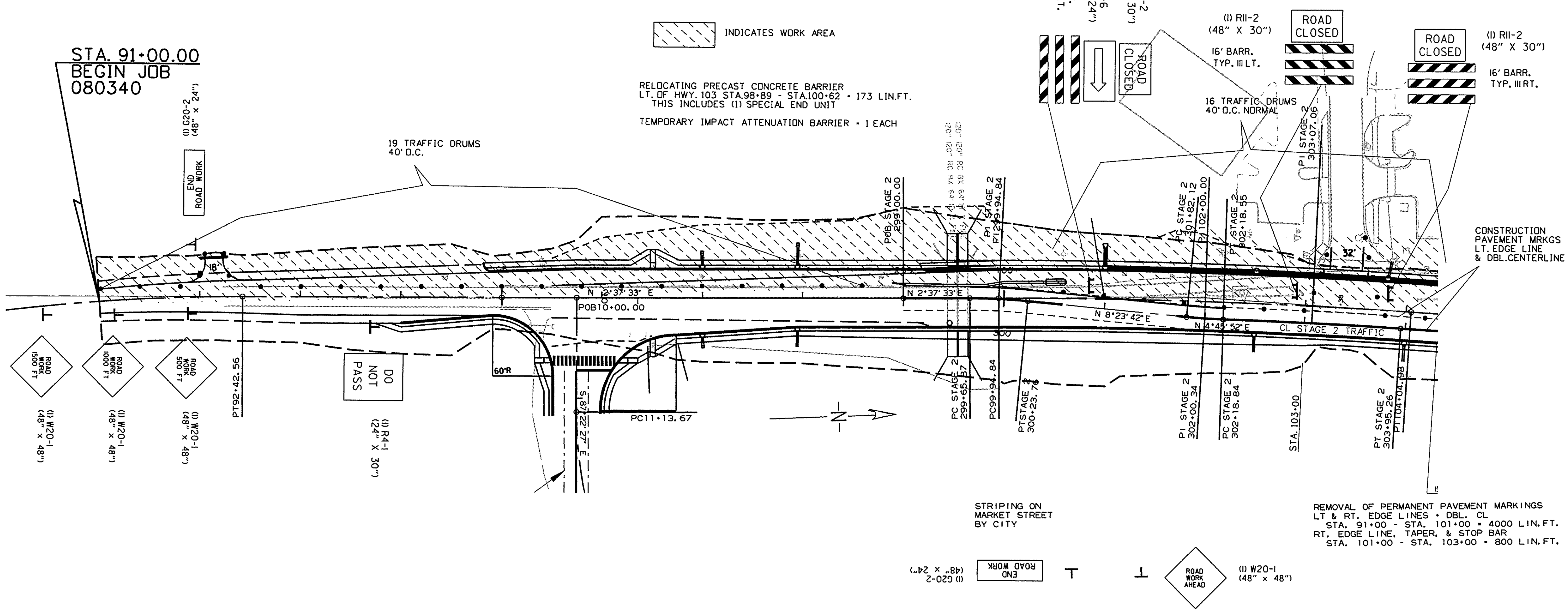
MAINTENANCE OF TRAFFIC
STAGE 1

r080340_MOT.dgn mot sheets 7/19/12

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.		080340	23	187

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
10-30-13



RELOCATING PRECAST CONCRETE BARRIER
LT. OF HWY. 103 STA. 98+89 - STA. 100+62 = 173 LIN. FT.
THIS INCLUDES (1) SPECIAL END UNIT

TEMPORARY IMPACT ATTENUATION BARRIER = 1 EACH

REMOVAL OF PERMANENT PAVEMENT MARKINGS
LT & RT. EDGE LINES + DBL. CL
STA. 91+00 - STA. 101+00 = 4000 LIN. FT.
RT. EDGE LINE, TAPER, & STOP BAR
STA. 101+00 - STA. 103+00 = 800 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS
CL STAGE 2 TRAFFIC STA. 299+65 - STA. 305+65
WHITE LT. EDGE LINE + DBL YELLOW CENTERLINE = 1800 LIN. FT.

STAGE 2 OPERATIONS

SHIFT HWY. 103 TRAFFIC ONTO STAGE 2 TRAFFIC ALIGNMENT.

RELOCATE PRECAST CONCRETE BARRIER AT BOX CULVERT STA. 99+54
EXTEND BOX CULVERT LEFT OF EXISTING.

REMOVE EXISTING BRIDGE AND CONSTRUCT LEFT SIDE OF NEW BRIDGE.

CONSTRUCT LEFT SIDE OF HWY. 103 AS SHOWN ON PLANS.

CONSTRUCT WIDENING OF EASTBOUND DECEL LANE AS SHOWN ON PLANS.

MAINTENANCE OF TRAFFIC STAGE 2

r080340_MOT.dgn mot sheets7/19/12

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.		080340	24	187

② MAINTENANCE OF TRAFFIC

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

10-30-13

▨ INDICATES WORK AREA

LT. OF HWY. 103 STA. 108+00 TO STA. 114+60

RELOCATING PRECAST CONCRETE BARRIER = 400 LIN. FT.
FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER = 260 LIN. FT.
TEMPORARY IMPACT ATTENUATION BARRIER = 2 EACH

REMOVABLE CONSTRUCTION PAVEMENT MARKINGS

ON BRIDGE DECK STA. 310+07 - STA. 312+40
LT. EDGE LINE + DBL. CENTERLINE = 466 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS

EASTBOUND EXIST & ENTRANCE RAMPS
INTERSECTION ISLAND SHAPES (8" WHITE) = 420 LIN. FT.
MEDIAN ISLAND (4" YELLOW) = 658 LIN. FT.
4" WHITE OUTSIDE EDGE LINES
INCL. RT. TURN CURVE RADIUS = 541 LIN. FT.
CL STAGE 2 TRAFFIC STA. 307+00 - B.E. 310+07
WHITE LT. EDGE LINE + DBL. YELLOW CENTERLINE = 921 LIN. FT.

CONSTRUCTION PAVEMENT MARKINGS

WESTBOUND EXIST & ENTRANCE RAMPS
INTERSECTION ISLAND SHAPES (8" WHITE) = 446 LIN. FT.
MEDIAN ISLAND (4" YELLOW) = 436 LIN. FT.
4" YELLOW INSIDE EDGE LINES = 355 LIN. FT.
4" WHITE OUTSIDE EDGE LINES
INCL. RT. TURN CURVE RADIUS = 745 LIN. FT.
CL STAGE 2 TRAFFIC B.E. 312+40 - STA. 315+50
WHITE LT. EDGE LINE + DBL. YELLOW CENTERLINE = 930 LIN. FT.

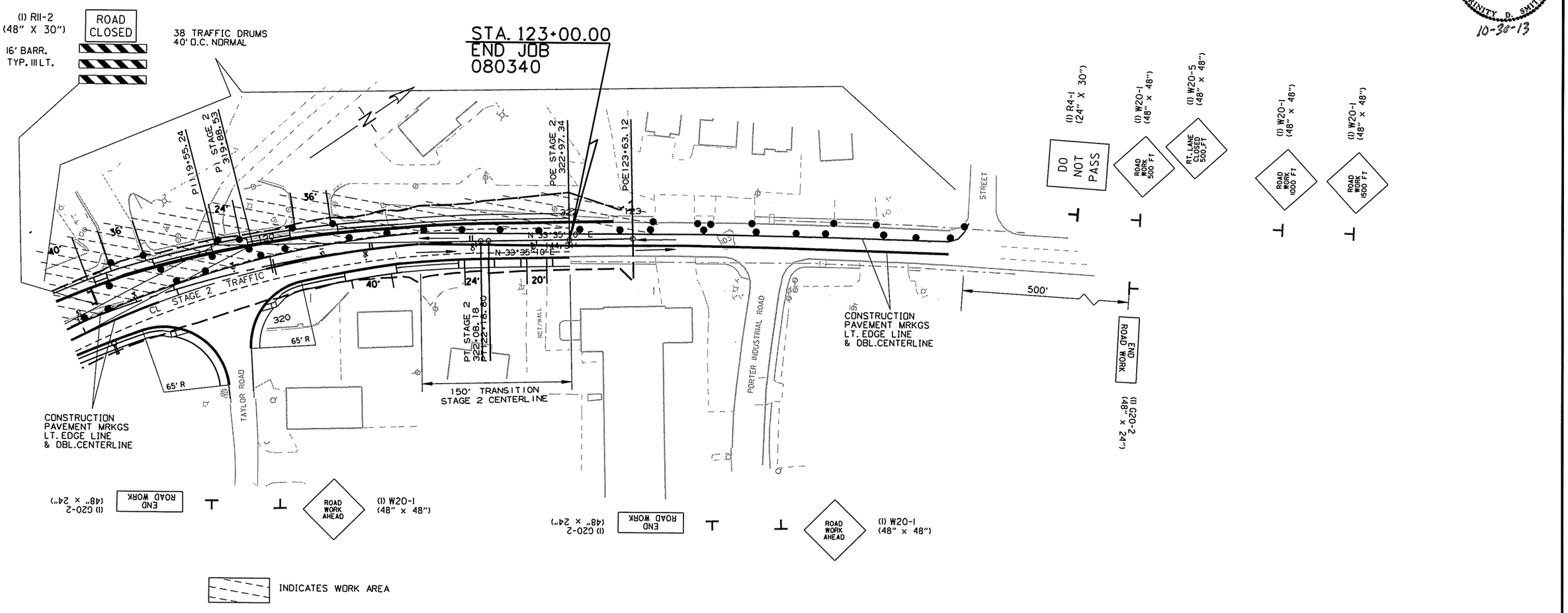
MAINTENANCE OF TRAFFIC
STAGE 2

r080340_MOT.dgn mot sheets7/19/12

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.		080340	25	187

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-30-13



REMOVAL OF PERMANENT PAVEMENT MARKINGS

LEFT TURN LANE STRIPING
CL CONST. STA. 116+81 - STA. 117+81 = 300 LIN.FT.
DBL YELLOW CENTERLINE
CL CONST. STA. 117+81 - STA. 118+85 = 208 LIN.FT.
CONTINUOUS LEFT TURN LANE
CL CONST. STA. 118+85 - STA. 123+00 = 1038 LIN.FT.
CONTINUOUS LEFT TURN LANE
CL CONST. STA. 1223+00 - SIDE RD. ON LT. = 1000 LIN.FT.

CONSTRUCTION PAVEMENT MARKINGS

WHITE LT. EDGE LINE + DBL. YELLOW CENTERLINE = 1792 LIN.FT.
CL STAGE 2 TRAFFIC STA. 317+00 - STA. 322+97.34
END OF STAGE 2 TRAFFIC TO SIDE STREET ON LT. = 1030 LIN. FT.

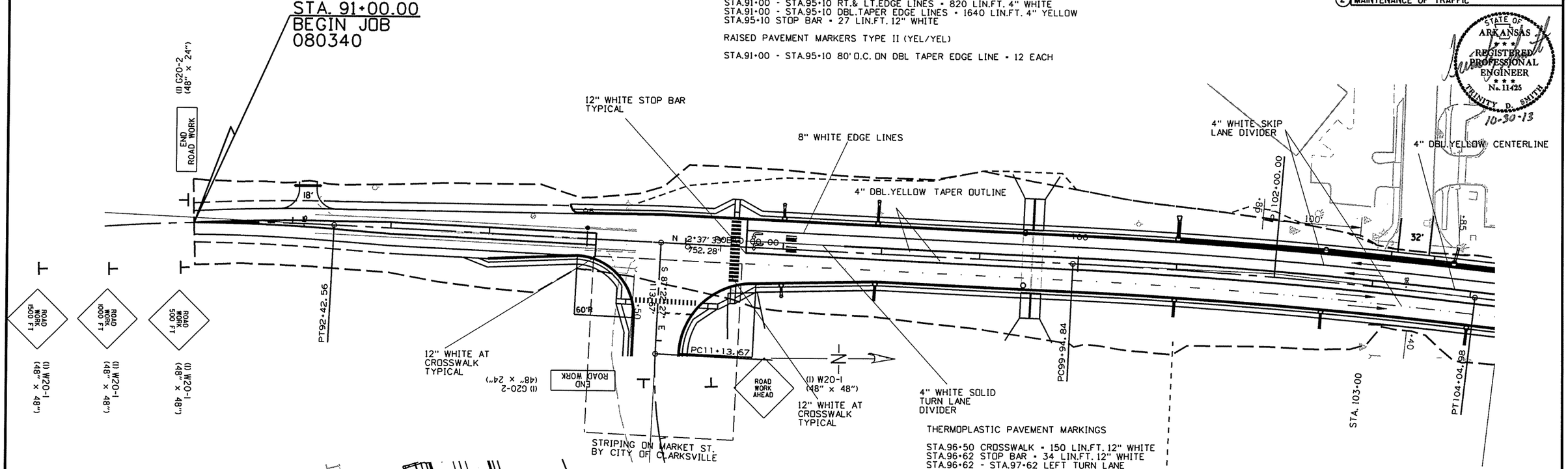
r080340_MOT.dgn mot sheets 7/19/12

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.		080340	26	187

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-30-13



THERMOPLASTIC PAVEMENT MARKINGS

STA.91+00 - STA.95+10 RT.& LT.EDGE LINES = 820 LIN.FT. 4" WHITE
STA.91+00 - STA.95+10 DBL.TAPER EDGE LINES = 1640 LIN.FT. 4" YELLOW
STA.95+10 STOP BAR = 27 LIN.FT. 12" WHITE

RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)

STA.91+00 - STA.95+10 80' O.C. ON DBL TAPER EDGE LINE = 12 EACH

THERMOPLASTIC PAVEMENT MARKINGS

STA.96+50 CROSSWALK = 150 LIN.FT. 12" WHITE
STA.96+62 STOP BAR = 34 LIN.FT. 12" WHITE
STA.96+62 - STA.97+62 LEFT TURN LANE
EDGE LINE = 100 LIN.FT. 8" WHITE
EDGE LINE = 100 LIN.FT. 4" WHITE
WORD "ONLY" = 2 EACH
ARROW = 2 EACH

RAISED PAVEMENT MARKERS TYPE II

STA.96+50 - STA.101+85 80' O.C. ON LANE LINE = 14 EACH (WHITE/RED)
STA.96+50 - STA.101+85 80' O.C. ON DBL. YELLOW CENTERLINE = 12 EACH (YELLOW/YELLOW)

THERMOPLASTIC PAVEMENT MARKINGS

STA.101+85 - STA.105+40
LT.&RT.SKIP LANE DIVIDERS = 180 LIN.FT. 4" WHITE
DBL.YELLOW CENTERLINE = 180 LIN.FT. 4" YELLOW

RAISED PAVEMENT MARKERS TYPE II
80' O.C. ON SKIP LANE DIVIDERS = 10 EACH (WHITE/RED)
80' O.C. ON DBL.YELLOW CENTERLINE = 10 EACH (YELLOW/YELLOW)

REMOVAL OF PERMANENT PAVEMENT MARKINGS
OUTSIDE EDGE LINE EASTBOUND LANES
STA. 3097+50 - STA. 3102+78 = 528 LIN.FT.

HIGH PERFORMANCE PAVEMENT MARKINGS
OUTSIDE EDGE LINE EASTBOUND LANES
STA. 3097+50 - STA. 3102+78 = 528 LIN.FT. 4" WHITE

HIGH PERFORMANCE PAVEMENT MARKINGS
CENTERLINE EASTBOUND LANES
STA. 3097+50 - STA. 3102+78 = 132 LIN.FT. 4" WHITE

RAISED PAVEMENT MARKERS TYPE II
80' O.C. ON SKIP LANE DIVIDERS = 7 EACH (WHITE/RED)

STAGE 3 OPERATIONS

CONSTRUCT NEW INTERCHANGE ISLANDS

PLACE FINAL LIFT OF ACHM SURFACE AND STRIPING

MAINTENANCE OF TRAFFIC STAGE 3

r080340_MOT.dgn mot sheets7/19/12

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.		080340	27	187

(2) MAINTENANCE OF TRAFFIC

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-30-13

THERMOPLASTIC PAVEMENT MARKINGS

STA.105+40 STOP BAR - 34 LIN.FT. 12" WHITE
STA.104+40 - STA.105+40 LEFT TURN LANE
EDGE LINE - 100 LIN.FT. 4" WHITE
WORD "ONLY" - 1 EACH
ARROW - 1 EACH

THERMOPLASTIC PAVEMENT MARKINGS

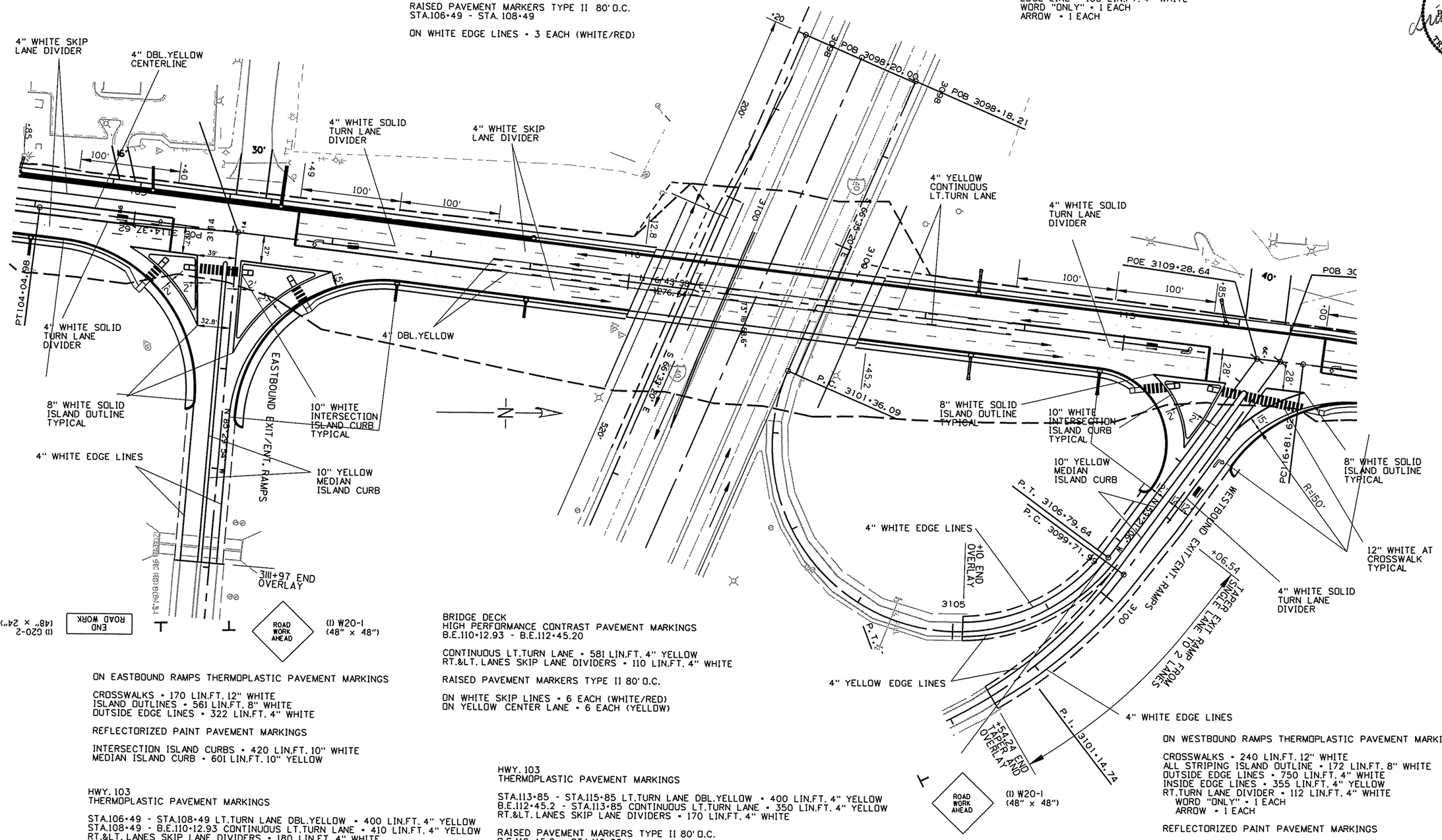
STA.106+49 STOP BAR - 34 LIN.FT. 12" WHITE
STA.106+49 - STA.107+49 LEFT TURN LANE
EDGE LINE - 100 LIN.FT. 4" WHITE
WORD "ONLY" - 1 EACH
ARROW - 1 EACH

RAISED PAVEMENT MARKERS TYPE II 80' O.C.
STA.106+49 - STA. 108+49

ON WHITE EDGE LINES - 3 EACH (WHITE/RED)

THERMOPLASTIC PAVEMENT MARKINGS

STA.115+83 STOP BAR - 34 LIN.FT. 12" WHITE
STA.113+83 - STA.115+83 LEFT TURN LANE
EDGE LINE - 100 LIN.FT. 4" WHITE
WORD "ONLY" - 1 EACH
ARROW - 1 EACH



ON EASTBOUND RAMPS THERMOPLASTIC PAVEMENT MARKINGS

CROSSWALKS - 170 LIN.FT. 12" WHITE
ISLAND OUTLINES - 561 LIN.FT. 8" WHITE
OUTSIDE EDGE LINES - 322 LIN.FT. 4" WHITE

REFLECTORIZED PAINT PAVEMENT MARKINGS

INTERSECTION ISLAND CURBS - 420 LIN.FT. 10" WHITE
MEDIAN ISLAND CURB - 601 LIN.FT. 10" YELLOW

HWY. 103
THERMOPLASTIC PAVEMENT MARKINGS

STA.106+49 - STA.108+49 LT.TURN LANE DBL.YELLOW - 400 LIN.FT. 4" YELLOW
STA.108+49 - B.E.110+12.93 CONTINUOUS LT.TURN LANE - 410 LIN.FT. 4" YELLOW
RT.&LT. LANES SKIP LANE DIVIDERS - 180 LIN.FT. 4" WHITE

RAISED PAVEMENT MARKERS TYPE II 80' O.C.
STA.106+49 - B.E.110+12.93

ON WHITE SKIP LINES - 10 EACH (WHITE/RED)
ON YELLOW CENTER LANE - 10 EACH (YELLOW/YELLOW)

BRIDGE DECK
HIGH PERFORMANCE CONTRAST PAVEMENT MARKINGS
B.E.110+12.93 - B.E.112+45.20

CONTINUOUS LT.TURN LANE - 581 LIN.FT. 4" YELLOW
RT.&LT. LANES SKIP LANE DIVIDERS - 110 LIN.FT. 4" WHITE

RAISED PAVEMENT MARKERS TYPE II 80' O.C.

ON WHITE SKIP LINES - 6 EACH (WHITE/RED)
ON YELLOW CENTER LANE - 6 EACH (YELLOW)

HWY. 103
THERMOPLASTIC PAVEMENT MARKINGS

STA.113+85 - STA.115+85 LT.TURN LANE DBL.YELLOW - 400 LIN.FT. 4" YELLOW
B.E.112+45.2 - STA.113+85 CONTINUOUS LT.TURN LANE - 350 LIN.FT. 4" YELLOW
RT.&LT. LANES SKIP LANE DIVIDERS - 170 LIN.FT. 4" WHITE

RAISED PAVEMENT MARKERS TYPE II 80' O.C.
B.E.112+45.2 - STA.115+85

ON WHITE SKIP LINES - 8 EACH (WHITE/RED)
ON YELLOW CENTER LANE - 8 EACH (YELLOW/YELLOW)

ON WESTBOUND RAMPS THERMOPLASTIC PAVEMENT MARKINGS

CROSSWALKS - 240 LIN.FT. 12" WHITE
ALL STRIPING ISLAND OUTLINE - 172 LIN.FT. 8" WHITE
OUTSIDE EDGE LINES - 750 LIN.FT. 4" WHITE
INSIDE EDGE LINES - 355 LIN.FT. 4" YELLOW
RT.TURN LANE DIVIDER - 112 LIN.FT. 4" WHITE
WORD "ONLY" - 1 EACH
ARROW - 1 EACH

REFLECTORIZED PAINT PAVEMENT MARKINGS

INTERSECTION ISLAND CURBS - 180 LIN.FT. 10" WHITE
MEDIAN ISLAND CURB - 436 LIN.FT. 10" YELLOW

MAINTENANCE OF TRAFFIC STAGE 3

r080340_MOT.dgn mot sheets 7/19/12

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.		080340	28	187

(2) MAINTENANCE OF TRAFFIC

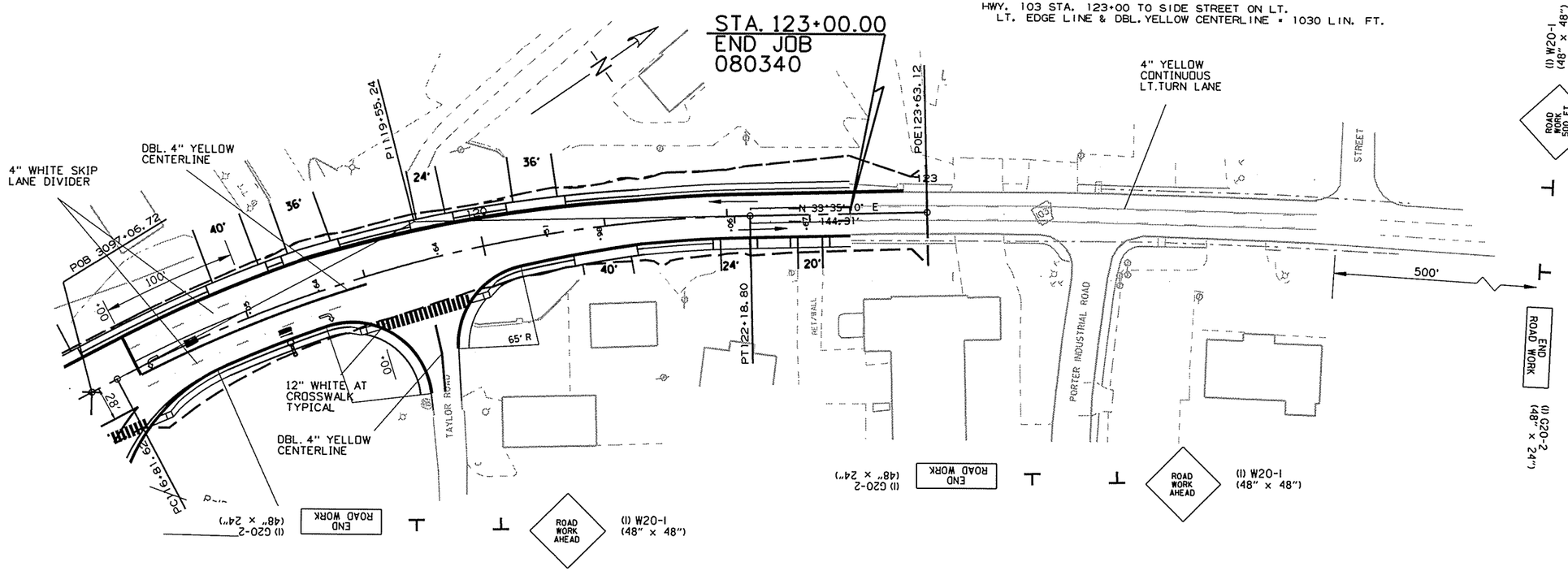
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-30-13

THERMOPLASTIC PAVEMENT MARKINGS

STA.117+00 STOP BAR - 34 LIN.FT. 12" WHITE
STA.117+00 - STA.118+00 LEFT TURN LANE
EDGE LINE - 100 LIN.FT. 4" WHITE
WORD "ONLY" - 1 EACH
ARROW - 1 EACH

REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS

HWY. 103 STA. 123+00 TO SIDE STREET ON LT.
LT. EDGE LINE & DBL. YELLOW CENTERLINE - 1030 LIN. FT.



HWY. 103
THERMOPLASTIC PAVEMENT MARKINGS
STA.117+00 - STA.119+00

LT.TURN LANE DBL.YELLOW - 400 LIN.FT. 4" YELLOW
RT.&LT. LANES SKIP LANE DIVIDERS - 80 LIN.FT. 4" WHITE

RAISED PAVEMENT MARKERS TYPE II 80' O.C..

ON WHITE SKIP LINES - 5 EACH (WHITE/WHITE)
ON YELLOW CENTER LANE - 3 EACH (YELLOW/YELLOW)

TAYLOR ROAD
THERMOPLASTIC PAVEMENT MARKINGS

RT.TURN ONLY LANE
WORD - 1 EACH
ARROW - 1 EACH
CROSSWALK - 190 LIN.FT. 12" WHITE
REFRESH DBL.YELLOW CENTERLINE - 110 LIN.FT. 4" YELLOW

HWY. 103
THERMOPLASTIC PAVEMENT MARKINGS

TAYLOR RD. TO STREET LT.
CONTINUOUS LT. TURN LANE - 1643 LIN.FT. 4" YELLOW

RAISED PAVEMENT MARKERS TYPE II 80' O.C.
ON CONT.LT.TURN LANE - 10 EACH (YELLOW/YELLOW)

r080340_MOT.dgn mot sheets 7/19/12

MAINTENANCE OF TRAFFIC
STAGE 3

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.		080340	29	187

(2) QUANTITIES

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	STAGE 3	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS		THERMOPLASTIC PAVEMENT MARKINGS						REFLECTORIZED PAINT PAVEMENT MARKINGS		HIGH PERFORMANCE CONTRAST PAVEMENT MARKING		HIGH PERFORMANCE PAVEMENT MARKING
								TYPE II (WHITE/RED)	TYPE II (YEL/YEL)	4" WHITE	4" YELLOW	8" WHITE	12" WHITE	WORDS	ARROWS	10" WHITE	10" YELLOW	4" WHITE	4" YELLOW	4" WHITE
	LIN. FT. - EACH			LIN. FT.		LIN. FT.		EACH		LIN. FT.				EACH		LIN. FT.		LIN. FT.		LIN. FT.
REMOVAL OF PERMANENT PAVEMENT MARKINGS		7478	528	8006																
CONSTRUCTION PAVEMENT MARKINGS	20884	1206			22090															
REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS			1030			1030														
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS		1126					1126													
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED)			69					69												
RAISED PAVEMENT MARKERS TYPE II (YEL/YEL)			77						77											
THERMOPLASTIC PAVEMENT MARKINGS WHITE (4")			3114							3114										
THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4")			5888								5888									
THERMOPLASTIC PAVEMENT MARKINGS WHITE (8")			833									833								
THERMOPLASTIC PAVEMENT MARKINGS WHITE (12")			947										947							
THERMOPLASTIC PAVEMENT MARKINGS WORDS			8											8						
THERMOPLASTIC PAVEMENT MARKINGS ARROWS			8												8					
REFLECTORIZED PAINT PAVEMENT MARKINGS WHITE (10")			600													600				
REFLECTORIZED PAINT PAVEMENT MARKINGS YELLOW (10")			1037														1037			
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING WHITE (4")			110															110		
HIGH PERFORMANCE CONTRAST PAVEMENT MARKING YELLOW (4")			581																581	
HIGH PERFORMANCE PAVEMENT MARKING WHITE (4")			660																	660
TOTALS:				**8006**	**22090**	**1030**	**1126**	**69**	**77**	**3114**	**5888**	**833**	**947**	**8**	**8**	**600**	**1037**	**110**	**581**	**660**

NOTE: THIS IS A HIGH TRAFFIC VOLUME ROAD AS DEFINED IN SECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2003 EDITION.

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	STAGE 3	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		TRAFFIC DRUMS	PORTABLE CHANGEABLE MESSAGE SIGN	BARRICADES (TYPE III)		FURNISHING & INSTALLING PRECAST CONC. BARRIER	RELOCATING PRECAST CONCRETE BARRIER	TEMPORARY IMPACT ATTENUATION BARRIER	TEMP. IMPACT ATTEN.BARR. (REPAIR)	ADVANCE WARNING ARROW PANEL
											RIGHT	LEFT					
			LIN. FT. - EACH				NO.	SQ. FT.	EACH	WEEK	LIN. FT.				EACH		DAY
W20-1	ROAD WORK 1 MILE	48"x48"	4	4	4	4	4	64.0									
W20-1	ROAD WORK 1/2 MILE	48"x48"	4	4	4	4	4	64.0									
W20-1	ROAD WORK 1500 FT.	48"x48"	6	6	6	6	6	96.0									
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	2	2	2	32.0									
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	2	2	2	32.0									
W20-1	ROAD WORK AHEAD	48"x48"	7	7	7	7	7	112.0									
G20-2	END ROAD WORK	48"x24"	10	10	10	10	10	80.0									
W20-5	RT. LANE CLOSED AHEAD	48"X48"	3	3	3	3	3	48.0									
W20-5	RT. LANE CLOSED 1/2 MILES	48"X48"	2	2	2	2	2	32.0									
W20-5	RT. LANE CLOSED 1500 FT.	48"X48"	2	2	2	2	2	32.0									
R11-2	ROAD CLOSED	48"x30"	8	9		9	9	90.0									
OM-3L	OBJECT MARKER	12"x36"	8	8		8	8	24.0									
OM-3R	OBJECT MARKER	12"x36"	12	8		12	12	36.0									
W1-6	LARGE ARROW	48"x24"		1		1	1	8.0									
W1-6	LARGE ARROW	60"x30"	3	3	3	3	3	37.5									
W1-8	CHEVRONS	18"x24"															
R2-1	SPEED LIMIT (ADVISORY)	48"X60"	4	4	4	4	4	80.0									
R2-2	TRUCKS (ADVISORY)	48"x48"	2	2	2	2	2	32.0									
R2-5A	REDUCED SPEED AHEAD	48"X60"	2	2	2	2	2	40.0									
R4-1	DO NOT PASS	24"x30"	4	6	4	6	6	30.0									
R55-1	FINES DOUBLE IN WORK ZONES	36"X60"	4			4	4	60.0									
RSP-1	SHOULDER CLOSED	48"x30"	4	4	4	4	4	40.0									
W4-2 RT.	MERGE LEFT	48"x48"	2	2	2	2	2	32.0									
SPECIAL	MERGE NOW	48"x48"	1	1	1	1	1	16.0									
	ADVANCE WARNING ARROW PANEL		1	1	1	1											20
	TRAFFIC DRUMS		226	200	90	226			226								
	PORTABLE CHANGEABLE MESSAGE SIGN		2			2				130							
	TYPE III BARRICADE-LT. (8')			1		1						8					
	TYPE III BARRICADE-RT. (16')		4	3		4					64						
	TYPE III BARRICADE-LT. (16')		5	5		5						80					
	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		2609	340		2949							2949				
	RELOCATING PRECAST CONCRETE BARRIER			979	406	1385								1385			
	TEMPORARY IMPACT ATTENUATION BARRIER		1	3		3									3		
	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)					3										3	
TOTALS:								**1117.5**	**226**	**130**	**64**	**88**	**2949**	**1385**	**3**	**3**	**20**

NOTE: THIS IS A HIGH TRAFFIC VOLUME ROAD AS DEFINED IN SECTION 604.03, STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2003 EDITION.

NOTE: THE QUANTITY OF FRAFFIC DRUMS PROVIDED IS FOR ONE SIDE OF THE ROADWAY FOR THE FULL LENGTH OF THE JOB. HOWEVER, THE INSTALLATION OF TRAFFIC DRUMS SHALL NEVER EXCEED THE ACTUAL WORK AREA BY MORE THAN 1/4 MILES, UNLESS APPROVED BY THE ENGINEER.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-30-13

12/12/2012

R080340.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.		080340	30	187

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL						TEMPORARY EROSION CONTROL								
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	SOLID SODDING	TEMPORARY SEEDING	MULCH COVER	WATER	SAND BAG DITCH CHECKS (E-5)	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	LIN. FT.	LIN. FT.	CU.YD.	CU.YD.	CU. YD.
ENTIRE	PROJECT	STAGE 1 - CONSTRUCTION RT. SIDE	2.00	4.00	2.00	211.4	2.00	588				418	275	2577			106
ENTIRE	PROJECT	STAGE 2 - CONSTRUCTION LT. SIDE	1.20	2.40	1.20	129.2	1.20	543				286	275	1954			83
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.									3.00	3.00	61.2	100	50	500	222	222	242
TOTALS:			3.20	6.40	3.20	340.6	3.20	1131	3.00	3.00	61.2	804	600	5031	222	222	431

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

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

EARTHWORK

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT	* SOIL STABILIZATION
			CU. YD.		TON
ENTIRE	PROJECT	STAGE 1-MAIN LANES	1134	35034	
ENTIRE	PROJECT	STAGE 2-MAIN LANES	579	10411	
ENTIRE	PROJECT	APPROACHES		185	
99+54		CHANNEL CHANGE	165		
ENTIRE	PROJECT	BRIDGE EARTHWORK	1260		
		MARKET ST. TURNOUT		1280	
		EASTBOUND RAMPS TURNOUT	111	731	
		WESTBOUND RAMPS TURNOUT	684	45	
		TAYLOR RD. TURNOUT		40	
* ENTIRE	PROJECT	TO BE USED IF AND WHERE			100
		DIRECTED BY THE ENGINEER			
TOTALS:			3933	47726	100

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

REMOVAL AND DISPOSAL OF CULVERTS AND DROP INLETS

STATION	SIDE	DESCRIPTION	PIPE CULVERTS	DROP INLETS
			EACH	EACH
91+91	LT.	18" X 30' C.M. PIPE CULVERT	1	
96+36	RT.	18" X 24' C.M. PIPE CULVERT	1	
103+26	RT.	DROP INLET W/ PIPE OUTLET	1	1
103+64	RT.	DROP INLET W/ PIPE OUTLET	1	1
103+38	LT.	18" X 84' R.C. PIPE CULVERT	1	
104+88	LT.	18" X 46' C.M. PIPE CULVERT	1	
106+14	LT.	18" X 62' C.M. PIPE CULVERT	1	
109+89	RT.	DROP INLET W/ PIPE OUTLET	1	1
109+99	LT.	DROP INLET W/ PIPE OUTLET	1	1
112+86	RT.	DROP INLET W/ PIPE OUTLET	1	1
112+96	LT.	DROP INLET W/ PIPE OUTLET	1	1
TOTALS:			11	6

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

CLEARING AND GRUBBING

STATION	STATION	LOCATION	CLEARING	GRUBBING
			STATION	
93+00	103+00	MAIN LANES	10	10
TOTALS:			10	10

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	CONCRETE CURB	CURB AND GUTTER	CONCRETE ISLANDS	CONCRETE DRIVEWAYS	WALKS	CONC. PARAPET WALL	GUARDRAIL	IMPACT ATTENUATION BARRIER	CONC. PIER PROTECTION
			LIN. FT.	LIN. FT.	SQ. YD.	SQ. YD.	SQ. YD.	EACH	LIN. FT.	EACH	LIN. FT.
102+70	103+27	RT. SIDE HWY. 103 TO MARKET ST.		94			64				
103+61		LT. SIDE MARKET ST.		8							
104+71	105+00	LT. SIDE HWY. 103		54		42	19				
105+11	105+77	RT. SIDE HWY. 103	229		229						
105+94	106+00	RT. SIDE HWY. 103 EB RAMPS	620		138						
106+15	106+87	RT. SIDE HWY. 103	228		207						
108+18	110+32	LT. & RT. SIDE EXIST HWY. 103						2	400		
112+53	114+61	LT. & RT. SIDE EXIST HWY. 103						2	400		
115+38	116+08	RT. SIDE HWY. 103	252		303						
115+20	116+28	RT. SIDE HWY. 103 WB RAMPS	436		97						
116+48	117+29	RT. SIDE HWY. 103	204		152						
116+00	117+00	LT. SIDE HWY. 103				360	12				
106+67	117+83	LT. SIDE HWY. 103		116			77				
117+76	118+25	LT. SIDE HWY. 103				193					
118+25	118+90	LT. SIDE HWY. 103		70		176	31				
118+90	120+20	LT. SIDE HWY. 103		130			87				
120+20	120+72	LT. SIDE HWY. 103		86			20				
120+72	123+00	LT. SIDE HWY. 103		228			152				
117+75	119+30	RT. SIDE HWY. 103		186							
119+70	120+76	RT. SIDE HWY. 103		170			76				
120+76	121+40	RT. SIDE HWY. 103				165					
121+26	121+93	RT. SIDE HWY. 103		67			45				
121+93	122+19	RT. SIDE HWY. 102				72					
122+19	122+57	RT. SIDE HWY. 103		38			25				
122+57	122+77	RT. SIDE HWY. 103				60					
122+77	123+00	RT. SIDE HWY. 103		23			15				
3100+20	3101+50	LT. OF I-40							100		30
3100+40	3100+70	MEDIAN OF I-40								2	60
3097+80	3100+85	RT. OF I-40							275		30
TOTALS:			1969	1270	1126	1068	623	4	1175	2	120

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

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	LENGTH	"W"	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	WATER
			LIN. FT.	FEET	SQ. YD.	SQ. YD.	M. GAL.
109+91.53	110+52.37	TOP OF MSE WALL "A"	213.05	4	94.69		
109+91.53	110+52.37	FRONT OF MSE WALL "A"	211.50	8	188.00	47.00	0.59
112+04.03	112+64.72	TOP OF MSE WALL "B"	213.20	4	94.76		
112+04.03	112+64.72	FRONT OF MSE WALL "B"	211.00	8	187.56	46.89	0.59
TOTALS:					565.01	93.89	1.18

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

12/12/2012

R080340.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.		080340	31	187

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

CONCRETE COMBINATION CURB AND GUTTER

STATION	STATION	SIDE	DESCRIPTION	CONC. COMB. CURB AND GUTTER TYPE A (1' 6") LIN. FT.
99+16	103+16	LT.	ALONG HWY. 103	376
94+00	100+16	RT.	ALONG HWY. 103	616
100+16	100+76	RT.	HWY. 103 TO MARKET ST.	94
10+93	11+15	RT.	ALONG MARKET ST.	22
101+24	102+04	RT.	MARKET ST. TO HWY. 103	109
103+60	104+74	LT.	ALONG HWY. 103	90
102+04	104+33	RT.	ALONG HWY. 103	205
105+02	105+93	LT.	ALONG HWY. 103	79
104+33	105+76	RT.	HWY. 103 TO EB RAMP	243
106+13	107+70	RT.	EB RAMP TO HWY. 103	246
106+35	110+21	LT.	ALONG HWY. 103	358
107+70	110+04	RT.	ALONG HWY. 103	218
112+37	114+80	RT.	ALONG HWY. 103	219
112+54	116+13	LT.	ALONG HWY. 103	335
114+80	115+55	RT.	HWY. 103 TO WB RAMP	173
116+22	117+60	RT.	WB RAMP TO HWY. 103	182
116+65	117+72	LT.	ALONG HWY. 103	107
117+60	118+57	RT.	ALONG HWY. 103	89
118+57	119+29	RT.	HWY. 103 TO TAYLOR RD.	116
118+24	118+40	LT.	ALONG HWY. 103	16
118+88	119+46	LT.	ALONG HWY. 103	58
119+60	120+26	RT.	TAYLOR RD. TO HWY. 103	91
119+82	120+27	LT.	ALONG HWY. 103	45
120+72	123+00	LT.	ALONG HWY. 103	228
120+26	120+70	RT.	ALONG HWY. 103	44
121+22	121+88	RT.	ALONG HWY. 103	66
122+24	122+51	RT.	ALONG HWY. 103	27
122+83	123+00	RT.	ALONG HWY. 103	17
TOTAL:				4469

CONCRETE WALKS

STATION	STATION	SIDE	LOCATION	LENGTH LIN. FT.	CONCRETE WALKS SQ.YD.
99+16	101+54	LT.	ALONG HWY. 103	238	132
94+00	99+24	RT.	HWY. 103 TRANSITION	524	291
99+24	100+16	RT.	ALONG HWY. 103	92	51
100+16	100+63	RT.	RADIUS TO MARKET ST.	56	31
10+46	10+60	RT.	ALONG MARKET ST.	14	8
10+65	10+93	RT.	MARKET ST. TO WHEELCHAIR RAMP	28	16
10+93	11+15	RT.	ALONG MARKET ST.	22	12
10+65	10+83	LT.	MARKET ST. TO WHEELCHAIR RAMP		16
10+85	11+15	LT.	ALONG MARKET ST.	30	17
101+54	101+72	LT.	HWY. 103 TO WHEELCHAIR RAMP		12
101+77	102+00	LT.	HWY. 103 TO WHEELCHAIR RAMP		15
100+63	101+71	RT.	HWY. 103 TO WHEELCHAIR RAMP		8
101+76	102+04	RT.	HWY. 103 TO WHEELCHAIR RAMP		15
102+00	103+16	LT.	ALONG HWY. 103	116	64
102+04	104+33	RT.	ALONG HWY. 103	229	127
103+60	104+74	LT.	ALONG HWY. 103	114	63
104+33	105+20	RT.	ALONG HWY. 103		50
105+02	105+93	LT.	ALONG HWY. 103	91	51
106+35	110+21	LT.	ALONG HWY. 103	386	214
106+86	107+70	RT.	ALONG HWY. 103		50
107+70	110+04	RT.	ALONG HWY. 103	234	130
112+37	114+80	RT.	ALONG HWY. 103	243	135
112+54	116+13	LT.	ALONG HWY. 103	359	199
114+80	115+25	RT.	ALONG HWY. 103		19
116+65	117+72	LT.	ALONG HWY. 103	107	59
118+24	118+40	LT.	ALONG HWY. 103	16	9
117+09	117+60	RT.	ALONG HWY. 103	51	28
117+60	118+57	RT.	ALONG HWY. 103	97	54
118+57	118+84	RT.	ALONG HWY. 103	27	15
118+88	119+46	LT.	ALONG HWY. 103	58	32
119+97	120+26	RT.	ALONG HWY. 103		18
119+82	120+27	LT.	ALONG HWY. 103	45	25
120+26	120+70	RT.	ALONG HWY. 103	44	24
121+22	121+88	RT.	ALONG HWY. 103	66	37
122+24	122+51	RT.	ALONG HWY. 103	27	15
120+75	123+00	LT.	ALONG HWY. 103	225	125
122+83	123+00	RT.	ALONG HWY. 103	17	9
TOTAL:					2176

BENCH MARKS

STATION	LOCATION	BENCH MARKS EACH
99+54	LT. SIDE HWY. 103 HEADWALL	1
112+45	RT. SIDE HWY. 103 BRIDGE END	1
TOTAL:		2

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

SOIL LOG

STATION	LATITUDE DEG	LATITUDE MIN	LATITUDE SEC	LONGITUDE DEG	LONGITUDE MIN	LONGITUDE SEC	LOCATION	DEPTH FEET	LIQUID LIMIT	PLASTICITY INDEX	AASHTO CLASSIFICATION	COLOR
98+00	35	26	55.90	93	27	55.80	5' RT.	0-5	38	19	A-2-6(0)	BROWN
98+00	35	26	55.90	93	27	55.60	20' RT.	0-5	19	4	A-4(0)	BROWN
105+00	35	27	2.90	93	27	55.90	15' LT.	0-5	24	9	A-4(3)	BROWN
117+80	35	27	15.30	93	27	54.30	20'LT.	0-5	25	9	A-4(4)	BROWN
117+80	35	27	15.40	93	27	54.50	42' LT.	0-5	26	13	A-6(5)	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.

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT (CLASS III) 18" LIN. FT.	24" LIN. FT.	30" LIN. FT.	FLARED END SECTIONS FOR R.C. PIPE CULVERTS 18" EACH	24" EACH	30" EACH	DROP INLETS TYPE MO EACH	EXT. 4' EACH	EXT. 8' EACH	JUNCT. BOX ADJUSTED TO GRADE EACH	SPAN LIN. FT.	HEIGHT LIN. FT.	LENGTH LIN. FT.	CLASS S CONCRETE-ROADWAY CU.YD.	REINF. STEEL-ROADWAY (GRADE 60) POUND	UNCL.EXC. FOR STR.-ROADWAY CU.YD.	SOLID SODDING SQ.YD.	WATER M.GAL	STD. DWG. NOS.
99+45	DI ON RT. OVER RCB							1												FPC-9, FPC-9E, FPC-9M
99+45	DI ON LT. OVER RCB							1												FPC-9, FPC-9E, FPC-9M
101+50	DI ON LT. W/ RCP OUTLET & FES			16			1	1										13	0.16	FPC-9E, FPC-9M, FES-1, FES-2, PCC-1
101+65	DI W/ EXT.ON RT. W/ RCP OUTLET & FES	14			1			1	1									5	0.06	FPC-9E, FPC-9M, FES-1, FES-2, PCC-1
102+50	DI W/ EXT. ON RT. W/ RCP OUTLET & FES	12			1			1	1									5	0.06	FPC-9E, FPC-9M, FES-1, FES-2, PCC-1,
102+50	DI ON LT. W/ PIPE OUTLET			96				1												FPC-9E, FPC-9M, PCC-1
103+80	DI W/ EXT. ON LT W/ PIPE OUTLET	16		126				1	1											FPC-9E, FPC-9M, PCC-1
104+00	DI W/ EXT. ON RT. W/ RCP OUTLET & FES	12			1			1	1									5	0.06	FPC-9E, FPC-9M, FES-1, FES-2, PCC-1
105+15	DI W/ EXT. ON LT W/ PIPE OUTLET	22	131		1			1	1									5	0.06	FPC-9E, FPC-9M, FES-1, FES-2, PCC-1
106+45	DI W/ EXT. ON LT W/ PIPE OUTLET		164			1		1	1									8	0.10	FPC-9E, FPC-9M, FES-1, FES-2, PCC-1
107+70	DI ON RT. W/ RCP OUTLET & FES	12			1			1										5	0.06	FPC-9E, FPC-9M, FES-1, FES-2, PCC-1
109+00	DI W/ EXT. ON RT. W/ RCP OUTLET & FES	12			1			1		1								5	0.06	FPC-9E, FPC-9M, FES-1, FES-2, PCC-1
109+00	DI W/ EXT. ON LT W/ PIPE OUTLET	251						1		1										FPC-9E, FPC-9M, PCC-1
113+50	DI W/ EXT. ON RT. W/ RCP OUTLET & FES	12			1			1	1									5	0.06	FPC-9E, FPC-9M, FES-1, FES-2, PCC-1
113+50	DI W/ EXT. ON LT. W/ RCP OUTLET & FES	20			1			1	1									5	0.06	FPC-9E, FPC-9M, FES-1, FES-2, PCC-1
114+80	DI W/ EXT. ON RT. W/ RCP OUTLET & FES	12			1			1	1									5	0.06	FPC-9E, FPC-9M, FES-1, FES-2, PCC-1
116+00	DI W/ EXT. ON LT. W/ RCP OUTLET & FES	14			1			1	1									5	0.06	FPC-9E, FPC-9M, FES-1, FES-2, PCC-1
118+25	DI ON RT. W/ RCP OUTLET & FES	6			1			1										5	0.06	FPC-9E, FPC-9M, FES-1, FES-2, PCC-1
121+27	ADJUST JB ON RT. TO GRADE										1									FPC-9S
SUBTOTALS:		415	295	238	11	1	1	18	10	2	1							76	0.92	
	STRUCTURES OVER 20' - 0" SPAN																			
99+54	EXTEND RC BOX CULVERT 30' LT. &											10	10	58	212.01	23817	90	37	0.47	R-200X-X2, R-215X-2, W-X003-2, W-X15,
	28' RT. @ 15^ RT. FWD SKEW																			W-X153-2, RCB-1, RCB-2, RCB-4
SUBTOTALS:															212.01	23817	90	37	0.47	
TOTALS:		415	295	238	11	1	1	18	10	2	1				212.01	23817	90	113	1.39	

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.

12/12/2012

R080340.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.		080340	32	187

(2) QUANTITIES

STATE OF ARKANSAS, REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
10-23-13

ACHM PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE	20
DIRECTED BY THE ENGINEER	
TOTAL:	20

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

ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	TON	TACK COAT
		GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	15	30
DIRECTED BY THE ENGINEER		
TOTALS:	15	30

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

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT PAVEMENT
			FEET	SQ. YD.
94+50	95+50	HWY. 103	22	244.44
122+00	123+00	HWY. 103	35	388.89
3111+00	3112+00	EB ENTRANCE RAMP	15	166.67
3111+00	3112+00	EB EXIT RAMP	15	166.67
3105+50	3106+50	WB ENTRANCE RAMP	15	166.67
3100+50	3101+50	WB EXIT RAMP	15	166.67
TOTAL:				1300.01

NOTE: AVERAGE MILLING DEPTH 1".

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)	SIDE DRAINS
										18"
			FEET	STATION	STATION	SQ. YD.	SQ. YD.	TON	TON	LIN. FT.
91+90	LT.	HWY. 103	16				56.0	6.2	22.9	28
103+38	LT.	HWY. 103	32	103+08	103+68	39.10	85.3	9.4	34.8	
104+88	LT.	HWY. 103	16	104+66	105+10	87.10				
106+14	LT.	HWY. 103	30	105+85	106+43	37.30	146.7	16.1	59.9	
116+39	LT.	HWY. 103	40	116+05	116+73	277.30				
117+98	LT.	HWY. 103	40	117+64	118+32	250.60				
118+64	LT.	HWY. 103	36	118+32	118+96	210.70				
119+64	LT.	HWY. 103	24	119+38	119+90	32.00	104.0	11.4	42.5	
120+51	LT.	HWY. 103	36	120+19	120+83	42.70	148.0	16.3	60.4	
120+98	RT.	HWY. 103	40	120+64	121+32	108.40				
122+06	RT.	HWY. 103	24	121+80	122+32	32.00	45.3	5.0	18.5	
122+67	RT.	HWY. 103	20	122+43	122+91	66.20				
* ENTIRE PROJECT TEMPORARY DRIVES									100.0	
TOTALS:						1183.40	585.3	64.4	339.0	28

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

* 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.

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.

RETAINING WALLS

LOCATION	DESCRIPTION	UNCLASSIFIED EXCAVATION	SELECT GRANULAR BACKFILL	RETAINING WALL	TEXTURED COATING FINISH
		CU.YDS.	CU.YDS.	SQ.FT.	SQ.YD.
BRIDGE ENDS	WALL A & B	2100	2700	5500	500
TOTALS:		2100	2700	5500	500

CONCRETE BASE

STATION	STATION	LOCATION	LENGTH	PORTLAND CEMENT CONCRETE BASE		
				AVG. WID.	6.5" U.T.	7" U.T.
			FEET	FEET	SQ. YD.	SQ. YD.
95+75.00	108+00.00	MAIN LANES	1225.00	2.5		340.3
113+50.00	115+90.21	MAIN LANES	240.21	2.5		66.7
115+90.21	121+30.00	MAIN LANES	539.79	2.5		149.9
121+30.00	122+00.00	LT. OF MAIN LANES	170.00	2.5		47.2
121+30.00	122+00.00	RT. OF MAIN LANES	170.00	1.1		20.8
121+30.00	122+00.00	RT. OF MAIN LANES	170.00	3.6	68.0	
TOTALS:					68.0	624.9

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF	
AND WHERE DIRECTED BY THE	80
ENGINEER	
TOTAL:	80

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

CONCRETE ISLAND

STATION	STATION	LOCATION	CURB FACE TYPE	CONCRETE ISLAND
				SQ.YD.
105+19	105+72	RT. SIDE HWY. 103	C	122
106+14	106+87	RT. SIDE HWY. 103	C	259
10+53	13+34	MEDIAN EASTBOUND RAMPS	B	125
115+46	116+02	RT. SIDE HWY. 103	C	160
3097+79	3099+70	MEDIAN WESTBOUND RAMPS	B	83
TOTAL:				749

4" PIPE UNDERDRAIN

STATION	STATION	LOCATIONS	4" PIPE UNDERDRAINS	UNDERDRAIN OUTLET PROTECTORS
			LIN. FT.	EACH
* ENTIRE PROJECT TO BE USED IF AND			1000	6
WHERE DIRECTED BY THE ENGINEER				
TOTALS:			1000	6

* NOTE: QUANTITIES ARE 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.

FLOWABLE SELECT MATERIAL

STATION	LOCATION	CU. YD.
110+13	HWY. 103	34
112+45	HWY. 103	34
TOTAL:		68

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE A)
			LIN. FT.
104+30	105+32	RT. SIDE HWY. 103	143
TOTALS:			143

WHEELCHAIR RAMPS

STATION	LOCATION	TYPE 3
		SQ.YD.
10+63	RT. SIDE MARKET ST.	8.9
10+63	LT. SIDE MARKET ST.	8.6
101+73	LT. SIDE HWY. 103	10.5
101+76	RT. SIDE HWY. 103	8.7
105+22	RT. SIDE HWY. 103	8.6
105+34	RT. SIDE HWY. 103	6.1
10+40	RT. SIDE EB RAMPS	6.2
10+40	LT. SIDE EB RAMPS	6.1
106+65	RT. SIDE HWY. 103	6.1
106+81	RT. SIDE HWY. 103	6.1
115+25	RT. SIDE HWY. 103	7.3
115+56	RT. SIDE HWY. 103	6.9
116+95	RT. SIDE HWY. 103	8.2
117+00	RT. SIDE HWY. 103	6.6
118+97	RT. SIDE HWY. 103	8.1
119+84	RT. SIDE HWY. 103	7.8
TOTAL:		120.8

12/12/2012

R080340.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.		080340	33	187

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT				ACHM BINDER COURSE (1")					ACHM SURFACE COURSE (1/2")											
				TON / STATION	TON	AVG. WID.	SQ.YD.	GALLONS / SQ.YD.	GALLON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 70-22	PG 76-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 70-22	PG 76-22	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 70-22	PG 76-22	TOTAL PG 70-22	TOTAL PG 76-22
			FEET			FEET				FEET			TON	TON	FEET			TON	TON	FEET			TON	TON	TON	TON
MAIN LANES																										
91+00	94+00	OPEN SHOULDER - 2 LANE VAR. WIDTH	300.00	240.75	722.3	20.9	696.7	0.03	20.9	10.7	356.7	495.0	88.3		10.2	340.0	220.0	37.4		45.7	1523.3	220.0	167.6		205.0	
94+00	94+81.37	OPEN SHOULDER - 3 LANE VAR. WIDTH	81.37	186.25	151.6	33.8	305.6	0.03	9.2	16.9	152.8	495.0	37.8		16.9	152.8	220.0	16.8		45.3	409.6	220.0	45.1		61.9	
94+81.37	95+75	CURB & GUTTER - 5 LANE VAR. WIDTH	93.63	136.00	127.3	50.0	520.2	0.03	15.6	25.0	260.1	495.0	64.4		25.0	260.1	220.0	28.6		53.3	554.5	220.0	61.0		89.6	
95+75.00		MARKET ST. RELOCATION		VAR.	285.4	VAR.	1405.7	0.03	42.2	VAR.	702.9	495.0	174.0		VAR.	702.9	220.0	77.3		VAR.	702.9	220.0	77.3		154.6	
95+75	108+00.00	CURB & GUTTER -5 LANE NOTCH AND WIDEN	1225.00	195.25	2391.8	81.2	11052.2	0.03	331.6	40.6	5526.1	495.0	1367.7		40.6	5526.1	220.0	607.9		56.0	7622.2	220.0	838.4		1446.3	
108+00.00	110+12.93	CURB & GUTTER - 5 LANE FULL DEPTH	212.93	276.75	589.3	112.0	2649.8	0.03	79.5	56.0	1324.9	495.0	327.9		56.0	1324.9	220.0	145.7		56.0	1324.9	220.0	145.7		291.4	
112+45.20	113+50.00	CURB & GUTTER - 5 LANE FULL DEPTH	104.80	276.75	290.0	112.0	1304.2	0.03	39.1	56.0	652.1	495.0	161.4		56.0	652.1	220.0	71.7		56.0	652.1	220.0	71.7		143.4	
113+50.00	115+90.21	CURB & GUTTER -5 LANE NOTCH AND WIDEN	240.21	195.25	469.0	81.2	2167.2	0.03	65.0	40.6	1083.6	495.0	268.2		40.6	1083.6	220.0	119.2		56.0	1494.6	220.0	164.4		283.6	
115+90.21	121+30	CURB & GUTTER - 5 LANE NOTCH AND WIDEN SUPER	539.79	145.38	784.7	126.2	7569.1	0.03	227.1	40.6	2435.1	495.0	602.7		40.6	2435.1	220.0	267.9		45.0	2699.0	220.0	296.9		564.8	
121+30	123+00	CURB & GUTTER - 3 LANE NOTCH AND WIDEN SUPER	170.00			32.9	621.4	0.03	18.6											34.0	642.2	220.0	70.6		70.6	
3098+20.00	3100+20.00	I-40 EB EXIT RAMP	200.00	113.50	227.0	12.4	275.6	0.03	8.3	6.3	140.0	495.0		34.7	6.1	135.6	220.0		14.9	9.0	200.0	220.0		22.0		36.9
3100+20.00	3102+71.37	I-40 EB EXIT RAMP	251.37	140.75	353.8	24.8	692.7	0.03	20.8	12.5	349.1	495.0		86.4	12.3	343.5	220.0		37.8	18.0	502.7	220.0		55.3		93.1
												495.0														
3097+38.88	3098+20.83	WB EXIT RAMP - RADIUS WIDENING SECTION	81.95	VAR.	49.3	VAR.	717.7	0.03	21.5	VAR.	152.8	495.0	37.8		VAR.	152.8	220.0	16.8		VAR.	412.0	220.0	45.3		62.1	
3098+20.83	3099+06.54	WB EXIT RAMP - NORMAL SECTION	85.71	127.00	108.9	48.8	464.7	0.03	13.9	9.5	90.5	495.0	22.4		9.3	88.6	220.0	9.7		30.0	285.7	220.0	31.4		41.1	
3099+06.54	3101+54.24	WB EXIT RAMP - SINGLE LANE TO 2 LANES TAPER SECTION	247.70	63.50	157.3	34.9	960.5	0.03	28.8	4.8	132.1	495.0	32.7		4.6	126.6	220.0	13.9		25.5	701.8	220.0	77.2		91.1	
3107+61.17	3109+01.32	WB ENTRANCE RAMP - RADIUS WIDENING SECTION	140.15	VAR.	41.6	VAR.	1060.4	0.03	31.8	VAR.	181.2	495.0	44.8		VAR.	181.2	220.0	19.9		VAR.	697.9	220.0	76.8		96.7	
3105+47.64	3107+61.17	WB ENTRANCE RAMP - NORMAL SECTION	213.53	22.50	48.0	15.0	355.9	0.03	10.7											21.0	498.2	220.0	54.8		54.8	
3112+71.99	3114+36.69	EASTBOUND EXIT RAMP - NORMAL SECTION	164.70	22.50	37.1	15.0	274.5	0.03	8.2											21.0	384.3	220.0	42.3		42.3	
3111+27.21	3112+71.99	EASTBOUND EXIT RAMP - RADIUS WIDENING SECTION	144.78	VAR.	84.7	VAR.	1413.4	0.03	42.4	VAR.	311.1	495.0	77.0		VAR.	311.1	220.0	34.2		VAR.	791.2	220.0	87.0		121.2	
3111+02.29	3112+51.40	EASTBOUND ENTRANCE RAMP - NORMAL SECTION	149.11	22.50	33.5	15.0	248.5	0.03	7.5											21.0	347.9	220.0	38.3		38.3	
3112+51.40	3114+08.67	EASTBOUND ENTRANCE RAMP - RADIUS WIDENING SECTION	157.27	VAR.	123.4	VAR.	1896.8	0.03	56.9	VAR.	481.1	495.0	119.1		VAR.	481.1	220.0	52.9		VAR.	934.5	220.0	102.8		155.7	
ADDITIONAL FOR LEVELING																										
91+00	108+00	MAIN LANES	1700.00			VAR.	3777.8	0.10	377.8											VAR.	VAR.	VAR.	1162.3		1162.3	
113+50	122+00	MAIN LANES	850.00			VAR.	2550.0	0.10	255.0											VAR.	VAR.	VAR.	778.1		778.1	
3097+38.88	3101+54.24	WB EXIT RAMP	415.36			15.0	692.3	0.10	69.2											15.0	115.3	VAR.	77.2		77.2	
3105+47.64	3109+01.32	WB ENTRANCE RAMP	353.68			15.0	589.5	0.10	59.0											15.0	98.3	VAR.	106.9		106.9	
3111+27.21	3114+36.69	EASTBOUND EXIT RAMP	309.48			15.0	515.8	0.10	51.6											15.0	86.0	VAR.	148.5		148.5	
3111+02.29	3114+08.67	EASTBOUND ENTRANCE RAMP	306.38			15.0	510.6	0.10	51.1											15.0	85.2	VAR.	49.5		49.5	
TOTALS:					7076.0		45288.8		1963.3		14332.2		3426.2	121.1		14298.1		1519.9	52.7		23766.3		4817.1	77.3	6337.0	130.0

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.7% MIN. AGGR.....5.3% ASPHALT BINDER
ACHM BINDER COURSE (1").....96.0% MIN. AGGR.....4.0% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 160 FOR PG 70-22
MAXIMUM NUMBER OF GYRATIONS = 205 FOR PG 76-22

12/12/2012

R080340.DGN

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		080340	34	187
① 07270 -		QUANTITIES	- 53346	

SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 080340

BRIDGE NO. / CODE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	205	801	SP & 802	SP & 802	803	SS & 804	SS & 804	805 ①	806	SP & 807	807 ②	808	812	816	SP JOB 080340	SP JOB 080340
		ITEM	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO._)	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	CLASS S CONCRETE-BRIDGE	CLASS S(AE) CONCRETE-BRIDGE	CLASS I PROTECTIVE SURFACE TREATMENT	REINFORCING STEEL-BRIDGE (GRADE 60)	EPOXY COATED REINFORCING STEEL (GRADE 60)	STEEL PILING (HP 12X53)	METAL BRIDGE RAILING (TYPE H)	STRUCTURAL STEEL IN PLATE GIRDER SPANS (M 270, GRADE 50)	PAINTING STRUCTURAL STEEL	ELASTOMERIC BEARINGS	BRIDGE NAME PLATE (TYPE D)	CONCRETE RIPRAP	TEXTURED COATING FINISH	ARCHITECTURAL FINISH
		UNIT	LUMP SUM	CU.YD.	CU.YD.	CU.YD.	GAL.	LB.	LB.	LIN.FT.	LIN.FT.	LB.	TON	CU.IN.	EACH	CU.YD.	SQ.YD.	SQ.FT.
07270 / X771 / HWY. 103 OVER I-40	BENT NO. 1			11	76.03		0.2	8,943		270		1,385	0.7	3,315.0		4	48	258
	BENT NO. 2				119.33			17,415						6,216.0			279	1,613
	BENT NO. 3			8	75.24		0.2	8,892		252		1,385	0.7	3,315.0		4	47	258
	230'-0" CONT. COMP. PLATE GIRDER UNIT					559.00	36.5		118,360		448	497,260	248.6		1		534	920
SITE NO. 1 (BR. NO. 03812)			1															
TOTALS FOR JOB NO. 080340				19	270.60	559.00	36.9	35,250	118,360	522	448	500,030	250.0	12,846.0	1	8	908	3,049

BRIDGE NO. / CODE NO. / NAME PLATE TITLE	UNIT OF STRUCTURE	ITEM NO.	SP JOB 080340	SP JOB 080340	SP JOB 080340	SP JOB 080340	SP JOB 080340
		ITEM	SHORING	TRANSITIONAL APPROACH RAILING	SILICONE JOINT SEALANT	DRILLED SHAFT (78" DIA.)	PERMANENT STEEL CASING (78" DIA.)
		UNIT	LUMP SUM	EACH	LIN.FT.	LIN.FT.	LIN.FT.
07270 / X771 / HWY. 103 OVER I-40	BENT NO. 1			2			
	BENT NO. 2					135	70
	BENT NO. 3			2			
	230'-0" CONT. COMP. PLATE GIRDER UNIT				156		
SITE NO. 1 (BR. NO. 03812)							
TOTALS FOR JOB NO. 080340			1	4	156	135	70

① These steel piles are required to have special driving points which will not be paid for directly, but will be considered subsidiary to the item "Steel Piling (HP12x53)".

② The color of paint shall conform to Federal Std. 595B, Color Chip No. 20059, Brown.

STEWART LINZ
DESIGN SECTION SUPERVISOR

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. FUSELIER
2/7/13

BRIDGE ENGINEER

SCHEDULE OF BRIDGE QUANTITIES
S. H. 103 OVER I-40
MARKET ST. - I-40 WB RAMPS (CLARKSVILLE)(S)
JOHNSON COUNTY

ROUTE 103 SEC. 0

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: 11/28/12 FILENAME: b080340_ql.dgn
CHECKED BY: RBR DATE: 2/1/13 SCALE: No Scale
DESIGNED BY: - DATE: -

BRIDGE NO. 07270 DRAWING NO. 53346

PRINT DATE: 2/1/2013

SUMMARY OF QUANTITIES (BOX 1 OF 2)

ITEM NUMBER	ITEM		QUANTITY	UNIT
201	CLEARING		10	STATION
201	GRUBBING		10	STATION
202	REMOVAL AND DISPOSAL OF CONCRETE CURB		1969	LIN. FT.
202	REMOVAL AND DISPOSAL OF CURB AND GUTTER		1270	LIN. FT.
202	REMOVAL AND DISPOSAL OF CONCRETE ISLANDS		1126	SQ. YD.
202	REMOVAL AND DISPOSAL OF CONCRETE DRIVEWAYS		1068	SQ. YD.
202	REMOVAL AND DISPOSAL OF WALKS		623	SQ. YD.
202	REMOVAL AND DISPOSAL OF CONCRETE PARAPET WALL		4	EACH
202	REMOVAL AND DISPOSAL OF DROP INLETS		6	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS		11	EACH
202	REMOVAL AND DISPOSAL OF GUARDRAIL		1175	LIN. FT.
SP	REMOVAL AND DISPOSAL OF IMPACT ATTENUATION BARRIER		2	EACH
202	REMOVAL AND DISPOSAL OF CONCRETE PIER PROTECTION		120	LIN. FT.
206	FLOWABLE SELECT MATERIAL		68	CU. YD.
210	UNCLASSIFIED EXCAVATION		6033	CU. YD.
210	COMPACTED EMBANKMENT		47726	CU. YD.
SP & 210	SOIL STABILIZATION		100	TON
SS & 303	AGGREGATE BASE COURSE (CLASS 7)		7415	TON
309	PORTLAND CEMENT CONCRETE BASE (6 1/2" UNIFORM THICKNESS)		68	SQ. YD.
309	PORTLAND CEMENT CONCRETE BASE (7" UNIFORM THICKNESS)		625	SQ. YD.
401	TACK COAT		1993	GAL.
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")		3405	TON
SP, SS, & 406	ASPHALT BINDER (PG 70-22) IN ACHM BINDER COURSE (1")		137	TON
SP, SS, & 406	ASPHALT BINDER (PG 76-22) IN ACHM BINDER COURSE (1")		5	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		6185	TON
SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")		3	TON
SP, SS, & 407	ASPHALT BINDER (PG 70-22) IN ACHM SURFACE COURSE (1/2")		336	TON
SP, SS, & 407	ASPHALT BINDER (PG 76-22) IN ACHM SURFACE COURSE (1/2")		7	TON
412	COLD MILLING ASPHALT PAVEMENT		1300	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC		15	TON
SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY		20	TON
505	PORTLAND CEMENT CONCRETE DRIVEWAY		1183.40	SQ. YD.
601	MOBILIZATION		1.00	LUMP SUM
SP & 602	FURNISHING FIELD OFFICE		1	EACH
SP, SS, & 603	MAINTENANCE OF TRAFFIC		1.00	LUMP SUM
SS & 604	SIGNS		1118	SQ. FT.
SS & 604	BARRICADES		152	LIN. FT.
SS & 604	TRAFFIC DRUMS		226	EACH
SS & 604	FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER		2949	LIN. FT.
SS & 604	RELOCATING PRECAST CONCRETE BARRIER		1385	LIN. FT.
SS & 604	CONSTRUCTION PAVEMENT MARKINGS		22090	LIN. FT.
604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS		1126	LIN. FT.
604	REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS		1030	LIN. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS		8006	LIN. FT.
SS & 604	ADVANCE WARNING ARROW PANEL		20	DAY
SP, SS, & 604	PORTABLE CHANGEABLE MESSAGE SIGN		130	WEEK
605	CONCRETE DITCH PAVING (TYPE B)		565	SQ. YD.
SS & 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		415	LIN. FT.
SS & 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		295	LIN. FT.
SS & 606	30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)		238	LIN. FT.
SP,SS & 606	18" SIDE DRAIN		28	LIN. FT.
606	18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		11	EACH
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		1	EACH
606	30" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS		1	EACH
606	SELECTED PIPE BEDDING		80	CU. YD.
609	DROP INLETS (TYPE MO)		18	EACH
610	JUNCTION BOXES ADJUSTED TO GRADE		1	EACH
609	DROP INLET EXTENSIONS (4')		10	EACH
609	DROP INLET EXTENSIONS (8')		2	EACH
611	UNDERDRAIN OUTLET PROTECTORS		6	EACH
611	4" PIPE UNDERDRAINS		1000	LIN. FT.
619	WIRE FENCE (TYPE A)		143	LIN. FT.
620	LIME		6	TON
620	SEEDING		3.20	ACRE
SS & 620	MULCH COVER		6.20	ACRE
SS & 620	WATER		404.4	M.GAL.
621	TEMPORARY SEEDING		3.00	ACRE
621	SILT FENCE		5031	LIN. FT.
621	SAND BAG DITCH CHECKS		804	BAG
621	DROP INLET SILT FENCE		600	LIN. FT.
621	SEDIMENT BASIN		222	CU. YD.
621	OBLITERATION OF SEDIMENT BASIN		222	CU. YD.
621	SEDIMENT REMOVAL AND DISPOSAL		431	CU. YD.
623	SECOND SEEDING APPLICATION		3.20	ACRE
624	SOLID SODDING		1338	SQ. YD.
632	CONCRETE ISLAND		749	SQ. YD.
633	CONCRETE WALKS		2176	SQ. YD.
634	CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1' 6")		4469	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL		1.00	LUMP SUM
641	WHEELCHAIR RAMPS (TYPE 3)		121	SQ. YD.
SP & 701	SYSTEM LOCAL CONTROLLER TS 2-TYPE 2 (8 PHASES)		3	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)		38	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)		14	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (5 SECTION, 1 WAY)		1	EACH
SP & 707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED		8	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)		5655	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)		1494	LIN. FT.
708	TRAFFIC SIGNAL CABLE (12C/14 A.W.G.)		813	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)		1039	LIN. FT.
709	GALVANIZED STEEL CONDUIT (1.25")		60	LIN. FT.
709	GALVANIZED STEEL CONDUIT (2")		140	LIN. FT.
710	NON-METALLIC CONDUIT (1.25")		60	LIN. FT.
710	NON-METALLIC CONDUIT (2")		90	LIN. FT.
710	NON-METALLIC CONDUIT (3")		1231	LIN. FT.
SS & 711	CONCRETE PULL BOX (TYPE 2)		3	EACH
SS & 711	CONCRETE PULL BOX (TYPE 2 HD)		15	EACH
713	SPAN WIRE ASSEMBLY		2	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (22')		1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (24')		1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (36')		1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (42'-40')		1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (44')		1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (46')		3	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (54')		1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (56')		1	EACH
SS & 715	TRAFFIC SIGNAL PEDESTAL POLE WITH FOUNDATION		3	EACH
716	TREATED WOOD POLE (CLASS 2, 40')		8	EACH
SS & 718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10")		600	LIN. FT.
SS & 718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (10")		1037	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")		3114	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING WHITE (8")		833	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING WHITE (12")		947	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")		5888	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING (WORDS)		8	EACH
SS & 719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)		8	EACH
SP & 719	INVERTED PROFILE THERMOPLASTIC PAVEMENT MARKING WHITE (4")	(ALTERNATE NO. 1)	660	LIN. FT.
SP	HIGH PERFORMANCE MARKING TAPE WHITE (4")	(ALTERNATE NO. 2)	660	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING WHITE (4")	(ALTERNATE NO. 1)	110	LIN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE WHITE (4")	(ALTERNATE NO. 2)	110	LIN. FT.
SP & 719	INVERTED PROFILE THERMOPLASTIC CONTRAST PAVEMENT MARKING YELLOW (4")	(ALTERNATE NO. 1)	581	LIN. FT.
SP	HIGH PERFORMANCE CONTRAST MARKING TAPE YELLOW (4")	(ALTERNATE NO. 2)	581	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)		146	EACH
SP	STEEL BRIDGE MOUNTED SIGN STRUCTURE (BM-040-36-03)		1	EACH
SS & 725	GUIDE SIGN-OVERHEAD MOUNTED (DEMOUNTABLE LEGEND)		147	SQ. FT.

SUMMARY OF QUANTITIES

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11435 TERRY D. SMITH
11-14-13

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	080340	35	187

(2) SUMMARY OF QUANTITIES

SUMMARY OF QUANTITIES (BOX 2 OF 2)

ITEM NUMBER	ITEM	QUANTITY	UNIT
SS & 727	EXIT NUMBER PANEL (TYPE A)	20	SQ. FT.
SP & 733	VIDEO DETECTOR RELOCATION	5	EACH
733	VIDEO CABLE	5682	LIN. FT.
SP & 733	VIDEO DETECTOR (CLR)	30	EACH
SP & 733	VIDEO EDGE CARD EXTENDER	3	EACH
733	VIDEO MONITOR (CLR)	5	EACH
SP & 733	VEHICLE DETECTOR RACK (16 CHANNEL)	1	EACH
SP & 733	VEHICLE DETECTOR RACK (20 CHANNEL)	2	EACH
SP & 733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	10	EACH
SP	ANTENNA CABLE (TYPE 6)	220	LIN. FT.
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES	1989	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., EGC)	1426	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., EGC)	545	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.)	60	LIN. FT.
SP	EMERGENCY BACKUP LOCAL RADIO UNIT	1	EACH
SP	LOCAL RADIO WITH ANTENNA	2	EACH
SP	LUMINAIRE ASSEMBLY	10	EACH
SP	MASTER RADIO WITH ANTENNA	1	EACH
SP	MODEM, HARDENED (33.6K BAUD)	1	EACH
SP	ON-STREET MASTER CONTROLLER	1	EACH
SP	RELOCATION OF TRAFFIC SIGNAL HEAD	20	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	1.00	LUMP SUM
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	4	EACH
SP	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)	6	EACH
SP	18" STREET NAME SIGN	4	EACH
SP	TEMPORARY IMPACT ATTENUATION BARRIER	3	EACH
SP	TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)	3	EACH
SP	SELECT GRANULAR BACKFILL	2700	CU. YD.
SP	RETAINING WALL	5500	SQ. FT.
SP	TEXTURED COATING FINISH	500	SQ. YD.
	STRUCTURES OVER 20' SPAN		
205	REMOVAL OF EXISTING BRIDGE STRUCTURE (SITE NO. 1)	1.00	LUMP SUM
636	BRIDGE CONSTRUCTION CONTROL	1.00	LUMP SUM
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	19	CU. YD.
801	UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	90	CU. YD.
802	CLASS S CONCRETE-ROADWAY	212.01	CU. YD.
SP & 802	CLASS S CONCRETE-BRIDGE	270.60	CU. YD.
SP & 802	CLASS S(AE) CONCRETE-BRIDGE	559.00	CU. YD.
803	CLASS 1 PROTECTIVE SURFACE TREATMENT	36.9	GAL.
SS & 804	REINFORCING STEEL-ROADWAY (GRADE 60)	23817	POUND
SS & 804	REINFORCING STEEL-BRIDGE (GRADE 60)	35250	POUND
SS & 804	EPOXY COATED REINFORCING STEEL (GRADE 60)	118360	POUND
805	STEEL PILING (HP 12X53)	522	LIN. FT.
806	METAL BRIDGE RAILING (TYPE H)	448	LIN. FT.
SP & 807	STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270-GR50)	500030	POUND
807	PAINTING STRUCTURAL STEEL	250.0	TON
808	ELASTOMERIC BEARINGS	12846.0	CU. IN.
812	BRIDGE NAME PLATE (TYPE D)	1	EACH
816	CONCRETE RIPRAP	8	CU. YD.
SP	TEXTURED COATING FINISH	908	SQ. YD.
SP	ARCHITECTURAL FINISH	3049	SQ. FT.
SP	SHORING	1.00	LUMP SUM
SP	TRANSITIONAL APPROACH RAILING	4	EACH
SP	SILICONE JOINT SEALANT	156	LIN. FT.
SP	DRILLED SHAFT (78" DIAMETER)	135	LIN. FT.
SP	PERMANENT STEEL CASING (78" DIAMETER)	70	LIN. FT.

* DENOTES ALTERNATE BID ITEMS

REVISIONS

DATE	REVISION	SHEET NUMBER

SUMMARY OF QUANTITIES AND REVISIONS

STATE OF ARKANSAS
TRINITY D. SMITH
REGISTERED PROFESSIONAL ENGINEER
No. 11425
10-23-13

DATE REVISED	DATE PLANS	DATE REVISED	DATE PLANS	FEDERAL DIST. NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.		36	187

JOB NO. 080340

2 SUMMARY OF QUANTITIES AND REVISIONS

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	37	187

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

SURVEY CONTROL COORDINATES

Project Name: 080340
Date: 6/8/2011
Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	411808.8853	876360.6848	386.25	CTL	5/8" REBAR W/ 2" ALUMINUM CAP
2	411043.3797	876061.5592	370.85	CTL	5/8" REBAR W/ 2" ALUMINUM CAP
3	410926.8445	876390.3886	357.38	CTL	5/8" REBAR W/ 2" ALUMINUM CAP
4	410607.0057	876270.5986	357.96	CTL	5/8" REBAR W/ 2" ALUMINUM CAP
5	410808.5963	875671.9807	357.24	CTL	5/8" REBAR W/ 2" ALUMINUM CAP
6	413045.2512	877418.3398	460.26	CTL	5/8" REBAR W/ 2" ALUMINUM CAP RTK ELEV
7	410289.4335	876797.1708	357.53	CTL	5/8" REBAR W/ 2" ALUMINUM CAP
8	410052.6871	876185.1704	356.94	CTL	5/8" REBAR W/ 2" ALUMINUM CAP
9	409573.2939	875927.8177	355.67	CTL	5/8" REBAR W/ 2" ALUMINUM CAP
10	410383.7739	876021.2454	373.74	CTL	5/8" REBAR W/ 2" ALUMINUM CAP
100	414839.9016	877941.8038	443.63	GPS	AHTD GPS 360009 RTK ELEV
101	414966.2566	880978.6419	419.29	GPS	AHTD GPS 360011 RTK ELEV
910	414892.3356	880994.0279	420.26	BM	ALUM CAP IN SOUTHWEST CORNER OF HEADWALL
911	415033.2755	879237.2975	424.22	BM	CHISELED SQUARE IN SIDEWALK IN THE NORTHWEST CORNER OF THE INTERSECTION OF POPLAR AND CARTER STREET
912	414873.8356	877936.9388	443.53	BM	CHISELED SQUARE IN SIDEALK IN THE SOUTHEAST CORNER OF THE INTERSECTION OF HWY. 123 AND 103
913	412712.1466	877083.0306	463.04	BM	CHISELED SQUARE IN SOUTHWEST OF HWY. 103
914	410762.4813	876034.7249	379.33	BM	CHISELED SQUARE IN NW CRNR OF BRIDGE ON HWY. 103
915	410640.2415	876047.2511	358.67	BM	CHISELED SQUARE IN CONCRETE UNDER BRIDGE
1500	413045.2512	877418.3398	460.26	CTL	5/8" REBAR W/ 2" ALUMINUM CAP RTK ELEV
1501	412465.5896	876859.7406	458.95	CTL	5/8" REBAR W/ 2" ALUMINUM CAP RTK ELEV
1502	408886.0600	875901.1527	360.26	CTL	5/8" REBAR W/ 2" ALUMINUM CAP RTK ELEV
1503	408008.3449	875996.7069	389.00	CTL	5/8" REBAR W/ 2" ALUMINUM CAP RTK ELEV
1504	410001.7523	877471.6111	367.18	CTL	5/8" REBAR W/ 2" ALUMINUM CAP RTK ELEV
1505	409697.6903	878421.5513	377.48	CTL	5/8" REBAR W/ 2" ALUMINUM CAP RTK ELEV
1506	411117.8288	874923.1291	358.43	CTL	5/8" REBAR W/ 2" ALUMINUM CAP RTK ELEV
1507	411745.0188	873509.7370	356.43	CTL	5/8" REBAR W/ 2" ALUMINUM CAP RTK ELEV
1508	411450.1862	874189.1593	356.69	CTL	5/8" REBAR W/ 2" ALUMINUM CAP RTK ELEV

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).
ALL DISTANCES ARE GROUND.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 0.999919973 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME. s080340gi.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 - 0301-NORTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 360006 - 360011
CONVERGENCE ANGLE: 00-46-12 LEFT AT LT: 35-27-27.2 LG: 093-27-45.2
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

7/1/2013

R080340.DGN

SURVEY CONTROL DETAILS

HWY. 103 CONST

POINT NO.	TYPE	STATION	NORTHING	EASTING
8051	POB	80+28.29	407574.8107	876178.2134
8052	PC	84+48.04	407967.8612	876030.8865
8054	PT	92+42.56	408747.3414	875907.9756
8008	PC	99+94.84	409498.8322	875942.4407
8010	PT	104+04.98	409907.5206	875975.8729
8011	PC	116+81.62	411175.3733	876125.4237
8013	PT	122+18.80	411675.0455	876308.8388
8007	POE	123+63.12	411795.2672	876388.6720

PROP MARKET STREET

POINT NO.	TYPE	STATION	NORTHING	EASTING
8067	POB	10+00.00	409079.4331	875923.2061
8068	PC	11+13.67	409074.2256	876036.7518
8070	PT	15+86.49	409305.3964	876417.8974
8071	PC	18+66.24	409559.1446	876535.6791
8073	PT	23+37.39	409790.3883	876915.1593
8029	POE	24+17.97	409787.0323	876995.6643

EB ENTRANCE RAMP

POINT NO.	TYPE	STATION	NORTHING	EASTING
8058	POB	3110+99.19	410085.9670	875996.9217
8059	POE	3114+36.69	410059.4770	876333.3859

EB EXIT RAMP

POINT NO.	TYPE	STATION	NORTHING	EASTING
8014	POB	3098+20.00	410675.1801	875796.4537
8015	PC	3105+78.18	410373.5322	876492.0434
8017	PT	3110+18.23	410073.8468	876417.4734
8019	POE	3114+37.62	410106.7638	875999.3749

I-40 CL

POINT NO.	TYPE	STATION	NORTHING	EASTING
8020	POB	3098+18.21	410731.4685	875818.9125
8021	POE	3114+62.68	410077.2017	877327.6288

WB ENTRANCE RAMP

POINT NO.	TYPE	STATION	NORTHING	EASTING
8030	POB	3098+18.21	410785.6234	875842.3604
8031	PC	3101+36.09	410659.3189	876134.0760
8033	PT	3106+79.64	410980.5270	876319.7487
8034	POE	3109+28.64	411129.1565	876119.9722

WB EXIT RAMP

POINT NO.	TYPE	STATION	NORTHING	EASTING
8035	POB	3097+06.72	411152.5438	876122.7308
8036	PC	3099+71.99	410995.9134	876336.8226
8038	PT	3102+49.42	410777.9283	876502.0724
8039	PC	3103+65.13	410669.5602	876542.6312
8041	PT	3107+00.71	410420.1790	876756.7849
8042	PC	3109+99.44	410274.3877	877017.5269
8044	PT	3111+92.77	410188.7290	877190.7585
8045	POE	3113+62.69	410121.2165	877346.6868

SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TIMOTHY D. SMITH
10-23-13

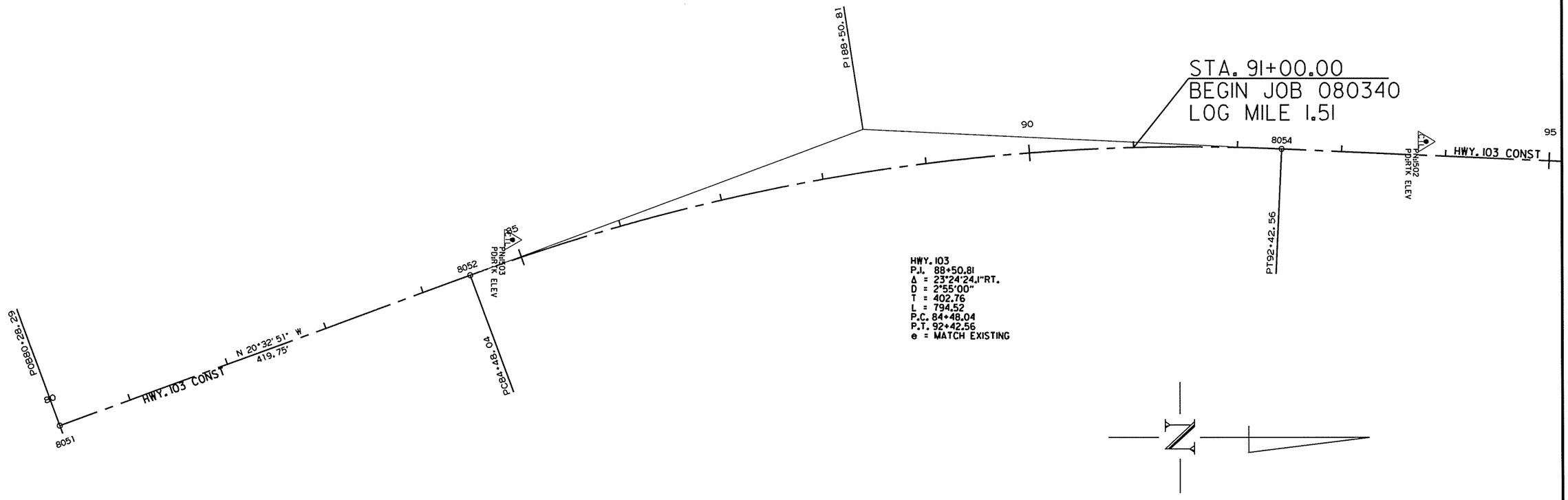
DATE REVISED	DATE PLANED	DATE REVISED	DATE PLANED	FEDERAL DET. NO.	STATE	FEDERAL PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.	080340	38	187

(2) 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.		080340	39	187

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13



SURVEY CONTROL DETAILS

7/1/2013

R080340.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.		080340	40	187

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
TRINITY D. SMITH
No. 11425
REGISTERED PROFESSIONAL ENGINEER
10-23-13

STA. 95+75 HWY. 103 =
STA. 10+00 MARKET ST.
RELOCATION
△ = 90°

STA. 105+84.67 ON HWY. 103
= STA. 3110+99.19
EB ENTRANCE RAMP
△ = 87°46'28"

STA. 106+05.61 ON HWY. 103
= STA. 3114+36.69
EB EXIT RAMP
△ = 92°13'32"

HIGHWAY 103
P.I. 102+00.00
Δ = 4°06'05.1"RT.
D = 1°00'00.00"
T = 205.16
L = 410.10
P.C. 99+94.84
P.T. 104+04.98
e = N.C.

EB EXIT RAMP
P.I. 3115+22.56
Δ = 161°03'26.2"RT.
D = 36°35'00"
T = 938.36
L = 440.05
P.C. 3105+78.18
P.T. 3110+18.23

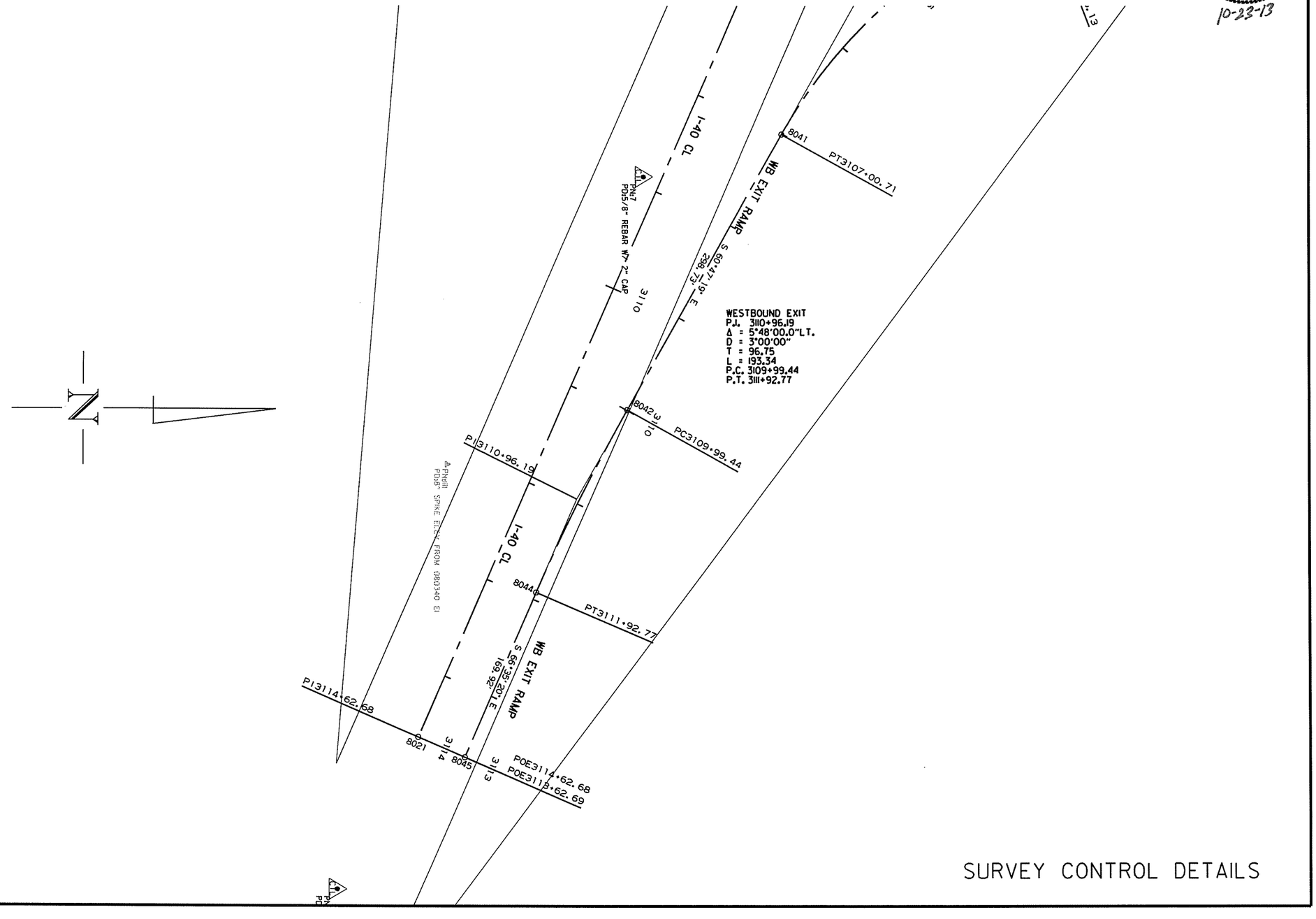
SURVEY CONTROL DETAILS

R080340.DGN 7/1/2013

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.		080340	41	187

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13



SURVEY CONTROL DETAILS

7/1/2013

R080340.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.		080340	42	187

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

STA. 111+90.83 HWY. 103
= STA. 3100+64.02
WB ENTRANCE RAMP
△=73°18'58"

STA. 116+58.64 HWY. 103
= STA. 3097+06.72
WB EXIT RAMP
△=60°32'17"

STA. 123+00.00
END JOB 080340

WESTBOUND ENTRANCE
P.I. 3117+45.55
Δ = 166°45'46.0"LT.
D = 30°40'50"
T = 1609.45
L = 543.55
P.C. 3101+36.09
P.T. 3106+79.64
e = MATCH EXIST.
Ls = MATCH EXIST.

WESTBOUND EXIT
P.I. 3101+14.74
Δ = 33°17'28.8"RT.
D = 12°00'00"
T = 142.75
L = 277.43
P.C. 3099+71.99
P.T. 3102+49.42
e = MATCH EXIST.
Ls = MATCH EXIST.

WESTBOUND EXIT
P.I. 3105+40.18
Δ = 40°16'09.8"LT.
D = 12°00'00"
T = 175.06
L = 335.58
P.C. 3103+65.13
P.T. 3107+00.71

HWY. 103
P.I. 119+55.24
Δ = 26°51'31.9"RT.
D = 5°00'00"
T = 273.62
L = 537.18
P.C. 116+81.62
P.T. 122+18.80
e = 0.061'/'
Ls = 360'

SURVEY CONTROL DETAILS

7/1/2013

R080340.DGN

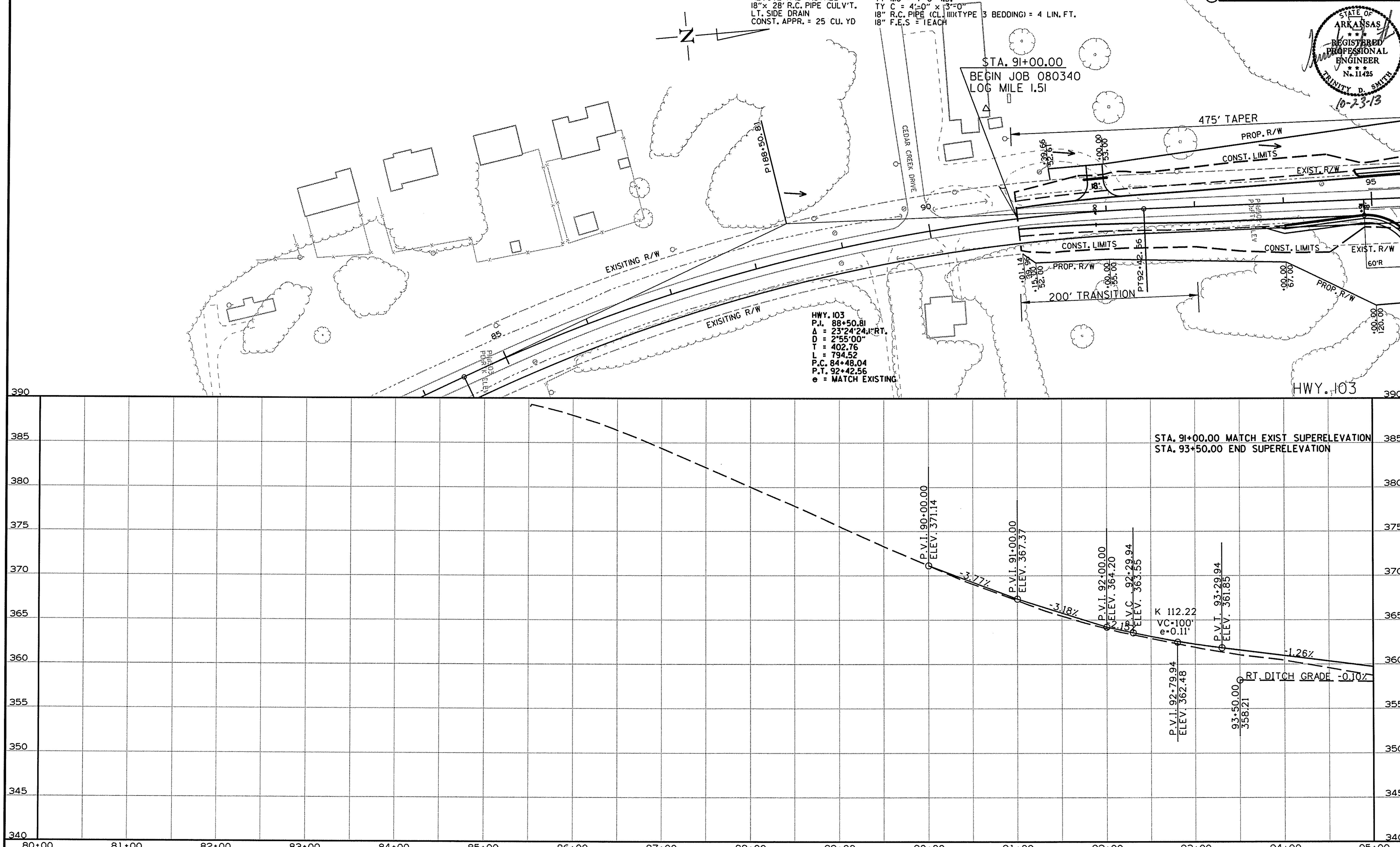
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	43	187

(2) PLAN & PROFILE - HWY. 103

STA. 91+90 LT.- IN PLACE
18" x 30' PIPE CULV'T.
LT. SIDE DRAIN
REMOVE AND INSTALL
18" x 28' R.C. PIPE CULV'T.
LT. SIDE DRAIN
CONST. APPR. = 25 CU. YD

STA. 97+00- CONSTRUCT
D.I. ON LT. (H = 2'-0")
W./ 4' EXTENSION AND
18" x 4' R.C. PIPE OUTLET W./ FES
TY MO = 4'-0" I.D.
TY C = 4'-0" x 3'-0"
18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 4 LIN. FT.
18" F.E.S = 1 EACH

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13



STA. 91+00.00
BEGIN JOB 080340
LOG MILE 1.51
475' TAPER
PROP. R/W
CONST. LIMITS
EXIST. R/W
CEDAR CREEK DRIVE
P.I. 88+50.81
EXISITING R/W
EXISITING R/W
CONST. LIMITS
PROP. R/W
200' TRANSITION
PT92+42.56
60'R
HWY. 103
P.I. 88+50.81
Δ = 23°24'24.1"RT.
D = 2°55'00"
T = 402.76
L = 794.52
P.C. 84+48.04
P.T. 92+42.56
e = MATCH EXISTING
HWY. 103
STA. 91+00.00 MATCH EXIST SUPERELEVATION
STA. 93+50.00 END SUPERELEVATION
P.V.I. 90+00.00
ELEV. 371.14
-3.77%
P.V.I. 91+00.00
ELEV. 367.37
-3.18%
P.V.I. 92+00.00
ELEV. 364.20
P.V.C. 92+29.94
ELEV. 363.55
K 112.22
VC=100'
e=0.11'
P.V.I. 92+79.94
ELEV. 362.48
P.V.T. 93+29.94
ELEV. 361.85
-1.26%
93+50.00
358.21
RT. DITCH GRADE -0.10%
80+00 81+00 82+00 83+00 84+00 85+00 86+00 87+00 88+00 89+00 90+00 91+00 92+00 93+00 94+00 95+00

11/2/12 plan and profile sheets
r080340.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.		080340	44	187

(2) PLAN & PROFILE - HWY. 103

HIGHWAY 103
P.I. 102+00.00
Δ = 4°06'05.1"RT.
D = 1°00'00.00"
T = 205.16
L = 410.10
P.C. 99+94.84
P.T. 104+04.98
e = N.C.

STA. 97+95- CONSTRUCT
D.I. ON LT. (H = 3'-0")
W./ 4' EXTENSION AND
18" x 8' R.C. PIPE OUTLET W./ FES
TY MO = 4'-0" I.D.
TY C = 4'-0" x 3'-0"
18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 8 LIN. FT.
18" F.E.S = 1 EACH

STA. 99+45- CONSTRUCT
D.I. ON LT. ON R.C. BOX CULVERT
(H = 8'-7")
TY MO = 4'-0" I.D.
TY C = 4'-0" x 3'-0

STA. 101+00- CONSTRUCT
D.I. ON LT. (H = 6'-0")
W./30" x 14' R.C. PIPE OUTLET W./ FES
TY MO = 5'-0" I.D.
TY C = 4'-0" x 4'-0"
30" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 14 LIN. FT.
30" F.E.S = 1 EACH

STA. 103+38 LT.- IN PLACE
18" x 84' R.C. PIPE CULV'T.
LT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 5' CU. YD.

STA. 99+54 - IN PLACE
DBL. 10' x 10' x 64' R.C. BOX CULV'T.
RETAIN AND EXTEND R.C. BOX 30' LT. AND
28' RT. @ 15° RT. FWD. SKEW
TO A COMPLETED LENGTH OF 122'
WITH 3:1 WINGS LT. & RT.
Q25 = 1491 CFS; D.A. = 1.82 SQ. MI.
CHANNEL CHANGE = 165 C.Y.

STA. 102+50- CONSTRUCT
D.I. ON LT. (H = 5'-2")
W./30" x 96' R.C. PIPE CULVERT
TO DROP INLET ON LT.
TY MO = 5'-0" I.D.
TY C = 4'-0" x 4'-0"
30" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 96 LIN. FT.

STA. 103+80- CONSTRUCT
D.I. ON LT. (H = 3'-6")
W./ 4' EXTENSION,
18" X 16' R.C. PIPE INLET
AND 30" x 126' R.C. PIPE CULVERT
TO DROP INLET ON LT.
TY MO = 5'-0" I.D.
TY C = 4'-0" x 4'-0"
18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 16 LIN. FT.
30" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 126 LIN. FT.

STA. 104+88 LT.- IN PLACE
18" x 46' C.M. PIPE CULV'T.
LT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 5 CU. YD.

STA. 106+45- CONSTRUCT
D.I. ON LT. (H = 9'-9")
W/ 4' EXTENSION,
24" X 38' R.C. PIPE INLET W/FES
AND 24" x 126' R.C. PIPE CULVERT
TO DROP INLET ON LT.
TY MO = 4'-0" I.D.
TY C = 4'-0" X 3'-0"
24" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 164 LIN. FT.
24" F.E.S. = 1 EACH

STA. 106+14 LT. - IN PLACE
18" x 62' C.M. PIPE CULV'T.
LT. SIDE DRAIN REMOVE &
CONSTR. APPR. = 10 CU. YD.

STA. 109+00- CONSTRUCT
D.I. ON LT. (H = 3'-6")
W./ 8' EXTENSION AND
18" x 251' R.C. PIPE CULVERT
TO DROP INLET ON LT.
TY MO = 4'-0" I.D.
TY C = 4'-0" x 3'-0"
18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 251 LIN. FT.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

475' TAPER

STA. 95+75 HWY. 103 =
STA. 10+00 MARKET ST. RELOCATION
Δ = 90°

STA. 106+05.61 ON HWY. 103
= STA. 3114+36.69 EB EXIT RAMP
Δ = 92°13'32"

STA. 105+84.67 ON HWY. 103
= STA. 3110+99.19 EB ENTRANCE RAMP
Δ = 87°46'28"

STA. 95+37 - IN PLACE
18" x 24' C.M. PIPE CULV'T.
RT. SIDE DRAIN
REMOVE

STA. 95+75 - CONSTRUCT
TURNOUT RT. FOR
MARKET ST. RELOCATION
= 1280 C.Y.

STA. 96+36 RT.- IN PLACE
18" x 24' C.M. PIPE CULV'T.
RT. SIDE DRAIN REMOVE.

STA. 97+95- CONSTRUCT
D.I. ON RT. (H = 3'-0")
W./ 4' EXTENSION AND
18" x 8' R.C. PIPE OUTLET W./ FES
TY MO = 4'-0" I.D.
TY C = 4'-0" x 3'-0"
18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 8 LIN. FT.
18" F.E.S = 1 EACH

STA. 99+45- CONSTRUCT
D.I. ON RT. ON R.C. BOX CULVERT
H = 8'-2"
TY MO = 4'-0" I.D.
TY C = 4'-0" x 3'-0"

STA. 101+00- CONSTRUCT
D.I. ON RT. (H = 3'-6")
W./4' EXTENSION AND
18" x 8' R.C. PIPE OUTLET W./ FES
TY MO = 4'-0" I.D.
TY C = 4'-0" x 3'-0"
18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 8 LIN. FT.
18" F.E.S = 1 EACH

STA. 102+50- CONSTRUCT
D.I. ON RT. (H = 3'-7")
W./4' EXTENSION AND
18" x 14' R.C. PIPE OUTLET W./ FES
TY MO = 4'-0" I.D.
TY C = 4'-0" x 3'-0"
18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 14 LIN. FT.
18" F.E.S = 1 EACH

STA.	STA.	LOCATION	FENCE (TYPE A)
104+30.00	105+31.83	RT. SIDE CL HWY. 103	143 LIN. FT.

STA. 107+70- CONSTRUCT
D.I. ON RT. H = 3'-6"
W./ 18" x 12' R.C. PIPE OUTLET W./ FES
TY MO = 4'-0" I.D.
TY C = 4'-0" x 3'-0"
18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 12 LIN. FT.
18" F.E.S = 1 EACH

STA. 106+10 RT.-CONSTR. APPR.
FOR EASTBOUND RAMP
= 840 CU. YD.

HWY. 103

SPECIAL FLOOD HAZARD AREA
STA. 96+00 TO STA. 112+80

FOR THE CONSTRUCTION OF TEMPORARY RAMPS OR HAUL ROADS, THIS STREAM IS CLASSIFIED AS AN INTERMITTENT STREAM. THE STREAM BANK ELEVATIONS ARE 342.0 FT.

STA. 97+00- CONSTRUCT
D.I. ON RT. (H = 2'-0")
W./ 4' EXTENSION AND
18" x 4' R.C. PIPE OUTLET W./ FES
TY MO = 4'-0" I.D.
TY C = 4'-0" x 3'-0"
18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 4 LIN. FT.
18" F.E.S = 1 EACH

STA. 104+00- CONSTRUCT
D.I. ON RT. H = 3'-6"
W./ 4' EXTENSION AND
18" x 12' R.C. PIPE OUTLET W./ FES
TY MO = 4'-0" I.D.
TY C = 4'-0" x 3'-0"
18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 12 LIN. FT.
18" F.E.S = 1 EACH

STA. 105+15- CONSTRUCT
D.I. ON LT. (H = 5'-9")
W./ 4' EXTENSION,
18" X 20' R.C. PIPE INLET W/FES
AND 24" x 131' R.C. PIPE CULVERT
TO DROP INLET ON LT.
TY MO 4'-0" I.D.
TY C = 4'-0" x 3'-0"
18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 20 LIN. FT.
18" F.E.S. = 1 EACH
24" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 131 LIN. FT.

STA. 109+00- CONSTRUCT
D.I. ON RT. H = 3'-6"
W./ 8' EXTENSION AND
18" x 12' R.C. PIPE OUTLET W./ FES
TY MO = 4'-0" I.D.
TY C = 4'-0" x 3'-0"
18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 12 LIN. FT.
18" F.E.S = 1 EACH

RT. DITCH GRADE -0.10%
-1.26%
0.13%
4.00%

P.V.C. 96+99.83
ELEV. 357.21
K 72.17
VC=100'
e=0.17'
P.V.T. 97+99.83
ELEV. 356.64
P.V.I. 97+49.83
ELEV. 356.58
95+50.00
358.00
P.V.C. 102+55.30
ELEV. 357.24
K 77.52
VC=300'
e=1.45'
P.V.I. 104+05.30
ELEV. 357.43
P.V.T. 105+55.30
ELEV. 363.43
K 76.92
VC=600'
e=5.85'
P.V.C. 108+52.00
ELEV. 375.30

SEE SHEET NO. 45
FOR DRAINAGE INFO

94+00 95+00 96+00 97+00 98+00 99+00 100+00 101+00 102+00 103+00 104+00 105+00 106+00 107+00 108+00 109+00

340 345 350 355 360 365 370 375 380 385

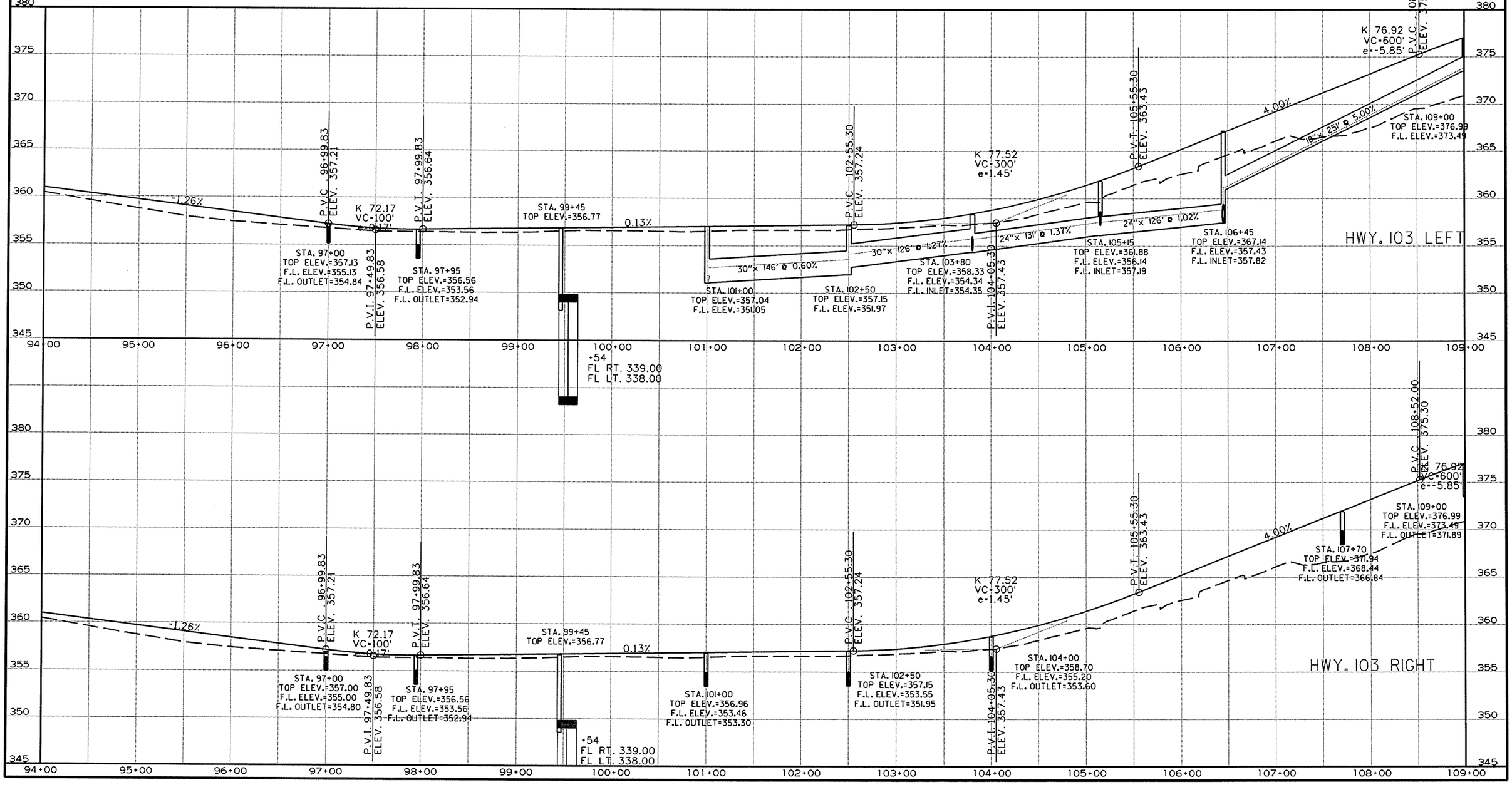
11/2/12 plan and profile sheets

r080340.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.		080340	45	187

(2) PLAN AND PROFILE SHEETS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13



R080340.DGN 10/15/2013

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.		080340	46	187

(2) PLAN & PROFILE - HWY. 103

HWY. 103
P.I. 119+55.24
Δ = 26°51'31.9"RT.
D = 5°00'00"
T = 273.62
L = 537.18
P.C. 116+81.62
P.T. 122+18.80
e = 0.061'/'
Ls = 360'

STA. 116+39 LT.- CONSTRUCT APPR. = 5 CU. YD.

STA. 116+00- CONSTRUCT D.I. ON LT. (H = 3'-6") W./4' EXTENSION AND 18" x 14' PIPE OUTLET W/ FES TY MO = 4'-0" I.D. TY C = 4'-0" X 3'-0" 18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 14 LIN. FT. 18" F.E.S. = 1EACH

STA. 113+50- CONSTRUCT D.I. ON LT. (H = 3'-6") W./4' EXTENSION AND 18" x 20' R.C. PIPE OUTLET W/ FES TY MO = 4'-0" I.D. TY C = 4'-0" x 3'-0" 18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 20 LIN. FT. 18" F.E.S. = 1EACH

STA. 116+35.09 HWY. 103
= STA. 3109+28.64 WB ENTRANCE RAMP
Δ=119°15'16"

STA. 116+52 - IN PLACE 18" x 150' R.C. PIPE CULV'T. RETAIN

STA. 117+82 - IN PLACE 18" x 110' R.C. PIPE CULV'T. RETAIN

STA. 118+64 LT. - CONSTRUCT APPR. = 20 CU. YD.

STA. 119+64 LT.- CONSTRUCT APPR. = 15 CU. YD.

STA. 118+05 LT. - CONSTRUCT APPR. = 5 CU. YD.

STA. 120+51 LT. - CONSTRUCT APPR. = 50 CU. YD.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

STA. 114+80- CONSTRUCT D.I. ON RT. (H = 3'-6") W./4' EXTENSION AND 18" x 12' R.C. PIPE OUTLET W./ FES TY MO = 4'-0" I.D. TY C = 4'-0" x 3'-0" 18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 12 LIN. FT. 18" F.E.S = 1EACH

STA. 116+58.64 HWY. 103
STA. 3097+06.72 WB EXIT RAMP
Δ=60°32'17"

STA. 113+50 CONSTRUCT D.I. ON RT. (H = 3'-6") W./4' EXTENSION AND 18" x 12' R.C. PIPE OUTLET W./ FES TY MO = 4'-0" I.D. TY C = 4'-0" x 3'-0" 18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 12 LIN. FT. 18" F.E.S = 1EACH

STA. 110+12.93 - STA. 112+45.20 CONSTRUCT 232'-3⅛" x 58'-0" CLEAR ROADWAY BRIDGE (2 SPAN CONT. COMP. PLATE GIRDER UNIT (115',115') BRIDGE NO. 07270

STA. 110+27 - STA. 112+58 INPLACE BRIDGE NO. 03812 231' x 33'-6" BRIDGE CONSISTING OF I-BEAM SPANS ON CONCRETE BENTS REMOVE AS EXISTING BRIDGE STRUCTURE (SITE NO. 1) = 1.00 LUMP SUM

STA. 116+70 RT. - CONSTRUCT TURNOUT FOR EASTBOUND RAMPS APPR. = 220 CU. YD.

STA. 119+62 RT. - TAYLOR RD. CONSTRUCT APPR. = 40 CU. YD.

STA. 120+98 RT. - CONSTRUCT APPR. = 5 CU. YD.

STA. 118+25- CONSTRUCT D.I. ON RT. H = 2'-9" W./ 18" x 6' R.C. PIPE OUTLET W./ FES TY MO = 4'-0" I.D. TY C = 4'-0" x 3'-0" 18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 6 LIN. FT. 18" F.E.S = 1EACH

STA. 121+27 IN PLACE JUNCTION BOX ON RT. ADJUST TO GRADE

STA. 122+06 RT. - CONSTRUCT APPR. = 10 CU. YD.

STA. 122+67 RT. - CONSTRUCT APPR. = 30 CU. YD.

STA. 123+00.00
END JOB 080340

HWY. 103

SPECIAL FLOOD HAZARD AREA
STA. 96+00 TO STA. 112+80

STA. 115+90.21 BEGIN SUPERELEVATION
STA. 119+50.21 MAX. SUPERELEVATION 0.061'/'
STA. 123+10.21 END SUPERELEVATION

BRIDGE END STA. 110+12.93

P.V.I. 111+52.00 ELEV. 387.30

BRIDGE END STA. 112+45.20

STA. 113+50 LT. TOP ELEV.=379.02 F.L. ELEV.=375.52 OUTLET ELEV.=372.21

K 76.92 VC=600' e=-5.85'

STA. 113+50 RT. TOP ELEV.=379.02 F.L. ELEV.=375.52 OUTLET ELEV.=373.14

P.V.T. 114+52.00 ELEV. 375.90

STA. 114+80 RT. TOP ELEV.=374.76 F.L. ELEV.=371.26 OUTLET ELEV.=369.59

-3.80%

P.V.C. 115+78.93 ELEV. 371.08

STA. 116+00 LT. TOP ELEV.=370.32 F.L. ELEV.=366.66 OUTLET ELEV.=364.44

K 65.95 VC=360' e=2.46'

P.V.T. 117+58.93 ELEV. 364.24

STA. 118+25 RT. TOP ELEV.=366.24 F.L. ELEV.=363.49 OUTLET ELEV.=363.33

P.V.T. 119+38.93 ELEV. 367.22

P.V.C. 119+44.86 ELEV. 367.32

P.V.I. 120+89.86 ELEV. 369.73

K 67.63 VC=290' e=1.55'

P.V.T. 122+34.86 ELEV. 378.35

P.V.I. 122+50.00 ELEV. 379.25

5.95%

-5.95%

P.V.I. 123+00.00 ELEV. 382.22

BM: 915 915BMSOR IN CONC UNDER BRIDGE 38.47 RT. OF STA. 111+42.87 ELEVATION = 358.67

BM: 914 914BMSOR IN NW CRNR OF BRIDGE ON 03 11.3 RT. OF STA. 112+62.91 ELEVATION = 379.33

395 390 385 380 375 370 365 360 355 350

109+00 110+00 111+00 112+00 113+00 114+00 115+00 116+00 117+00 118+00 119+00 120+00 121+00 122+00 123+00 124+00

11/2/12 plan and profile sheets

r080340.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.	080340		47	187

(2) PLAN & PROFILE - EASTBOUND EXIT RAMP

STA. 3100+20 TO STA. 3100+50 IN PLACE
CONCRETE PIER PROTECTION
LT. OF LT. MAINLANES
REMOVE

STA. 3100+40.59 TO STA. 3100+61.75 IN PLACE
CONCRETE PIER PROTECTION
LT. & RT. IN MEDIAN
REMOVE

STA. 3100+55.00 TO STA. 3100+85.00 IN PLACE
CONCRETE PIER PROTECTION
RT. OF RT. MAINLANES
REMOVE

WESTBOUND ENTRANCE
P.I. 3117+45.55
Δ = 166°45'46.0"LT.
D = 30°40'50"
T = 1609.45
L = 543.55
P.C. 3101+36.09
P.T. 3106+79.64

WESTBOUND EXIT
P.I. 3105+40.18
Δ = 40°16'09.8"LT.
D = 12°00'00"
T = 175.06
L = 335.58
P.C. 3103+65.13
P.T. 3107+00.71

WESTBOUND EXIT
P.I. 3110+96.19
Δ = 5°48'00.0"LT.
D = 3°00'00"
T = 96.75
L = 193.34
P.C. 3109+99.44
P.T. 3111+92.77

REMOVAL AND DISPOSAL OF GUARD

STA.	STA.	LOCATION	GUARDRAIL
3097+80.00	3100+55.00	RT. SIDE OF EASTBOUND RAMP	275 LIN. FT.
3100+50.00	3101+50.00	LT. SIDE OF WESTBOUND ENTRANCE	100 LIN. FT.

STA. 3098+20.00
EB EXIT RAMP
BEGIN WIDENING

STA. 3100+40.00 IN PLACE
IMPACT ATTENUATION BARRIER
IN MEDIAN
REMOVE
STA. 3100+70.00 IN PLACE
IMPACT ATTENUATION BARRIER
IN MEDIAN
REMOVE

STA. 3102+61.92
EB EXIT RAMP
END WIDENING

EASTBOUND EXIT
P.I. 3115+22.56
Δ = 161°03'26.2"RT.
D = 36°15'47"
T = 947.08
L = 444.13
P.C. 3105+75.48
P.T. 3110+19.62

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

EASTBOUND EXIT RAMP

RT. DITCH GRADE -0.02%
3100+00.00 354.05
3103+00.00 354.00

11/2/12 plan and profile sheets
r080340.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.		080340	48	187

(2) PLAN & PROFILE - WESTBOUND RAMPS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

STA. 116+58.64 HWY. 103
= STA. 3097+06.72 WB EXIT RAMP
Δ=60°32'17"

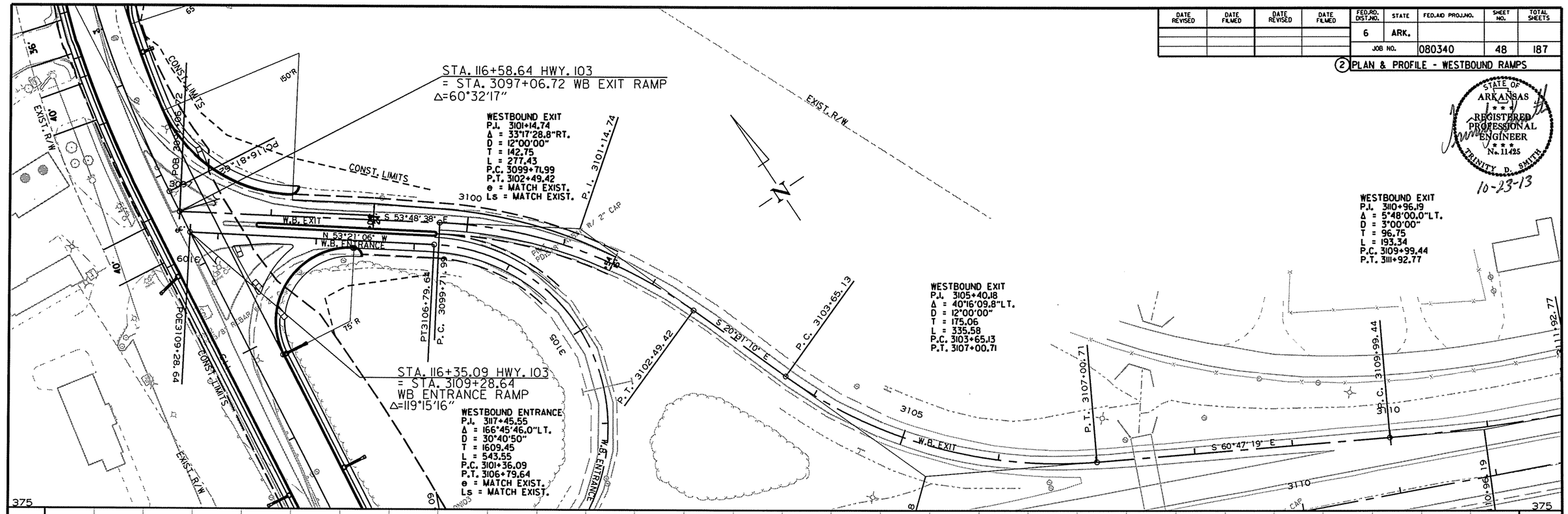
WESTBOUND EXIT
P.I. 3101+14.74
Δ = 33°17'28.8"RT.
D = 12°00'00"
T = 142.75
L = 277.43
P.C. 3099+71.99
P.T. 3102+49.42
e = MATCH EXIST.
Ls = MATCH EXIST.

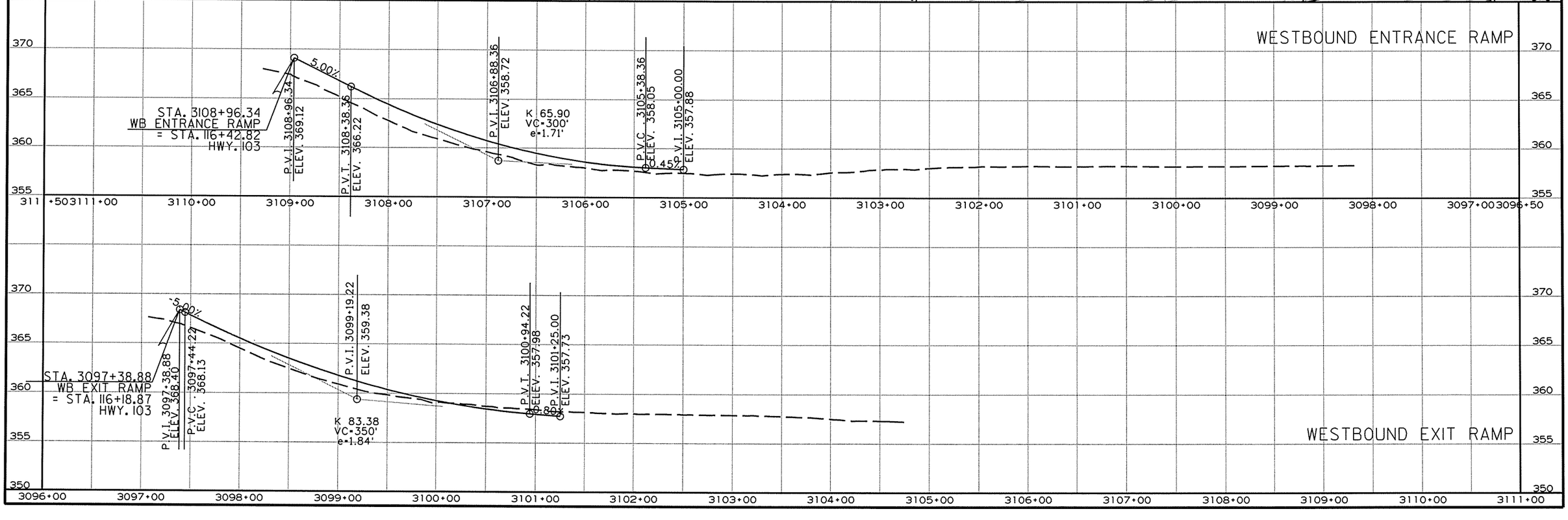
STA. 116+35.09 HWY. 103
= STA. 3109+28.64
WB ENTRANCE RAMP
Δ=119°15'16"

WESTBOUND ENTRANCE
P.I. 3117+45.55
Δ = 166°45'46.0"LT.
D = 30°40'50"
T = 1609.45
L = 543.55
P.C. 3101+36.09
P.T. 3106+79.64
e = MATCH EXIST.
Ls = MATCH EXIST.

WESTBOUND EXIT
P.I. 3105+40.18
Δ = 40°16'09.8"LT.
D = 12°00'00"
T = 175.06
L = 335.58
P.C. 3103+65.13
P.T. 3107+00.71

WESTBOUND EXIT
P.I. 3110+96.19
Δ = 5°48'00.0"LT.
D = 3°00'00"
T = 96.75
L = 193.34
P.C. 3109+99.44
P.T. 3111+92.77





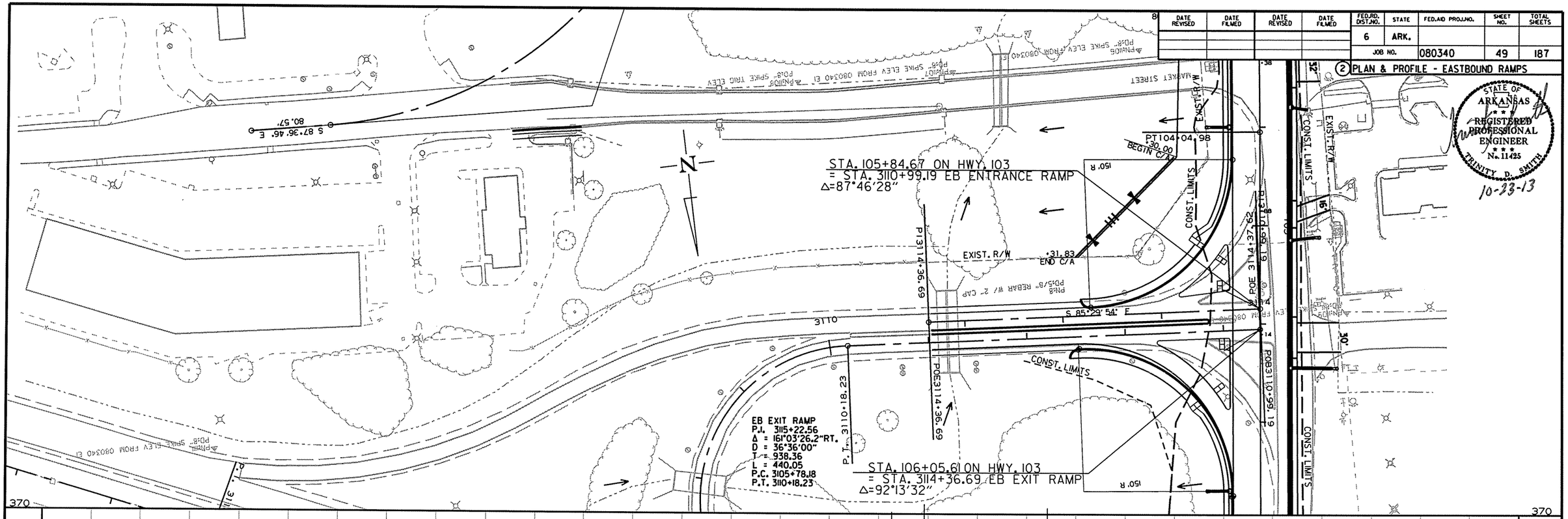
11/2/12 plan and profile sheets

r080340.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.		080340	49	187

(2) PLAN & PROFILE - EASTBOUND RAMPS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13



11/2/12 plan and profile sheets

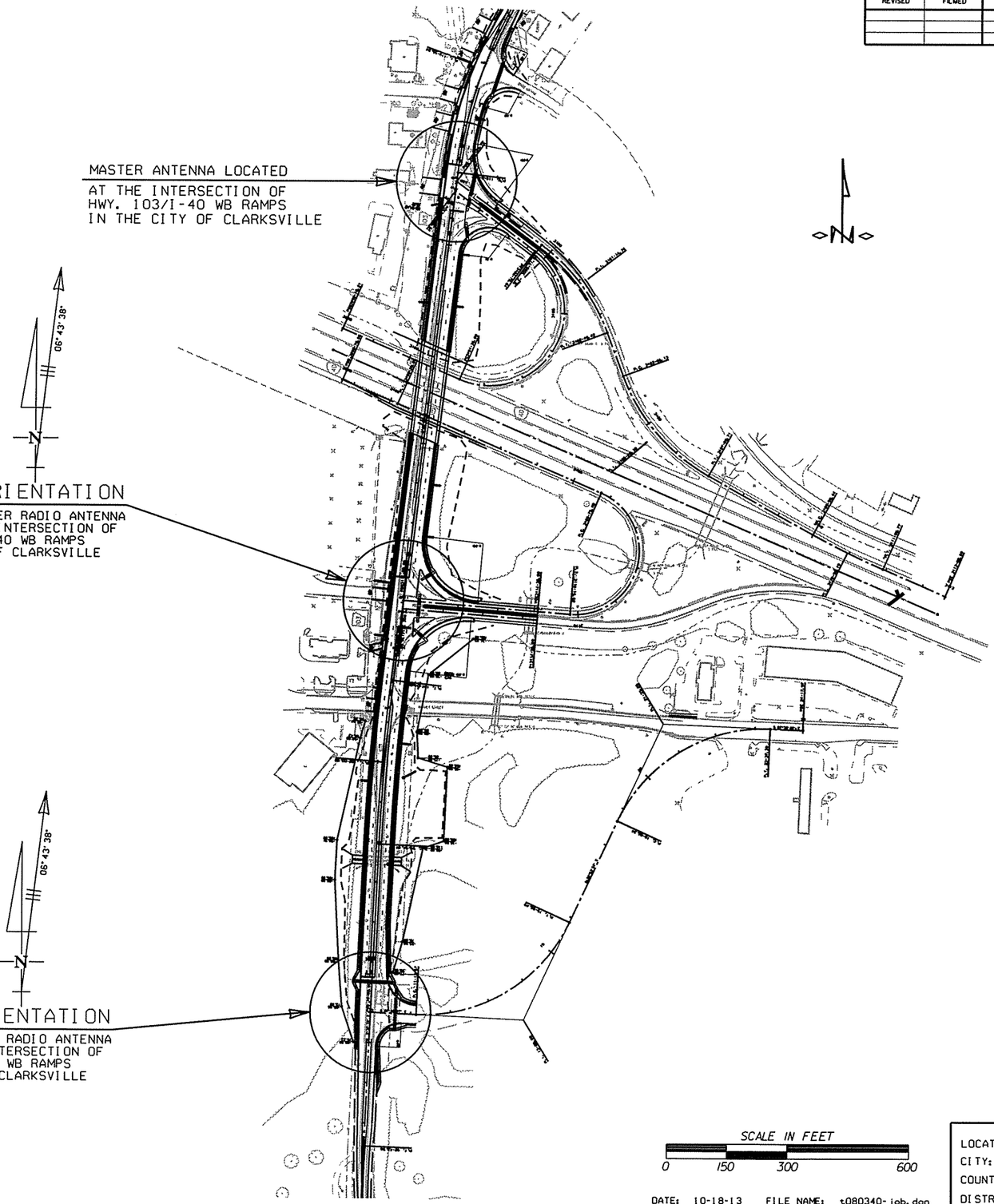
r080340.dgn

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.		080340	50	187

(2) SYSTEM MAP

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

MASTER ANTENNA LOCATED
AT THE INTERSECTION OF
HWY. 103/I-40 WB RAMPS
IN THE CITY OF CLARKSVILLE



ANTENNA ORIENTATION

ORIENTED TO MASTER RADIO ANTENNA
LOCATED AT THE INTERSECTION OF
HWY. 103/I-40 WB RAMPS
IN THE CITY OF CLARKSVILLE

ANTENNA ORIENTATION

ORIENTED TO MASTER RADIO ANTENNA
LOCATED AT THE INTERSECTION OF
HWY. 103/I-40 WB RAMPS
IN THE CITY OF CLARKSVILLE

SCALE IN FEET
0 150 300 600

DATE: 10-18-13 FILE NAME: t080340-job.dgn

LOCATION: MARKET ST.-I-40 WB RAMPS (CLARKSVILLE) (S)
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 SCALE: 1"=200' 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.		080340	51	187

(2) SUMMARY OF SIGNALIZATION QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

SUMMARY OF SIGNALIZATION QUANTITIES

ITEM NO.	ITEM	HWY. 103 AT MARKET ST.	HWY. 103 AT I-40 EB RAMPS	HWY. 103 AT I-40 WB RAMPS	TOTAL JOB QUANTITY	UNIT
SP&701	SYSTEM LOCAL CONTROLLER TS 2-TYPE 2 (8 PHASES)	1	1	1	3	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	8	16	14	38	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)		6	8	14	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (5 SECTION, 1 WAY)	1			1	EACH
SP&707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED	4	2	2	8	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	1777	1956	1922	5655	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	174	697	623	1494	LIN. FT.
708	TRAFFIC SIGNAL CABLE (12C/14 A.W.G.)	343		470	813	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	47	652	340	1039	LIN. FT.
709	GALVANIZED STEEL CONDUIT (1.25")	20	20	20	60	LIN. FT.
709	GALVANIZED STEEL CONDUIT (2")		70	70	140	LIN. FT.
710	NON-METALLIC CONDUIT (1.25")	20	20	20	60	LIN. FT.
710	NON-METALLIC CONDUIT (2")	20	20	50	90	LIN. FT.
710	NON-METALLIC CONDUIT (3")	450	384	397	1231	LIN. FT.
SS&711	CONCRETE PULL BOX (TYPE 2)		2	1	3	EACH
SS&711	CONCRETE PULL BOX (TYPE 2 HD)	6	4	5	15	EACH
713	SPAN WIRE ASSEMBLY		1	1	2	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (22')		1		1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (24')			1	1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (36')		1		1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (42'-40')	1			1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (44')		1		1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (46')	1	1	1	3	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (54')			1	1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (56')			1	1	EACH
SS&715	TRAFFIC SIGNAL PEDESTAL POLE WITH FOUNDATION	3			3	EACH
716	TREATED WOOD POLE (CLASS 2, 40')		4	4	8	EACH
733	VIDEO CABLE	998	2322	2362	5682	LIN. FT.
SP&733	VIDEO DETECTOR (CLR)	6 •	12	12	30	EACH
SP&733	VIDEO EDGE CARD EXTENDER	1		2	3	EACH
733	VIDEO MONITOR (CLR)	1	2	2	5	EACH
SP&733	VEHICLE DETECTOR RACK (16 CHANNEL)	1			1	EACH
SP&733	VEHICLE DETECTOR RACK (20 CHANNEL)		1	1	2	EACH
SP&733	VIDEO DETECTOR RELOCATION		3	2	5	EACH
SP&733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	4 •	3	3	10	EACH
SP	ANTENNA CABLE (TYPE 6)	70	75	75	220	LIN. FT.
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES	411	680	898	1989	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., EGC)	507	370	549	1426	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., EGC)	85	190	270	545	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.)	20	20	20	60	LIN. FT.
SP	EMERGENCY BACKUP LOCAL RADIO UNIT			1	1	EACH
SP	LOCAL RADIO WITH ANTENNA	1	1		2	EACH
SP	LUMINAIRE ASSEMBLY	2	4	4	10	EACH
SP	MASTER RADIO WITH ANTENNA			1	1	EACH
SP	MODEM, HARDENED (33.6 K BAUD)			1	1	EACH
SP	ON-STREET MASTER CONTROLLER			1	1	EACH
SP	RELOCATION OF TRAFFIC SIGNAL HEAD		10	10	20	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT		0.50	0.50	1.00	LUMP SUM
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1	1	2	4	EACH
SP	TRAFFIC SIGNAL CONTROLLER MODIFICATION		3	3	6	EACH
SP	18" STREET NAME SIGN	2	2		4	EACH

• ONE SPARE VIDEO DETECTOR AND ONE SPARE VIDEO PROCESSOR SHALL BE SUPPLIED.

DATE: 10-18-13 FILE NAME: t080340-job.dgn

LOCATION: MARKET ST.-I-40 WB RAMPS (CLARKSVILLE) (S)
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 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.		080340	52	187

(2) TRAFFIC SIGNAL NOTES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

TRAFFIC SIGNAL NOTES:

1. PERFORM ELECTRICAL WORK IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE NFPA 70 (2002) NATIONAL ELECTRICAL CODE, NFPA 101(2000) LIFE SAFETY CODE, STATE ELECTRICAL CODE AND LOCAL ELECTRICAL CODE.
2. EXTEND GREEN EQUIPMENT GROUNDING CONDUCTOR (EGC) FROM GROUND BAR AT MAIN BREAKER TO CONTROL PANEL AND TO FIRST POLE. SOLIDLY BOND EGC 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 WHERE STREET LIGHTING IS INCLUDED. AS PART OF THE SIGNAL INSTALLATION, STREET LIGHTING CIRCUIT (2c/#12 AWG 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 ARKANSAS HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARDS AND DETAILS 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 SPECIAL DETAILS). PAYMENT WILL BE INCLUDED IN SECTION 714, AHTD STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
12. ALL 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. 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.
17. 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.
18. 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.
19. 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.
20. CONTROLLER CABINET LAYOUT AND ORIENTATION SHALL CONFORM TO ISMA STANDARDS.
21. ONE VIDEO PROGRAMMING 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.
22. 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.
23. 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.

DATE: 10-18-13 FILE NAME: t080340-job.dgn

LOCATION: MARKET ST.-I-40 WB RAMPS (CLARKSVILLE) (S)
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 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.		080340	53	187

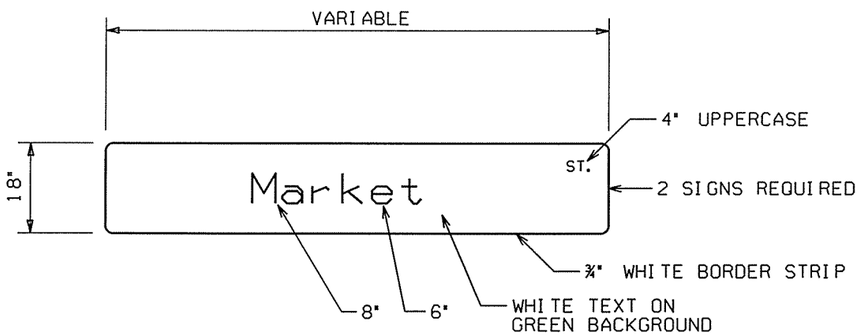
(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
SP&701	SYSTEM LOCAL CONTROLLER TS 2-TYPE 2 (8 PHASES)	1	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	8	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (5 SECTION, 1 WAY)	1	EACH
SP&707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED	4	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	1777	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	174	LIN. FT.
708	TRAFFIC SIGNAL CABLE (12C/14 A.W.G.)	343	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	47	LIN. FT.
709	GALVANIZED STEEL CONDUIT (1.25")	20	LIN. FT.
710	NON-METALLIC CONDUIT (1.25")	20	LIN. FT.
710	NON-METALLIC CONDUIT (2")	20	LIN. FT.
710	NON-METALLIC CONDUIT (3")	450	LIN. FT.
SS&711	CONCRETE PULL BOX (TYPE 2 HD)	6	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (42'-40')	1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (46')	1	EACH
SS&715	TRAFFIC SIGNAL PEDESTAL POLE WITH FOUNDATION	3	EACH
733	VIDEO CABLE	998	LIN. FT.
• SP&733	VIDEO DETECTOR (CLR)	6	EACH
SP&733	VIDEO EDGE CARD EXTENDER	1	EACH
733	VIDEO MONITOR (CLR)	1	EACH
• SP&733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	4	EACH
SP&733	VEHICLE DETECTOR RACK (16 CHANNEL)	1	EACH
SP	ANTENNA CABLE (TYPE 6)	70	LIN. FT.
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES	411	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., EGC)	507	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., EGC)	85	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.)	20	LIN. FT.
SP	LOCAL RADIO WITH ANTENNA	1	EACH
SP	LUMINAIRE ASSEMBLY	2	EACH
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1	EACH
SP	18" STREET NAME SIGN	2	EACH

• ONE SPARE VIDEO DETECTOR AND ONE SPARE VIDEO PROCESSOR SHALL BE SUPPLIED.



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 ANODIZED. 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 CLEARVIEW 5-W-R FONT SHALL BE USED FOR ALL LETTERS.

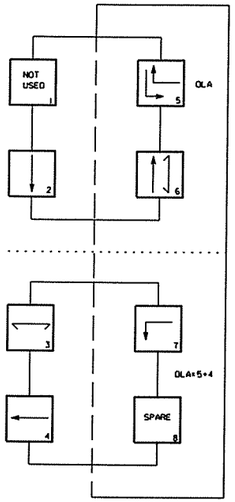
DATE: 10-18-13 FILE NAME: t080340-01.dgn

LOCATION: HWY. 103/MARKET STREET
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 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.		080340	54	187

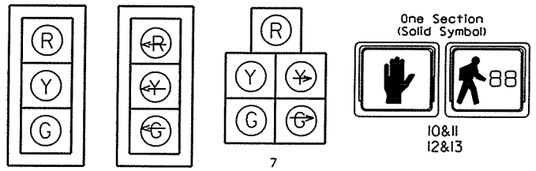
(2) SIGNALIZATION PLAN SHEET

PHASING DIAGRAM



SIGNAL FACES

12" LENSES

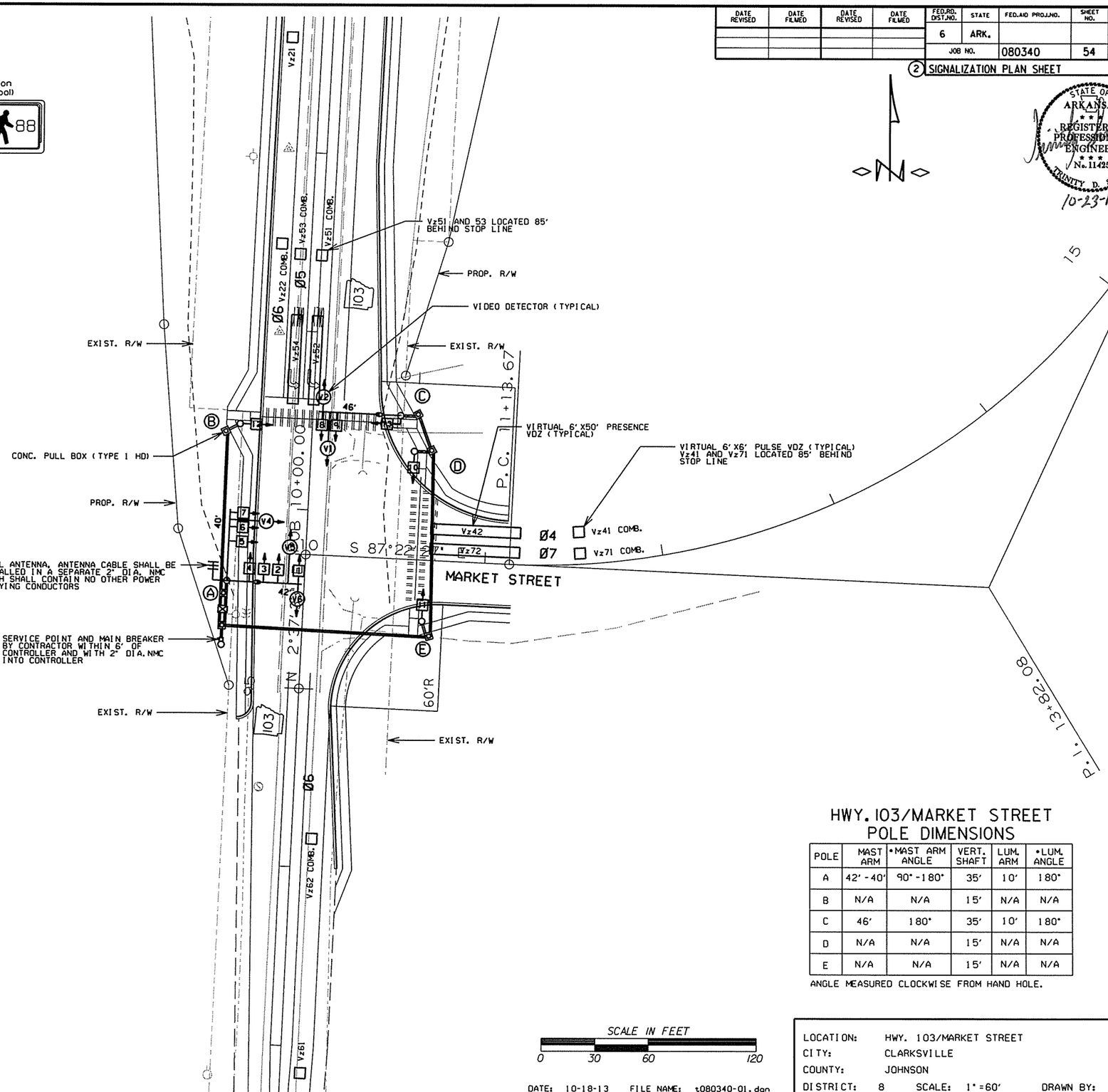


NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS

DETECTOR SPACING CHART

HWY. 103/MARKET STREET		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD VDZ	LAG VDZ
HWY. 103 - 35 MPH	260'	90'
MARKET ST. - 25 MPH	260'	90'

VDZ = VIDEO DETECTOR ZONE

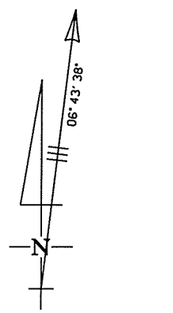


DESIGN PARAMETERS

POSTED SPEED LIMIT:
35 MPH NORTH AND SOUTH APPROACH
25 MPH EAST 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

ORIENTED TO MASTER RADIO ANTENNA LOCATED AT THE INTERSECTION OF HWY. 103/I-40 WB RAMPS

HWY. 103/MARKET STREET POLE DIMENSIONS

POLE	MAST ARM	•MAST ARM ANGLE	VERT. SHAFT	LUM. ARM	•LUM. ANGLE
A	42'-40'	90°-180°	35'	10'	180°
B	N/A	N/A	15'	N/A	N/A
C	46'	180°	35'	10'	180°
D	N/A	N/A	15'	N/A	N/A
E	N/A	N/A	15'	N/A	N/A

ANGLE MEASURED CLOCKWISE FROM HAND HOLE.

SCALE IN FEET
0 30 60 120

DATE: 10-18-13 FILE NAME: t080340-01.dgn

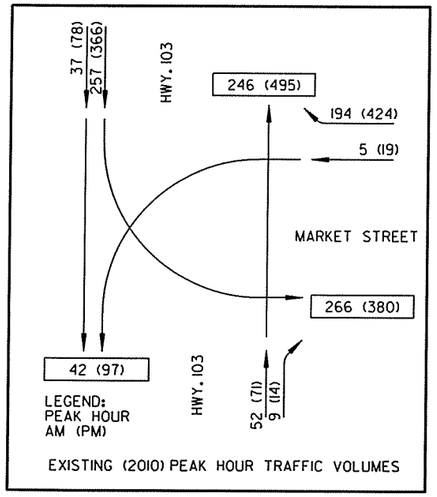
LOCATION:	HWY. 103/MARKET STREET				
CITY:	CLARKSVILLE				
COUNTY:	JOHNSON				
DISTRICT:	8	SCALE:	1"=60'	DRAWN BY:	GWE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

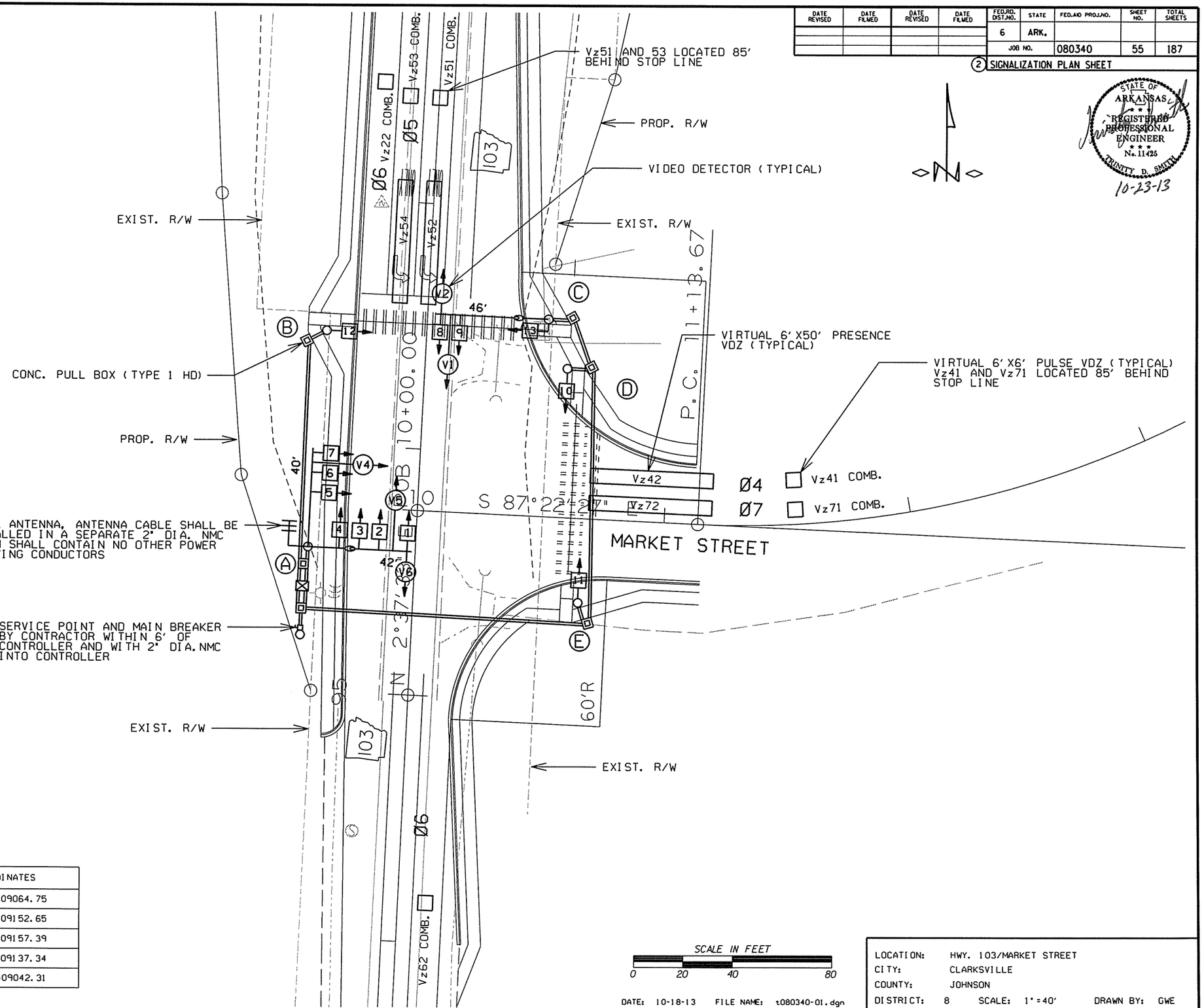
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	55	187

(2) SIGNALIZATION PLAN SHEET

TRAFFIC FLOW DIAGRAM



EXISTING (2010) PEAK HOUR TRAFFIC VOLUMES



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

HWY. 103/MARKET STREET POLE LOCATIONS

POLE	LOCATION & STATION	OFFSET	X, Y COORDINATES
A	HWY. 103 - STA. 95+58.31	43' LT.	875879.10, 409064.75
B	HWY. 103 - STA. 96+46.45	40' LT.	875886.14, 409152.65
C	HWY. 103 - STA. 96+55.29	49' RT.	875975.84, 409157.39
D	HWY. 103 - STA. 96+35.61	58' RT.	875983.57, 409137.34
E	HWY. 103 - STA. 95+40.90	67' RT.	875988.21, 409042.31

SCALE IN FEET
0 20 40 80

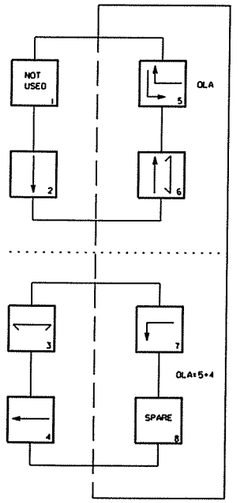
DATE: 10-18-13 FILE NAME: t080340-01.dgn

LOCATION: HWY. 103/MARKET STREET
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 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.		080340	56	187

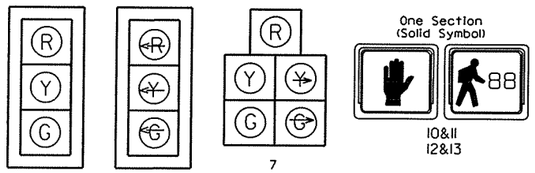
(2) SIGNALIZATION PLAN SHEET

PHASING DIAGRAM



SIGNAL FACES

12" LENSES



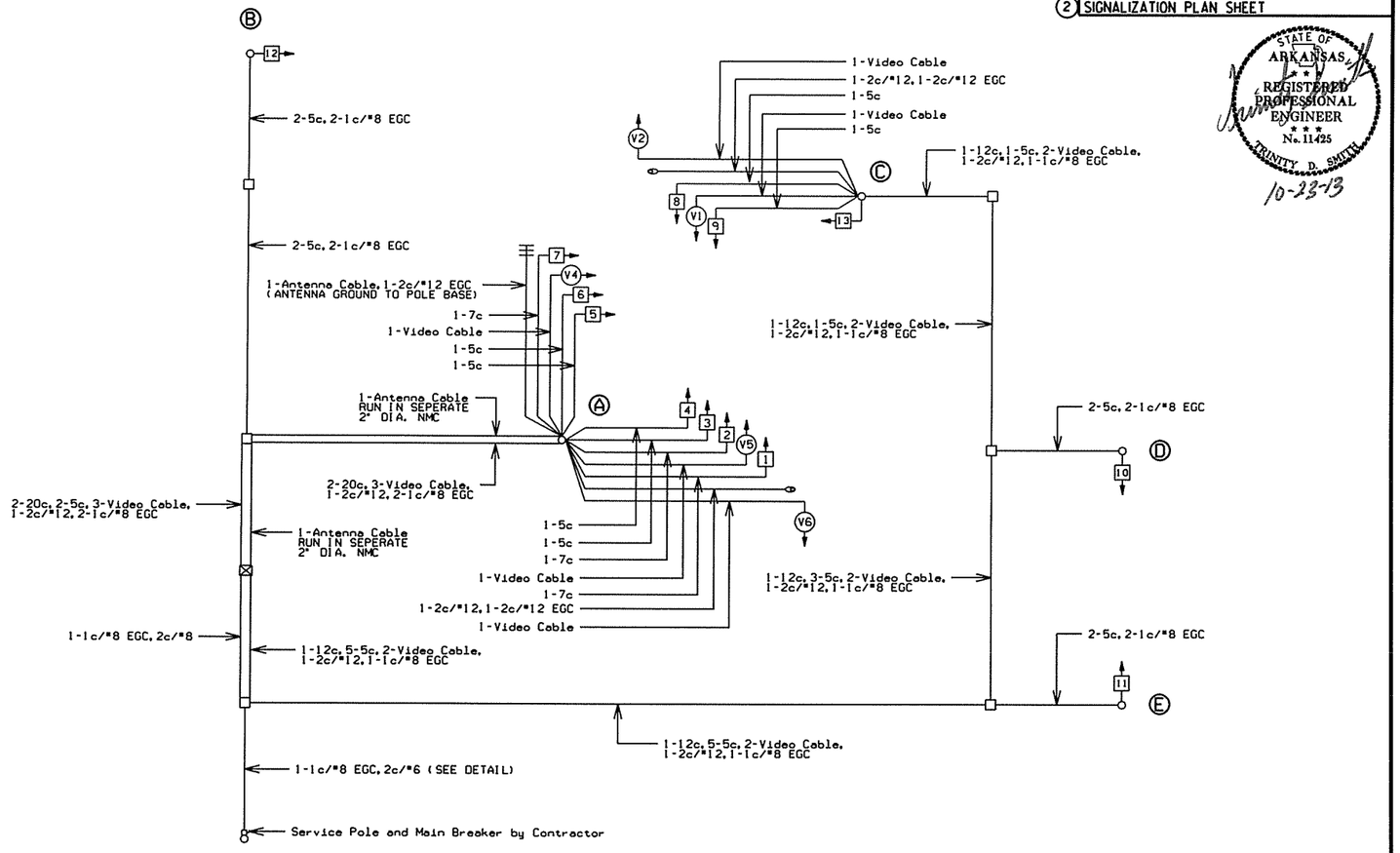
3&4
6
8&9

1, 2&5

7

10&11
12&13

NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

SYSTEM DESCRIPTION: JOB 080340											
CLARKSVILLE - HWY. 103/MARKET STREET DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS LOCAL		MASTER SYSTEM DETECTOR NUMBERS	COMMENTS	TUBE LENGTH
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *			
Vz21	SB ADVANCE	LOCAL			1	V2	2			CAMERA V2	74'
Vz22	SB NEAR	COMB.			2	V10	2	2		CAMERA V5	23'
Vz41	WB RIGHT ADVANCE	COMB.			9	V12	4	4		CAMERA V4	23'
Vz42	WB RIGHT TURN	LOCAL			10	V4	4			CAMERA V4	23'
Vz51	SB LT. TURN ADVANCE	COMB.			5	V13	5	5		CAMERA V5	23'
Vz52	SB LEFT TURN	LOCAL			6	V5	5			CAMERA V5	23'
Vz53	SB LT. TURN ADVANCE	COMB.			7	V11	5	3		CAMERA V5	23'
Vz54	SB LEFT TURN	LOCAL			8	V3	5			CAMERA V5	23'
Vz61	NB ADVANCE	LOCAL			13	V6	6			CAMERA V6	74'
Vz62	NB NEAR	COMB.			14	V14	6	6		CAMERA V1	23'
Vz71	WB LEFT ADVANCE	COMB.			11	V15	4	7		CAMERA V4	23'
Vz72	WB LEFT TURN	LOCAL			12	V7	4			CAMERA V4	23'
PB4A&B	HWY. 103 N. LEG	PED.					4				
PB6A&B	MARKET ST. E. LEG	PED.					6				
SPARE 3, 4, 15&16											

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.

WIRING DIAGRAM

NOTES TO CONTRACTOR:

1. ONE SEPARATE 1-5c IS RUN TO EACH POLE FOR THE PEDESTRIAN PUSH BUTTON.
2. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.
3. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.

INTERVAL CHART

SIGNAL FACES	HWY. 103/MARKET STREET 2+5	CLR.	2+6	CLR.	3+7	CLR.	4+7	CLR.		FLASH SEQ.
1&2	~~G~~	•	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~		~~R~~
3&4	G	••	G	••	R	R	R	R		R
5	~~R~~	~~R~~	~~R~~	~~R~~	~~G~~	•	~~G~~	•		~~R~~
6	R	R	R	R	R	R	G	••		R
7	~~G~~	•	R	R	R	R	G	••		R
8&9	R	R	G	••	R	R	R	R		R
10&11	DW	DW	W	FDW	DW	DW	DW	DW		BLK
12&13	DW	DW	DW	DW	W	FDW	DW	DW		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

DATE: 10-18-13 FILE NAME: t080340-01.dgn

LOCATION: HWY. 103/MARKET STREET
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 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.		080340	57	187

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

STAGE 1 TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
SP&701	SYSTEM LOCAL TS 2-TYPE 2 (8 PHASES)	1	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	8	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	3	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	1216	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	465	LIN. FT.
709	GALVANIZED STEEL CONDUIT (1.25")	20	LIN. FT.
709	GALVANIZED STEEL CONDUIT (2")	70	LIN. FT.
710	NON-METALLIC CONDUIT (1.25")	20	LIN. FT.
SS&711	CONCRETE PULL BOX (TYPE 2 HD)	2	EACH
713	SPAN WIRE ASSEMBLY	1	EACH
716	TREATED WOOD POLE (CLASS 2, 40')	4	EACH
733	VIDEO CABLE	1188	LIN. FT.
SP&733	VIDEO DETECTOR (CLR)	6	EACH
733	VIDEO MONITOR (CLR)	1	EACH
SP&733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	3	EACH
SP&733	VEHICLE DETECTOR RACK (20 CHANNEL)	1	EACH
SP	ANTENNA CABLE (TYPE 6)	75	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1c/8 A.W.G., EGC)	20	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2c/6 A.W.G.)	20	LIN. FT.
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.25	LUMP SUM
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1	EACH

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

STAGE 2 TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
SP&733	VIDEO DETECTOR RELOCATION	3	EACH
SP	RELOCATION OF TRAFFIC SIGNAL HEAD	4	EACH
SP	TRAFFIC SIGNAL CONTROLLER MODIFICATION	1	EACH

STAGE 2
RELOCATE TRAFFIC SIGNAL HEADS AND VIDEO DETECTORS AS SHOWN ON THE STAGE 2 TRAFFIC SIGNAL PLAN.
MAINTAIN THIS TRAFFIC SIGNAL CONFIGURATION AS SHOWN ON THE STAGE 2 TRAFFIC SIGNAL PLAN.
(REFER TO MAINTENANCE OF TRAFFIC DETAILS).

STAGE 3 TRAFFIC SIGNAL QUANTITIES

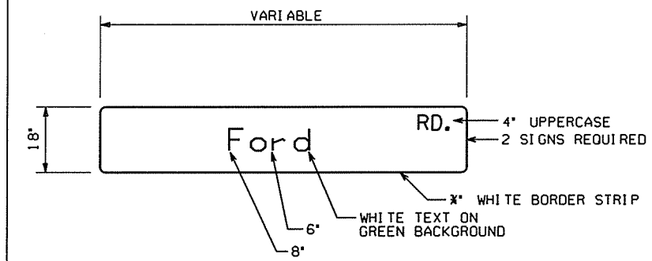
ITEM NO.	ITEM	QUANTITY	UNIT
SP	RELOCATION OF TRAFFIC SIGNAL HEAD	6	EACH
SP	TRAFFIC SIGNAL CONTROLLER MODIFICATION	1	EACH

STAGE 3
RELOCATE TRAFFIC SIGNAL HEADS AND VIDEO DETECTORS AS SHOWN ON THE STAGE 2 TRAFFIC SIGNAL PLAN.
MAINTAIN THIS TRAFFIC SIGNAL CONFIGURATION AS SHOWN ON THE STAGE 3 TRAFFIC SIGNAL PLAN.
(REFER TO MAINTENANCE OF TRAFFIC DETAILS).

PERMANENT TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
SP&706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	8	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	3	EACH
SP&707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED	2	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	740	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	232	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	652	LIN. FT.
710	NON-METALLIC CONDUIT (2")	20	LIN. FT.
710	NON-METALLIC CONDUIT (3")	384	LIN. FT.
SS&711	CONCRETE PULL BOX (TYPE 2 HD)	2	EACH
SS&711	CONCRETE PULL BOX (TYPE 2)	2	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (22')	1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (36')	1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (44')	1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (46')	1	EACH
733	VIDEO CABLE	1134	LIN. FT.
SP&733	VIDEO DETECTOR (CLR)	6	EACH
733	VIDEO MONITOR (CLR)	1	EACH
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES	680	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., EGC)	350	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., EGC)	190	LIN. FT.
SP	LOCAL RADIO WITH ANTENNA	1	EACH
SP	LUMINAIRE ASSEMBLY	4	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.25	LUMP SUM
SP	TRAFFIC SIGNAL CONTROLLER MODIFICATION	1	EACH
SP	18" STREET NAME SIGN	2	EACH

PERMANENT TRAFFIC SIGNAL:
THE TEMPORARY TRAFFIC SIGNAL INSTALLATION SHALL REMAIN IN OPERATION UNTIL THE PERMANENT TRAFFIC SIGNAL IS COMPLETED AND OPERATIONAL.
INSTALL PERMANENT TRAFFIC SIGNAL AND REMOVE ALL STAGE 1-3 TEMPORARY TRAFFIC SIGNAL COMPONENTS.
(REFER TO PERMANENT TRAFFIC SIGNAL PLANS).



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 ANODIZED. 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 CLEARVIEW 5-W-R FONT SHALL BE USED FOR ALL LETTERS.

DATE: 10-18-13 FILE NAME: t080340-02.dgn

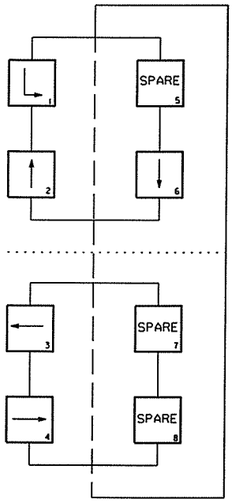
LOCATION: HWY. 103/I-40 EB RAMPS
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 SCALE: N/A DRAWN BY: GWE

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.		080340	58	187

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY B. SMITH
10-23-13

PHASING DIAGRAM



DETECTOR SPACING CHART

POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD VDZ	LAG VDZ
HWY.103 - 35 MPH	250'	85'
I-40 EB RAMP-30 MPH	85'	0'

VDZ = VIDEO DETECTOR ZONE

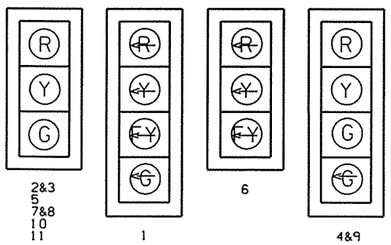
NOTE TO CONTRACTOR:

1. THE TRAFFIC SIGNAL CABLE PROVIDED IN STAGE 1 SHALL BE OF SUFFICIENT LENGTH TO BE UTILIZED IN STAGES 2 AND 3.

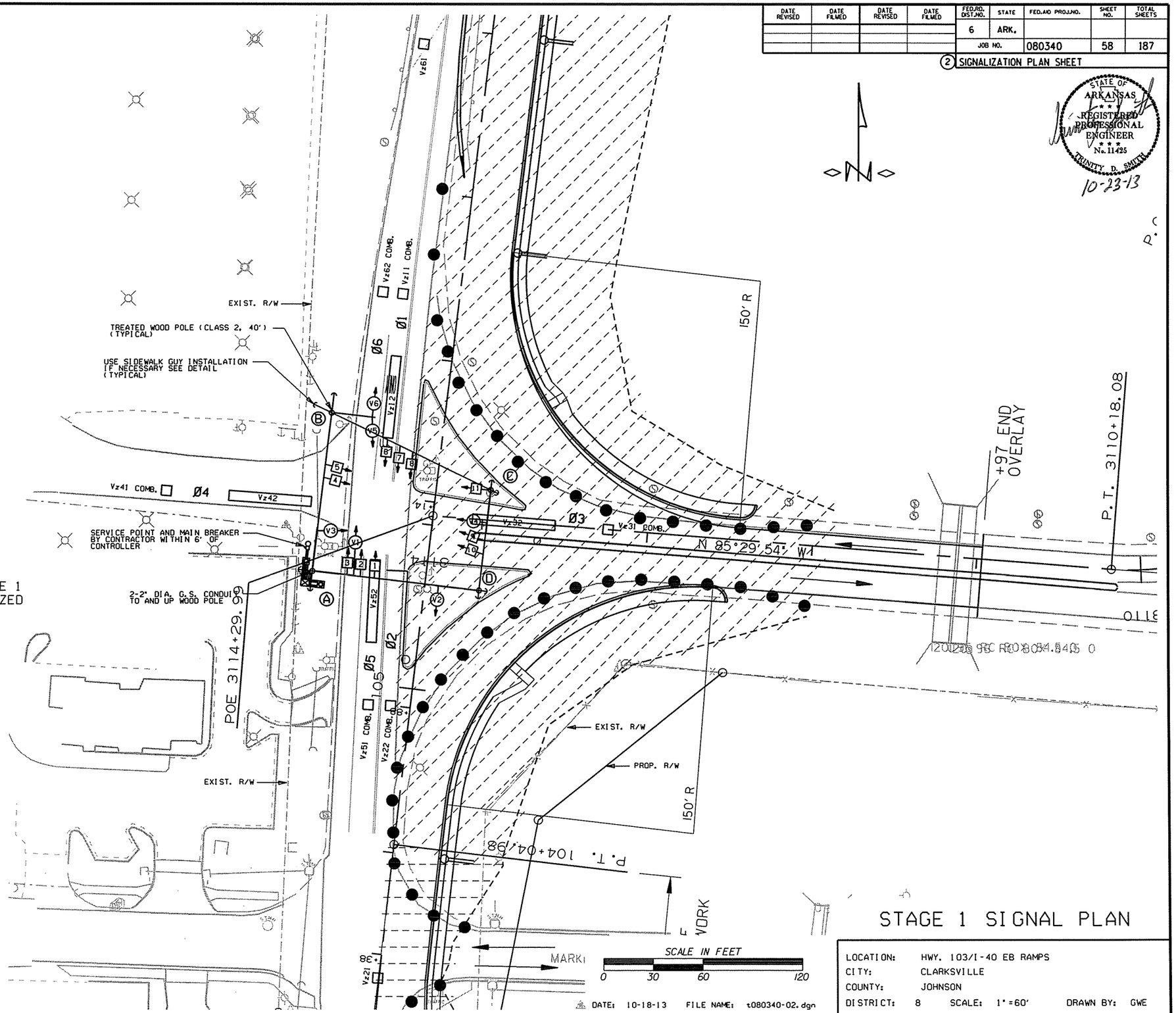
2. THE VIDEO CABLE PROVIDED IN STAGE 1 SHALL BE OF SUFFICIENT LENGTH TO BE UTILIZED IN STAGES 2 AND 3.

SIGNAL FACES

12" LENSES



NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.



STAGE 1 SIGNAL PLAN

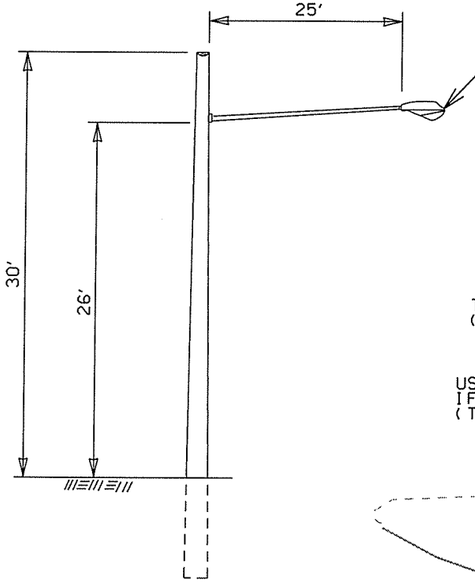
LOCATION:	HWY. 103/I-40 EB RAMPS		
CITY:	CLARKSVILLE		
COUNTY:	JOHNSON		
DISTRICT:	8	SCALE: 1"=60'	DRAWN BY: GWE

DATE: 10-18-13 FILE NAME: t080340-02.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.		080340	59	187

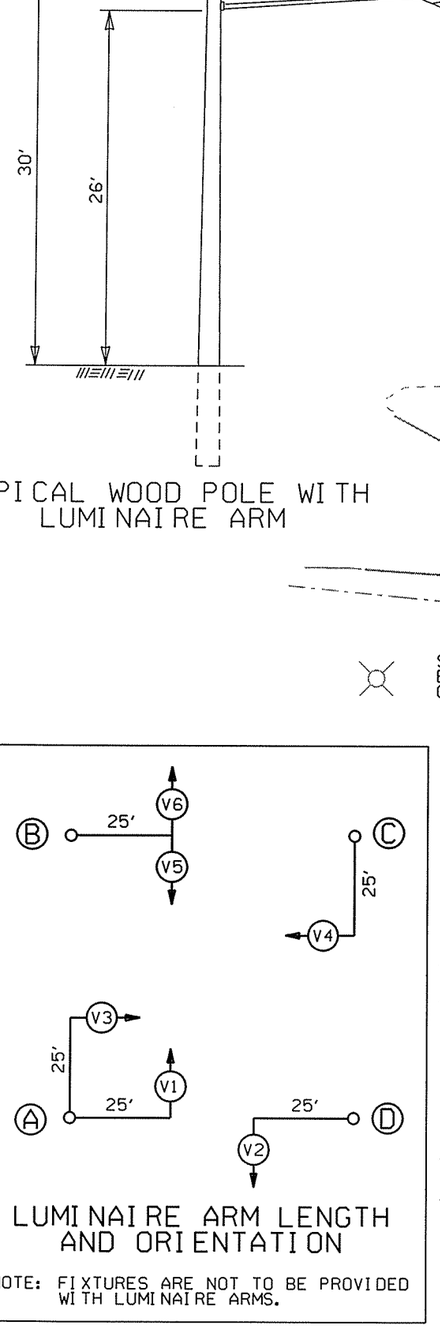
(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13



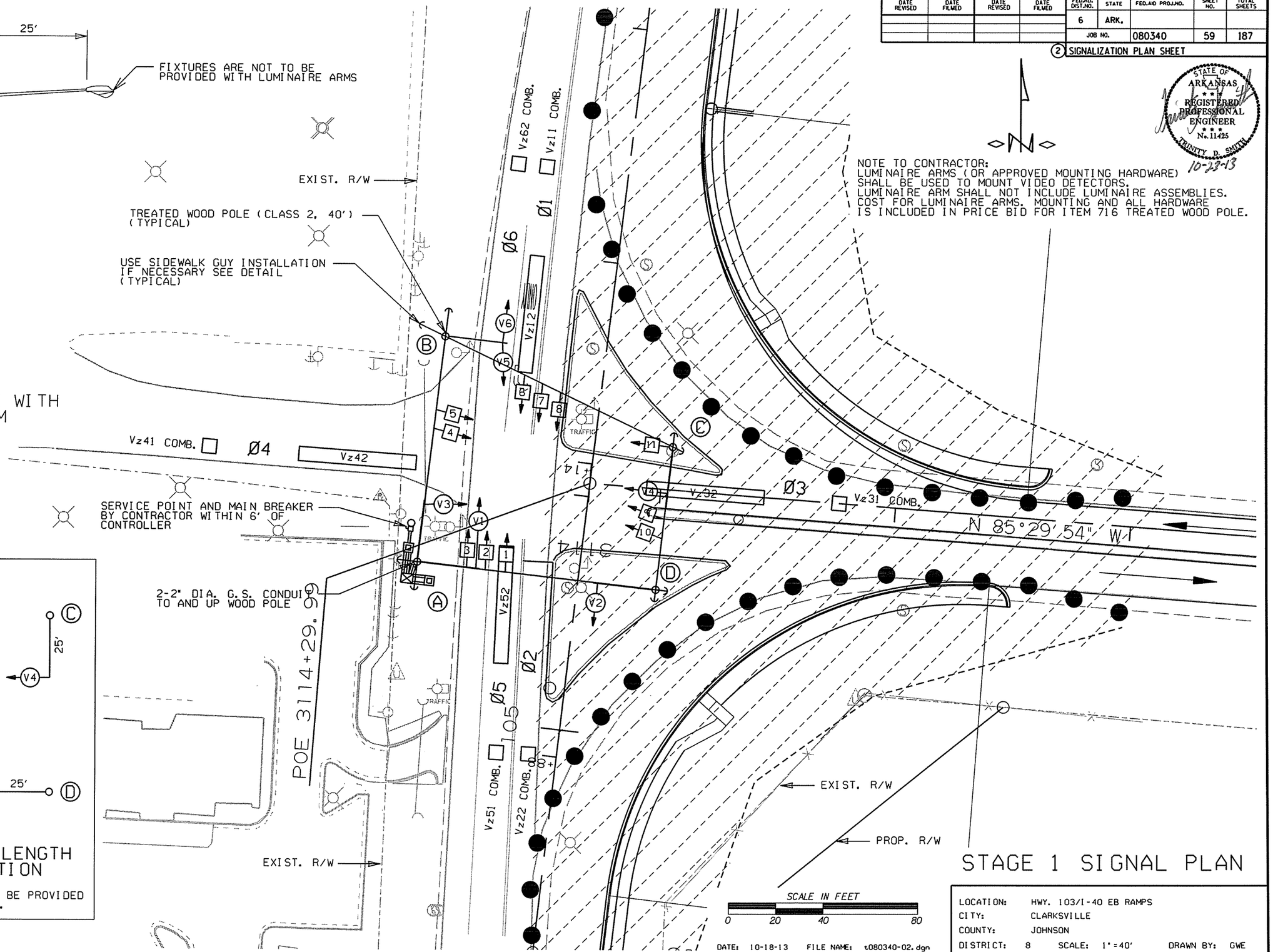
TYPICAL WOOD POLE WITH LUMINAIRE ARM

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.



LUMINAIRE ARM LENGTH AND ORIENTATION

NOTE: FIXTURES ARE NOT TO BE PROVIDED WITH LUMINAIRE ARMS.



STAGE 1 SIGNAL PLAN

SCALE IN FEET
0 20 40 80

DATE: 10-18-13 FILE NAME: t080340-02.dgn

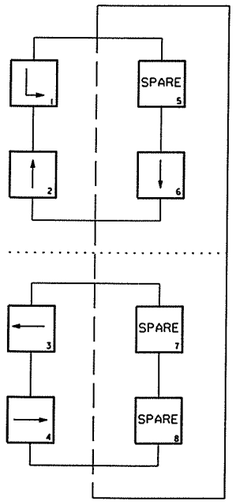
LOCATION:	HWY. 103/I-40 EB RAMPS			
CITY:	CLARKSVILLE			
COUNTY:	JOHNSON			
DISTRICT:	8	SCALE: 1"=40'	DRAWN BY:	GWE

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.		080340	60	187

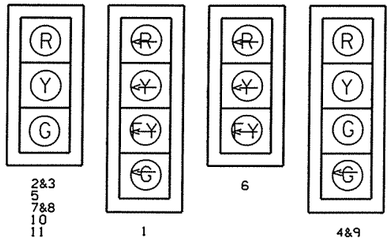
(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

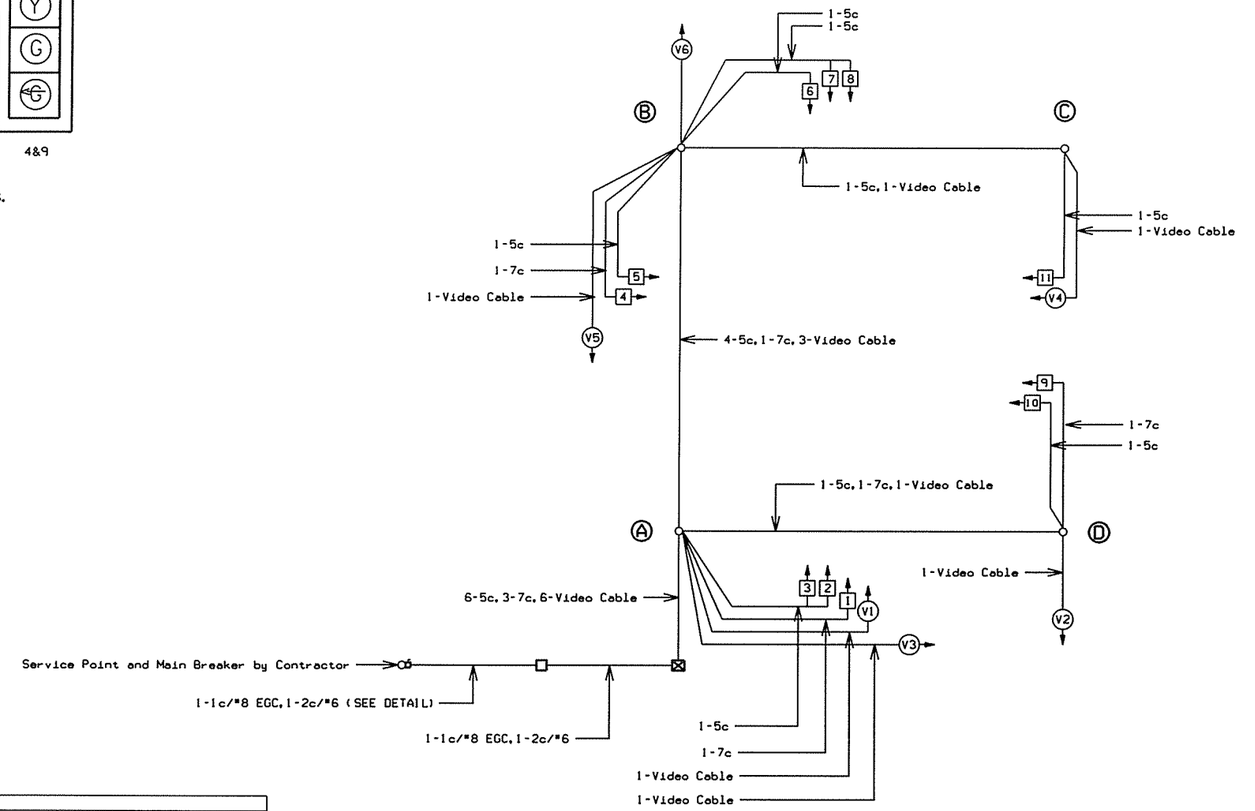
PHASING DIAGRAM



SIGNAL FACES
12" LENSES



NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.



STAGE 1
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.

DETECTOR SYSTEM DESCRIPTION: JOB 080340

CLARKSVILLE - HWY. 103/I-40 EB RAMPS 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. #			
Vz11	SB LT. TURN ADVANCE	COMB.			1	V9	1	1		CAMERA V1	
Vz12	SB LEFT TURN	LOCAL			2	V1	1			CAMERA V1	
Vz21	NB ADVANCE	LOCAL			9	V2	2			CAMERA V2	
Vz22	NB NEAR	COMB.			10	V10	2	2		CAMERA V5	
Vz31	WB NEAR	COMB.			17	V11	3	3		CAMERA V3	
Vz32	WB ADVANCE	LOCAL			18	V3	3			CAMERA V3	
Vz41	EB ADVANCE	COMB.			19	V12	4	4		CAMERA V4	
Vz42	EB NEAR	LOCAL			20	V4	4			CAMERA V4	
Vz51	NB LT. TURN ADVANCE	COMB.			13	V13	5	5		CAMERA V5	
Vz52	NB LEFT TURN	LOCAL			14	V5	5			CAMERA V5	
Vz61	SB ADVANCE	LOCAL			5	V6	6			CAMERA V6	
Vz62	SB NEAR	COMB.			6	V14	6	6		CAMERA V1	
					SPARE 3, 4, 7, 8, 11, 12, 15&16						

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.

INTERVAL CHART

SIGNAL FACES	HWY. 103/I-40 EB RAMPS 1+6	CLR.	2+6	CLR.	3	CLR.	4	CLR.		FLASH SEQ.
1	~~G~~	•	~~FY~~	•••	~~R~~	~~R~~	~~R~~	~~R~~		~~R~~
2&3	G	••	G	••	R	R	R	R		R
4	R	R	R	R	G/~~G~~	••	R	R		R
5	R	R	R	R	G	••	R	R		R
6	~~FY~~	•••	~~FY~~	•••	~~R~~	~~R~~	~~R~~	~~R~~		~~R~~
7&8	R	R	G	••	R	R	R	R		R
9	R	R	R	••	R	R	G/~~G~~	••		R
10	R	R	R	R	R	R	G	••		R
11	R	R	R	R	R	R	G	••		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

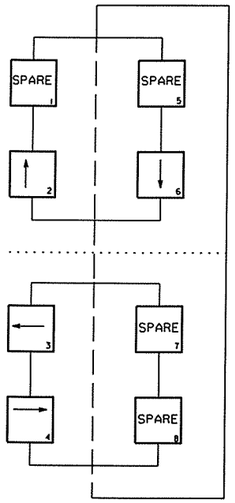
DATE: 10-18-13 FILE NAME: t080340-02.dgn

LOCATION: HWY. 103/I-40 EB RAMPS
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 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.		080340	61	187

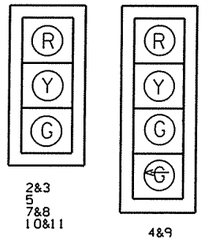
(2) SIGNALIZATION PLAN SHEET

PHASING DIAGRAM



SIGNAL FACES

12" LENSES

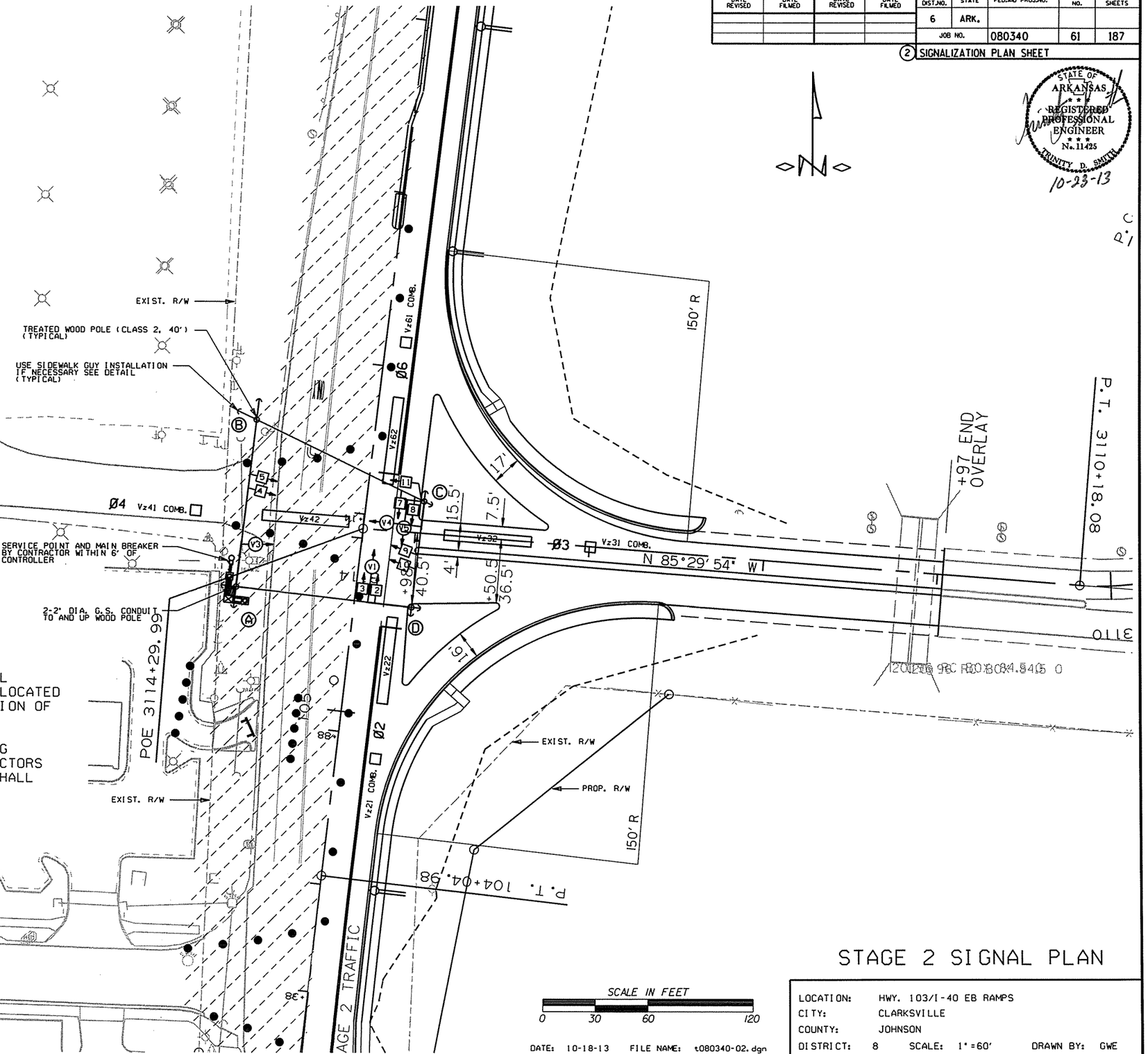


NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.

DETECTOR SPACING CHART

HWY. 103/I-40 EB RAMP		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD VDZ	LAG VDZ
HWY. 103 - 35 MPH	250'	85'
I-40 WB RAMP-30 MPH	85'	0'

VDZ = VIDEO DETECTOR ZONE



NOTE TO CONTRACTOR:

1. TRAFFIC SIGNAL HEADS #1 AND #6 SHALL BE BAGGED AND LEFT IN PLACE DURING STAGE 2. NO SEPARATE PAYMENT WILL BE MADE. TRAFFIC SIGNAL HEADS 2, 3, 7 AND 8 SHALL BE RELOCATED AS SHOWN. THIS WORK SHALL BE PAID FOR BY ITEM RELOCATION OF TRAFFIC SIGNAL HEAD.

2. THE VIDEO DETECTORS V2 AND V6 SHALL BE DISABLED DURING STAGE 2. NO SEPARATE PAYMENT WILL BE MADE. VIDEO DETECTORS V1, V4 AND V5 SHALL BE RELOCATED AS SHOWN. THIS WORK SHALL BE PAID FOR BY ITEM VIDEO DETECTOR RELOCATION.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

STAGE 2 SIGNAL PLAN

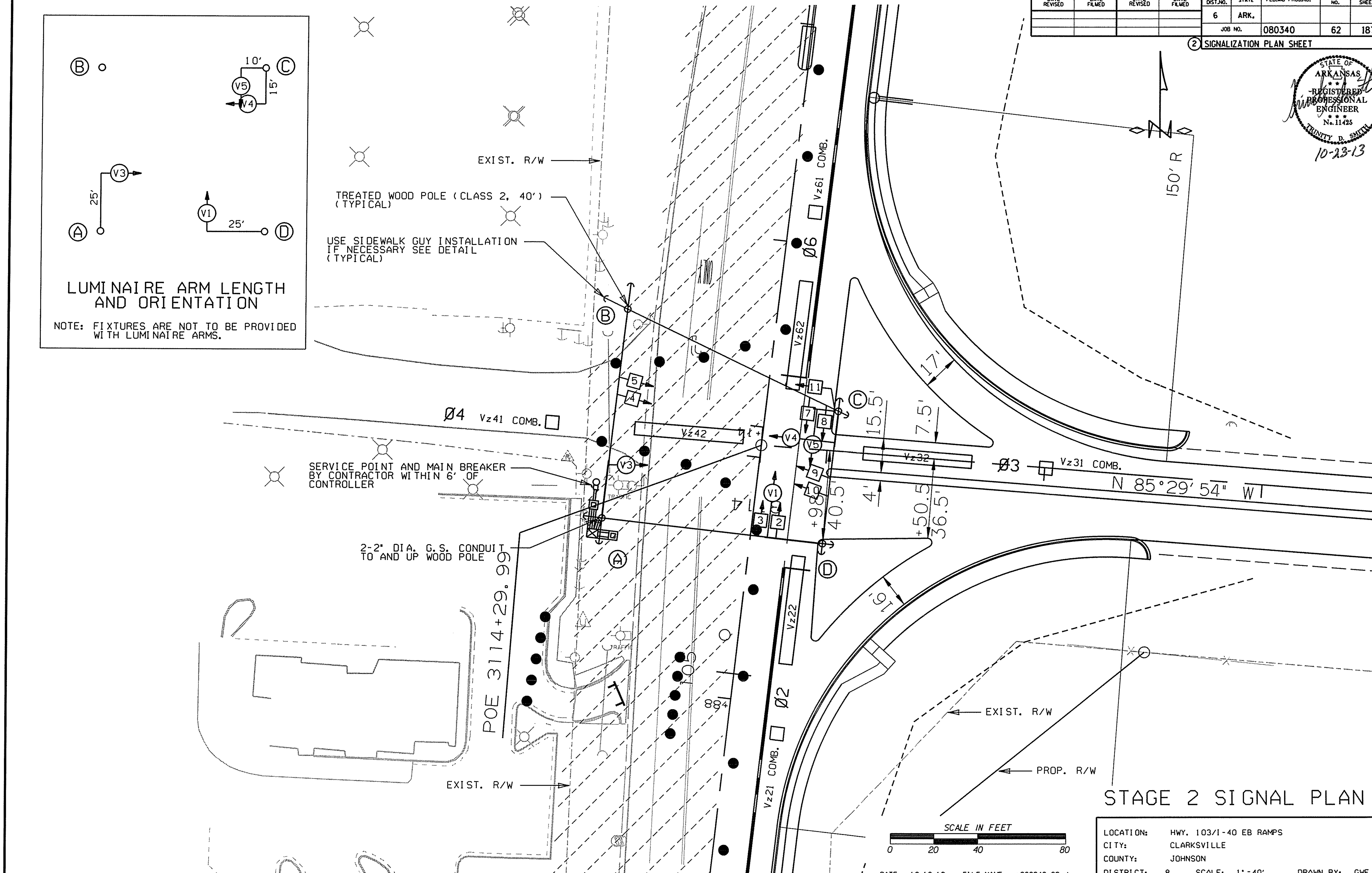
SCALE IN FEET
0 30 60 120

DATE: 10-18-13 FILE NAME: t080340-02.dgn

LOCATION:	HWY. 103/I-40 EB RAMPS			
CITY:	CLARKSVILLE			
COUNTY:	JOHNSON			
DISTRICT:	8	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.		080340	62	187

(2) SIGNALIZATION PLAN SHEET



LUMINAIRE ARM LENGTH AND ORIENTATION
NOTE: FIXTURES ARE NOT TO BE PROVIDED WITH LUMINAIRE ARMS.
EXIST. R/W
TREATED WOOD POLE (CLASS 2, 40') (TYPICAL)
USE SIDEWALK GUY INSTALLATION IF NECESSARY SEE DETAIL (TYPICAL)
SERVICE POINT AND MAIN BREAKER BY CONTRACTOR WITHIN 6' OF CONTROLLER
2-2" DIA. G.S. CONDUIT TO AND UP WOOD POLE
POE 3114+29.99
Ø4 Vz41 COMB.
Vz42
Vz61 COMB.
Ø6
Vz62
Ø3 Vz31 COMB.
Vz32
N 85°29'54" W
150' R
Vz22
Ø2
Vz21 COMB.
PROP. R/W
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
10-23-13
SCALE IN FEET

STAGE 2 SIGNAL PLAN

DATE: 10-18-13 FILE NAME: t080340-02.dgn

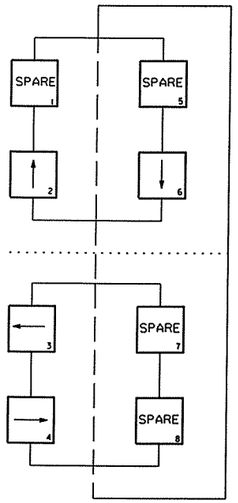
LOCATION:	HWY. 103/I-40 EB RAMPS
CITY:	CLARKSVILLE
COUNTY:	JOHNSON
DISTRICT:	8 SCALE: 1" = 40' DRAWN BY: GWE

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.		080340	63	187

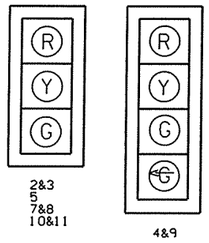
(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

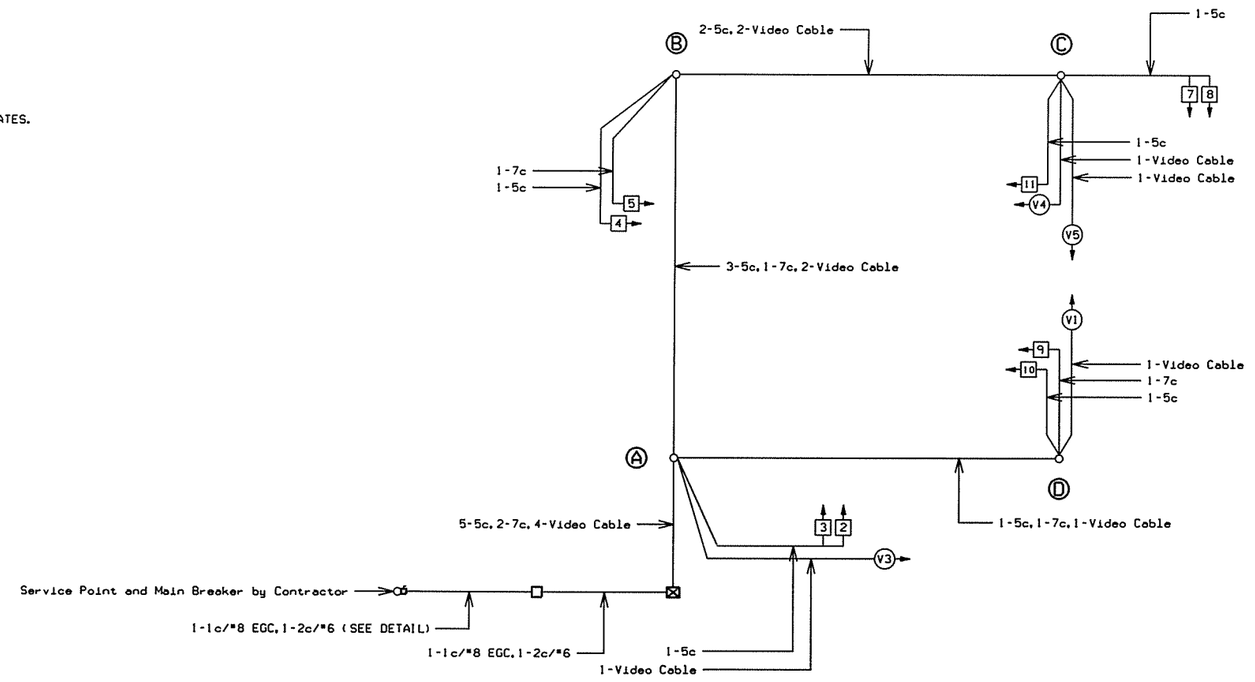
PHASING DIAGRAM



SIGNAL FACES
12" LENSES



NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.



DETECTOR SYSTEM DESCRIPTION: JOB 080340										
CLARKSVILLE - HWY. 103/I-40 EB RAMPS DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS			COMMENTS	TUBE LENGTHS
							LOCAL		MASTER SYSTEM		
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *	DETECTOR NUMBERS		
Vz21	NB ADVANCE	COMB.			9	V10	2	2		CAMERA V5	
Vz22	NB NEAR	LOCAL			10	V2	2			CAMERA V5	
Vz31	WB NEAR	COMB.			17	V11	3	3		CAMERA V3	
Vz32	WB ADVANCE	LOCAL			18	V3	3			CAMERA V3	
Vz41	EB ADVANCE	COMB.			19	V12	4	4		CAMERA V4	
Vz42	EB NEAR	LOCAL			20	V4	4			CAMERA V4	
Vz61	SB ADVANCE	COMB.			5	V14	6	6		CAMERA V1	
Vz62	SB NEAR	LOCAL			6	V6	6			CAMERA V1	
					SPARE 1, 2, 3, 4, 7, 8, 11, 12, 13, 14, 15&16						

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.

STAGE 2
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. 103/I-40 EB RAMPS 2+6	CLR.	3	CLR.	4	CLR.		FLASH SEQ.
2&3	G	••	R	R	R	R		R
4	R	R	G/G	••	R	R		R
5	R	R	G	••	R	R		R
7&8	G	••	R	R	R	R		R
9	R	R	R	R	G/G	••		R
10&11	R	R	R	R	G	••		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

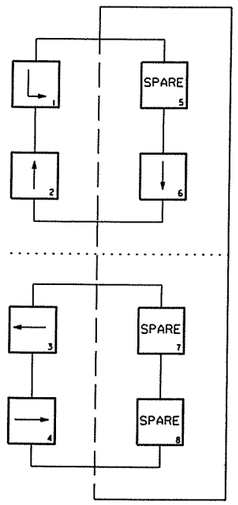
DATE: 10-18-13 FILE NAME: t080340-02.dgn

LOCATION: HWY. 103/I-40 EB RAMPS
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	64	187

(2) SIGNALIZATION PLAN SHEET

PHASING DIAGRAM



DETECTOR SPACING CHART

HWY. 103/I-40 EB RAMP		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD VDZ	LAG VDZ
HWY.103 - 35 MPH	250'	85'
I-40 EB RAMP-30 MPH	85'	0'

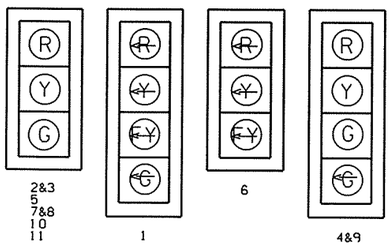
VDZ = VIDEO DETECTOR ZONE

NOTE TO CONTRACTOR:

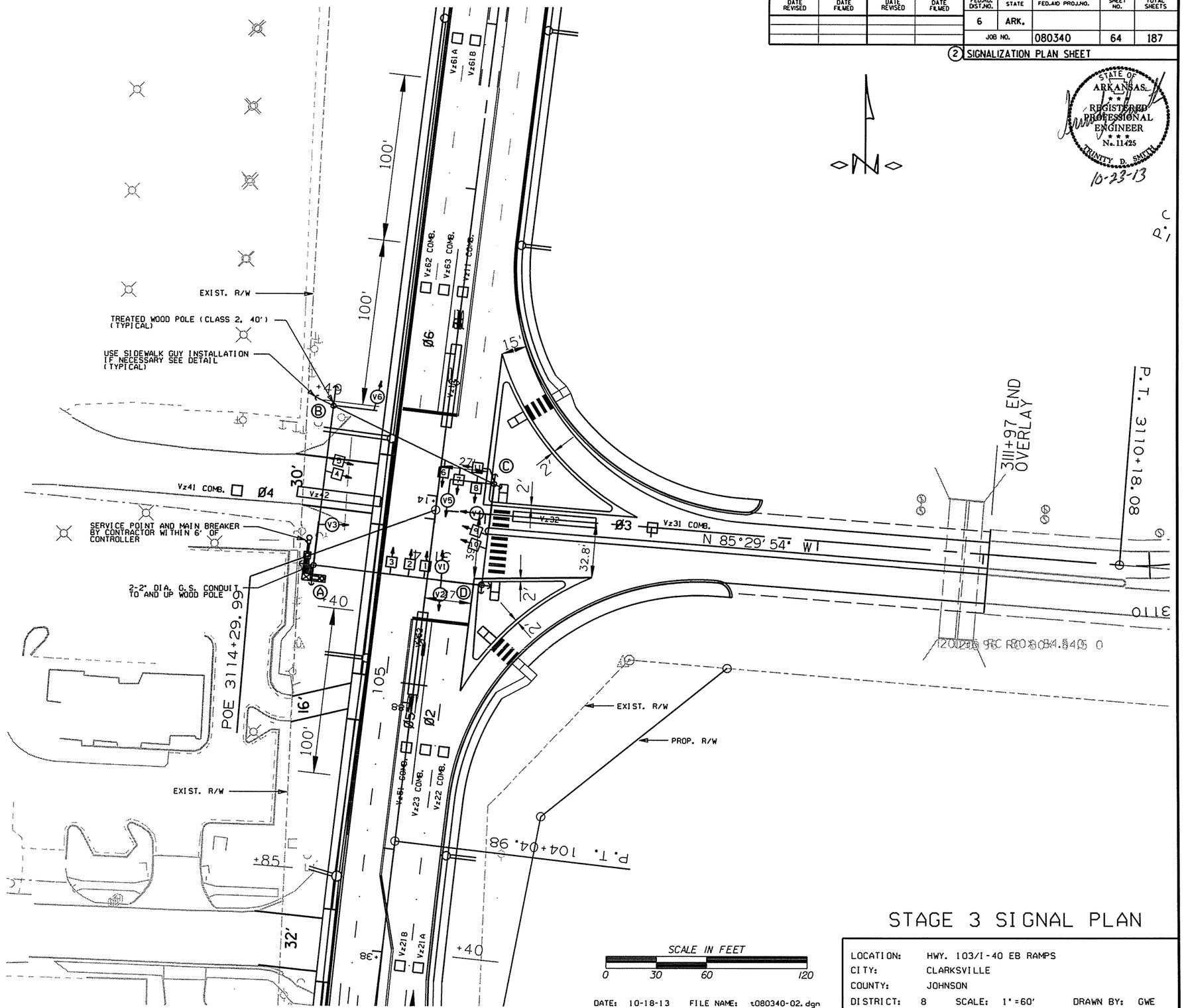
TRAFFIC SIGNAL HEADS 1, 2, 3, 6, 7 AND 8 SHALL BE RELOCATED AS SHOWN.

SIGNAL FACES

12" LENSES



NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.



SCALE IN FEET
0 30 60 120

DATE: 10-18-13 FILE NAME: t080340-02.dgn

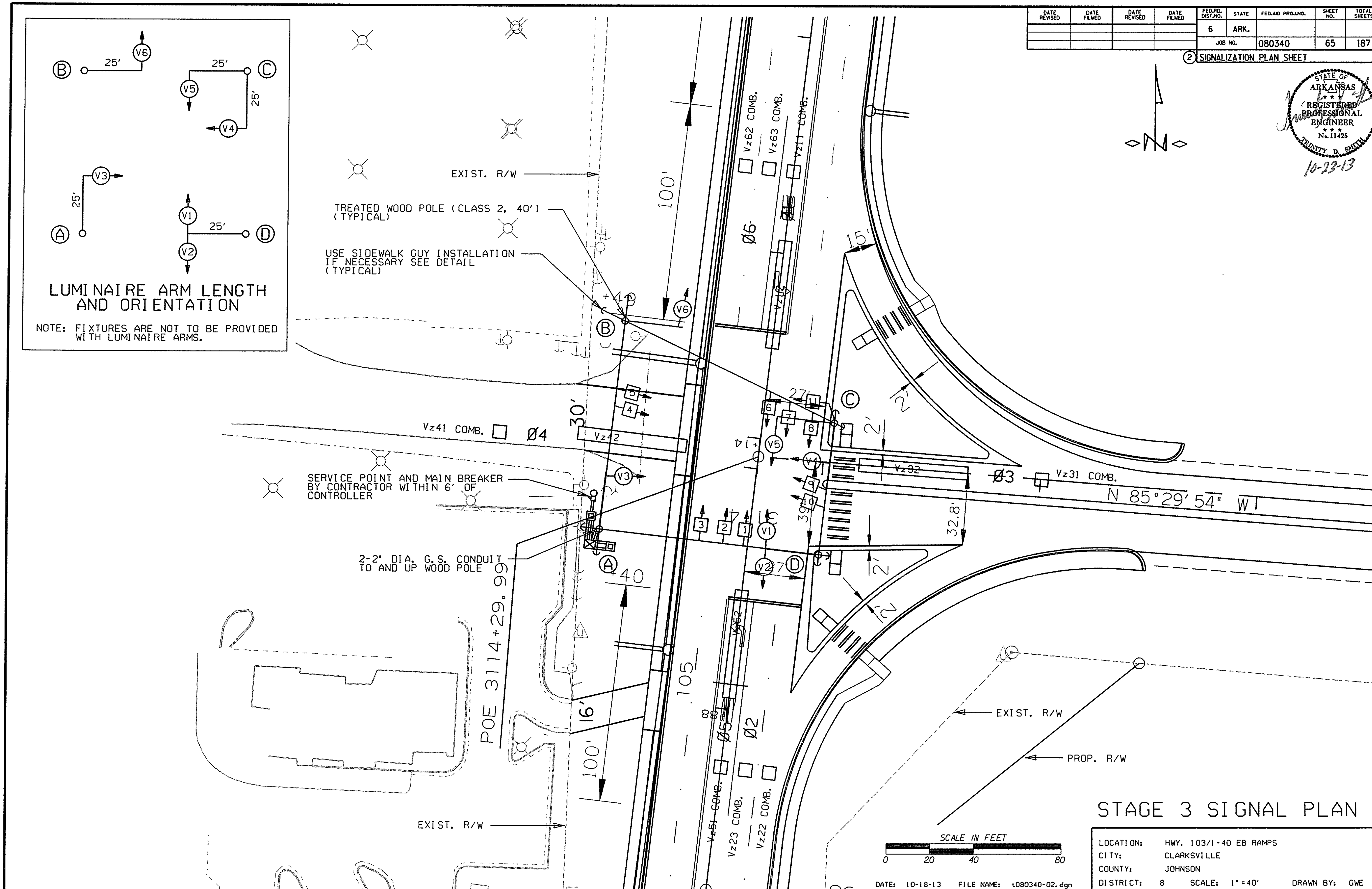
STAGE 3 SIGNAL PLAN

LOCATION:	HWY. 103/I-40 EB RAMPS
CITY:	CLARKSVILLE
COUNTY:	JOHNSON
DISTRICT: 8	SCALE: 1"=60' DRAWN BY: GWE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

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.		080340	65	187

(2) SIGNALIZATION PLAN SHEET



LUMINAIRE ARM LENGTH AND ORIENTATION
NOTE: FIXTURES ARE NOT TO BE PROVIDED WITH LUMINAIRE ARMS.
EXIST. R/W
TREATED WOOD POLE (CLASS 2, 40') (TYPICAL)
USE SIDEWALK GUY INSTALLATION IF NECESSARY SEE DETAIL (TYPICAL)
SERVICE POINT AND MAIN BREAKER BY CONTRACTOR WITHIN 6' OF CONTROLLER
2-2" DIA. G.S. CONDUIT TO AND UP WOOD POLE
POE 3114+29.99
Vz41 COMB.
Ø4
Vz31 COMB.
Ø3
N 85°29'54" W
Vz62 COMB.
Vz63 COMB.
Vz11 COMB.
Ø6
Ø2
Ø5
Vz51 COMB.
Vz23 COMB.
Vz22 COMB.
PROP. R/W
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
10-23-13
SCALE IN FEET

STAGE 3 SIGNAL PLAN

LOCATION: HWY. 103/I-40 EB RAMPS
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 SCALE: 1"=40' DRAWN BY: GWE

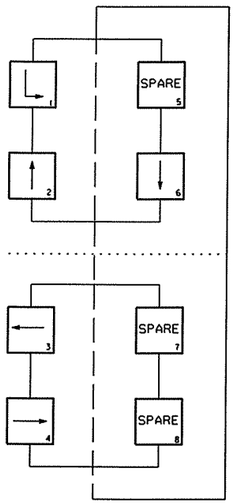
DATE: 10-18-13 FILE NAME: t080340-02.dgn

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.		080340	66	187

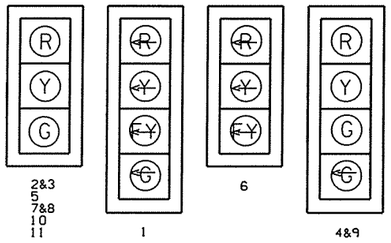
(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

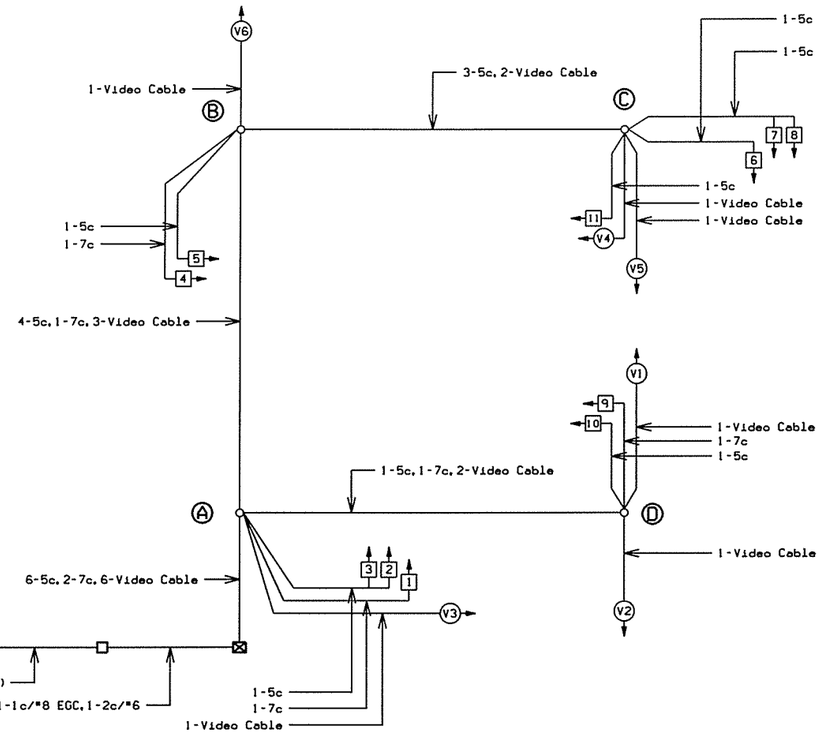
PHASING DIAGRAM



SIGNAL FACES
12" LENSES



NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.



DETECTOR SYSTEM DESCRIPTION: JOB 080340											
CLARKSVILLE - HWY. 103/I-40 EB RAMPS 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. #			
Vz11	SB LT. TURN ADVANCE	COMB.			1	V9	1	1		CAMERA V1	
Vz12	SB LEFT TURN	LOCAL			2	V1	1			CAMERA V1	
Vz21A&B	NB ADVANCE	LOCAL			9	V2	2			CAMERA V2	
Vz22	NB OUTSIDE NEAR	COMB.			10	V10	2	2		CAMERA V5	
Vz23	NB INSIDE NEAR	COMB.			11	V15	2	7		CAMERA V5	
Vz31	WB LEFT TURN	COMB.			17	V11	3	3		CAMERA V3	
Vz32	WB THRU AND RT.	LOCAL			18	V3	3			CAMERA V3	
Vz41	EB ADVANCE	COMB.			19	V12	4	4		CAMERA V4	
Vz42	EB NEAR	LOCAL			20	V4	4			CAMERA V4	
Vz51	NB LT. TURN ADVANCE	COMB.			13	V13	5	5		CAMERA V5	
Vz52	NB LEFT TURN	LOCAL			14	V5	5			CAMERA V5	
Vz61A&B	SB ADVANCE	LOCAL			5	V6	6			CAMERA V6	
Vz62	SB RIGHT TURN	COMB.			6	V14	6	6		CAMERA V1	
Vz63	SB OUTSIDE NEAR	COMB.			7	V16	6	8		CAMERA V1	
					SPARE 3, 4, 8, 12, 15&16						

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.

STAGE 3
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. 103/I-40 EB RAMPS I+6	CLR.	2+6	CLR.	3	CLR.	4	CLR.		FLASH SEQ.
1	~~G~~	•	~~FY~~	•••	~~R~~	~~R~~	~~R~~	~~R~~		~~R~~
2&3	G	••	G	••	R	R	R	R		R
4	R	R	R	R	G/~~G~~	••	R	R		R
5	R	R	R	R	G	••	R	R		R
6	~~FY~~	•••	~~FY~~	•••	~~R~~	~~R~~	~~R~~	~~R~~		~~R~~
7&8	R	R	G	••	R	R	R	R		R
9	R	R	R	R	R	R	G/~~G~~	••		R
10	R	R	R	R	R	R	G	••		R
11	R	R	R	R	R	R	G	••		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

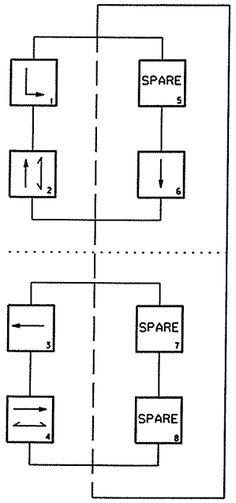
DATE: 10-18-13 FILE NAME: t080340-02.dgn

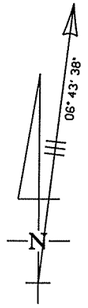
LOCATION: HWY. 103/I-40 EB RAMPS
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 SCALE: N/A DRAWN BY: GWE

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.		080340	67	187

(2) SIGNALIZATION PLAN SHEET

PHASING DIAGRAM





ANTENNA ORIENTATION

ORIENTED TO MASTER RADIO ANTENNA LOCATED AT THE INTERSECTION OF HWY. 103/I-40 WB RAMPS

DETECTOR SPACING CHART

POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD VDZ	LAG VDZ
HWY.103 - 35 MPH	250'	85'
I-40 EB RAMP-30 MPH	85'	0'

VDZ = VIDEO DETECTOR ZONE

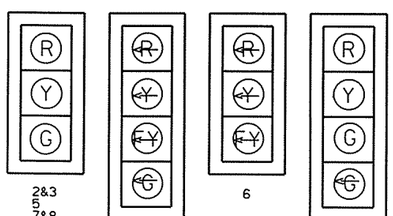
HWY. 103/I-40 EB RAMPS POLE DIMENSIONS

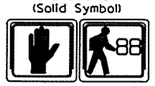
POLE	MAST ARM	•MAST ARM ANGLE	VERT. SHAFT	LUM. ARM	•LUM. ANGLE
A	46'	180°	35'	10'	90°
B	22'	270°	35'	15'	180°
C	44'	270°	35'	10'	180°
D	36'	270°	35'	15'	180°

ANGLE MEASURED CLOCKWISE FROM HAND HOLE.

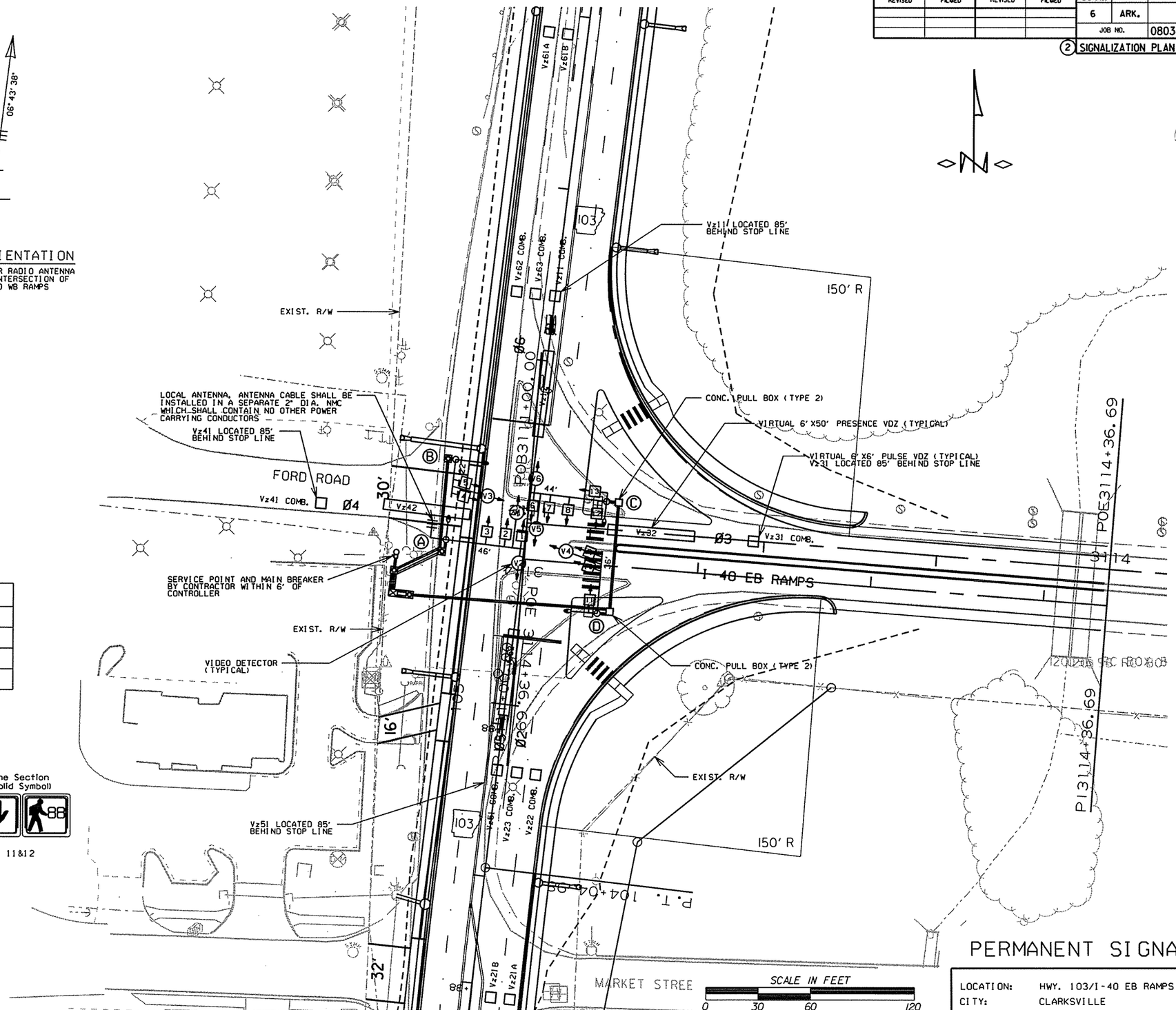
SIGNAL FACES

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. STANDARDS.



PERMANENT SIGNAL PLAN

LOCATION:	HWY. 103/I-40 EB RAMPS				
CITY:	CLARKSVILLE				
COUNTY:	JOHNSON				
DISTRICT:	8	SCALE:	1"=60'	DRAWN BY:	GWE

DATE: 10-18-13 FILE NAME: t080340-02.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.		080340	68	187

(2) SIGNALIZATION PLAN SHEET

HWY. 103/I-40 EB RAMPS POLE LOCATIONS

POLE	LOCATION & STATION	OFFSET	X, Y COORDINATES
A	HWY. 103 - STA. 105+90.45	46' LT.	875952.42, 410097.04
B	HWY. 103 - STA. 106+36.98	46' LT.	875957.87, 410143.25
C	HWY. 103 - STA. 106+23.28	44' RT.	876045.07, 410119.18
D	HWY. 103 - STA. 105+58.63	46' RT.	876039.87, 410054.69

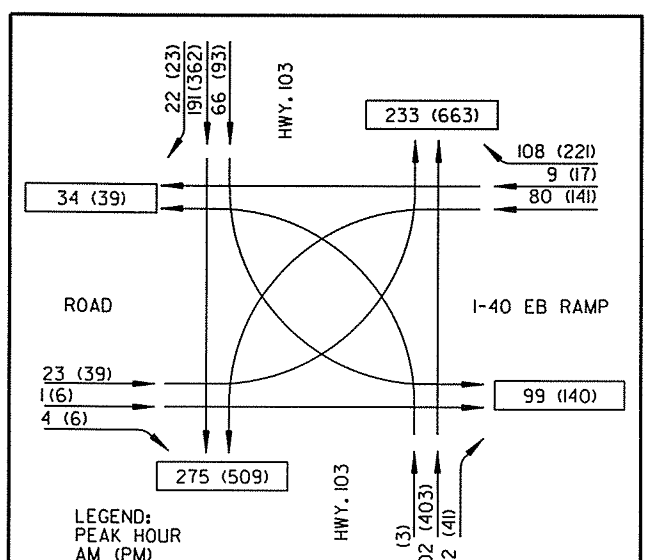
DESIGN PARAMETERS

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

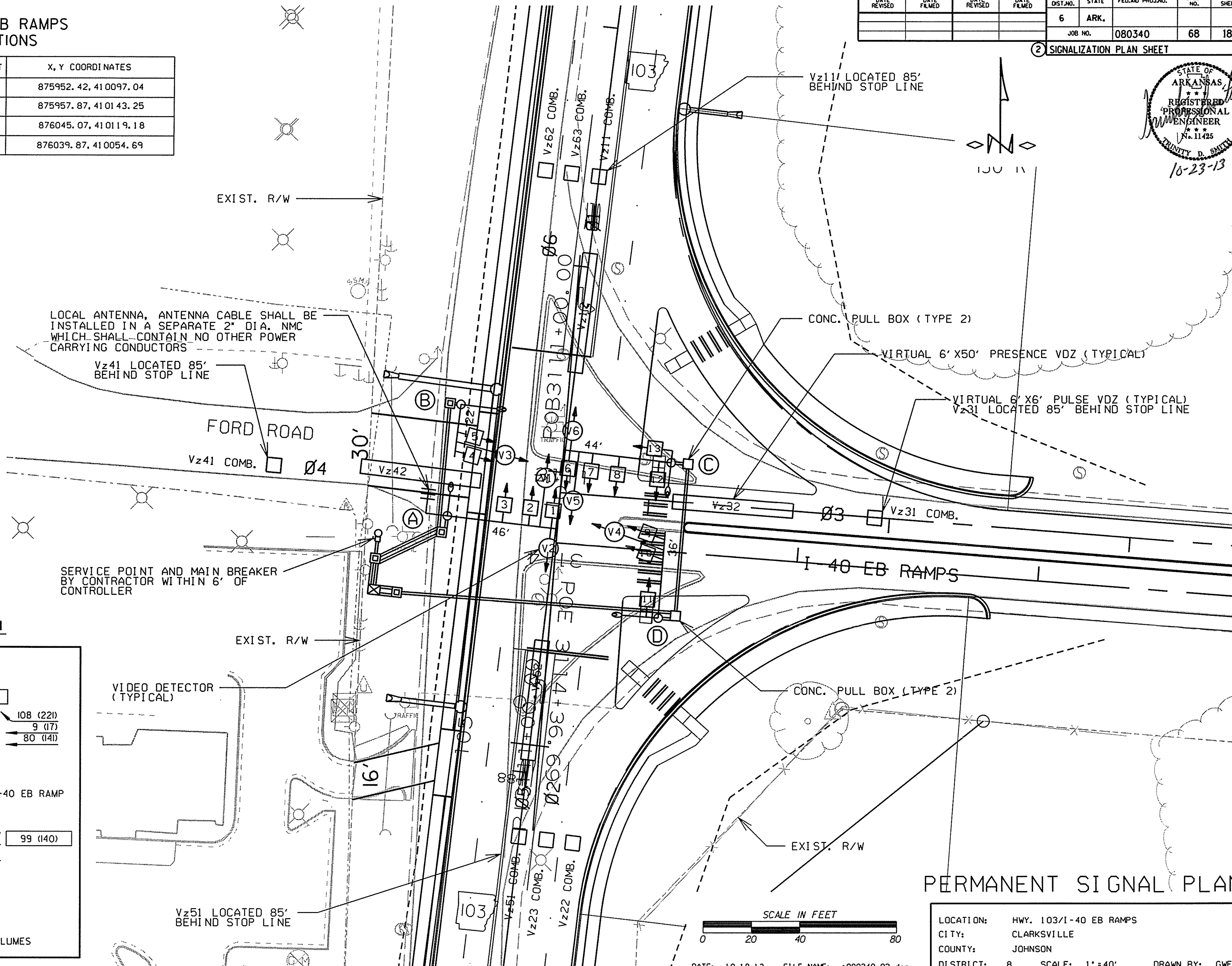
LOCATION OF STOP BARS SHOWN ON PAVEMENT MARKING PLAN. SEE SEPARATE SHEET.

MINIMUM CLEAR ZONE DISTANCE 3 FEET BEHIND CURB.

TRAFFIC FLOW DIAGRAM



EXISTING (2010) PEAK HOUR TRAFFIC VOLUMES



STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11435 TRINITY D. SMITH 10-23-13

PERMANENT SIGNAL PLAN

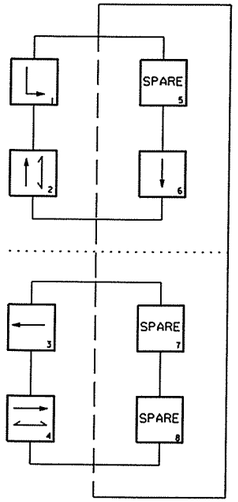
LOCATION:	HWY. 103/I-40 EB RAMPS
CITY:	CLARKSVILLE
COUNTY:	JOHNSON
DISTRICT:	8
SCALE:	1" = 40'
DRAWN BY:	GWE

DATE: 10-18-13 FILE NAME: t080340-02.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.		080340	69	187

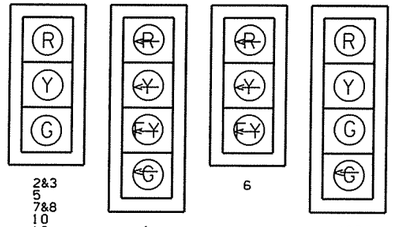
(2) SIGNALIZATION PLAN SHEET

PHASING DIAGRAM



SIGNAL FACES

12" LENSES



One Section (Solid Symbol)

11&12

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. STANDARDS.

INTERVAL CHART

SIGNAL FACES	HWY. 103/I-40 EB RAMPS I+6	CLR.	2+6	CLR.	3	CLR.	4	CLR.		FLASH SEQ.
1	~~G~~	•	~~FY~~	•••	~~R~~	~~R~~	~~R~~	~~R~~		~~R~~
2&3	G	••	G	••	R	R	R	R		R
4	R	R	R	R	G ~~G~~	••	R	R		R
5	R	R	R	R	G	••	R	R		R
6	~~FY~~	•••	~~FY~~	•••	~~R~~	~~R~~	~~R~~	~~R~~		~~R~~
7&8	R	R	G	••	R	R	R	R		R
9	R	R	R	R	R	R	G ~~G~~	••		R
10	R	R	R	R	R	R	G	••		R
11&12	DW	DW	W	FDW	DW	DW	DW	DW		BLK
13	R	R	R	R	R	R	G	••		R

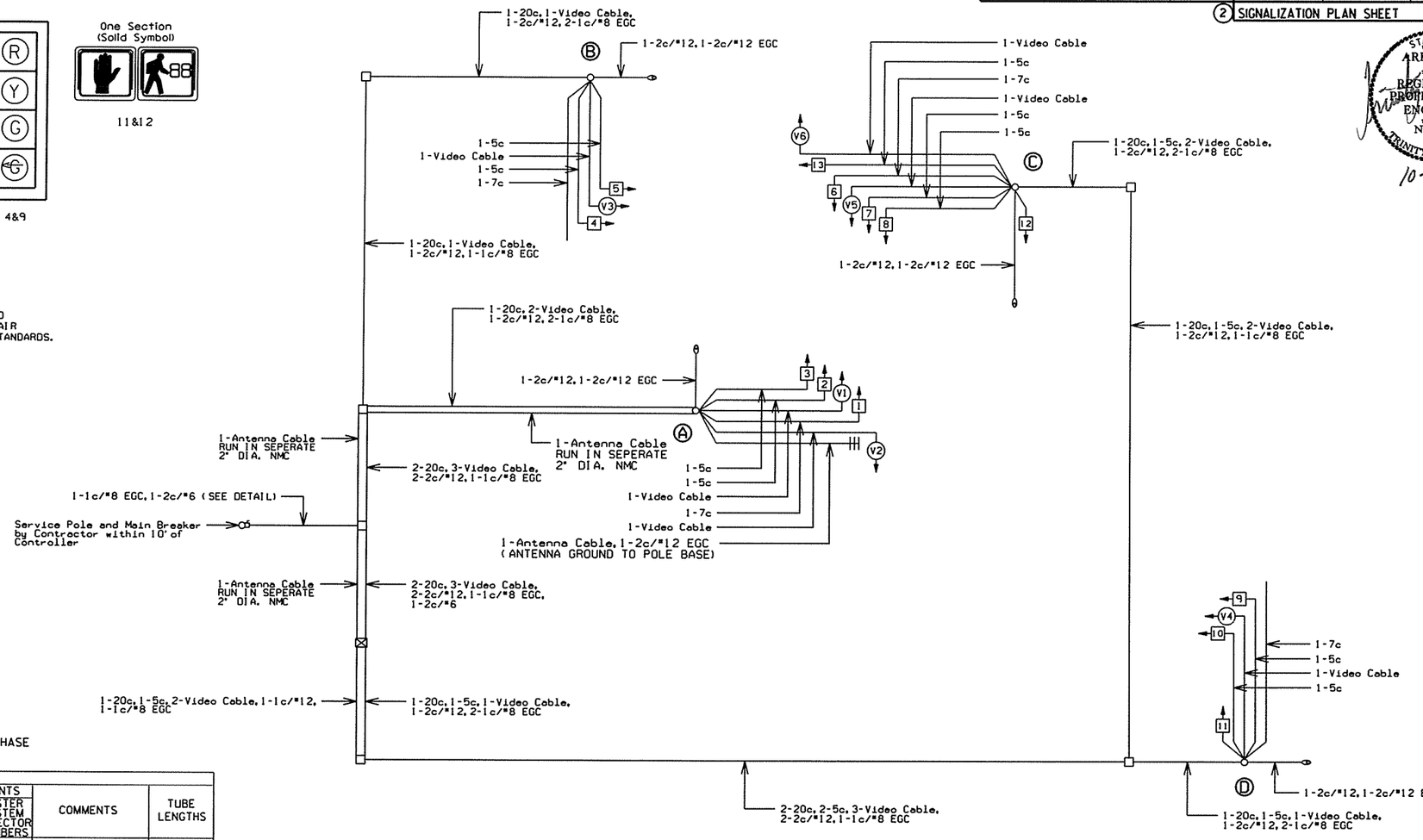
• DENOTES GREEN OR YELLOW ARROW DEPENDING ON NEXT PHASE
•• DENOTES GREEN OR YELLOW BALL DEPENDING ON NEXT PHASE
••• DENOTES FLASHING YELLOW ARROW OR YELLOW ARROW DEPENDING ON NEXT PHASE

DETECTOR SYSTEM DESCRIPTION: JOB 080340

CLARKSVILLE - HWY. 103/I-40 EB RAMPS 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. *			
Vz11	SB LT. TURN ADVANCE	COMB.			1	V9	1	1		CAMERA V1	23'
Vz12	SB LEFT TURN	LOCAL			2	V1	1			CAMERA V1	23'
Vz21A&B	NB ADVANCE	LOCAL			9	V2	2			CAMERA V2	74'
Vz22	NB OUTSIDE NEAR	COMB.			10	V10	2	2		CAMERA V5	23'
Vz23	NB INSIDE NEAR	COMB.			11	V15	2	7		CAMERA V5	23'
Vz31	WB LEFT TURN	COMB.			17	V11	3	3		CAMERA V3	23'
Vz32	WB THRU AND RT.	LOCAL			18	V3	3			CAMERA V3	23'
Vz41	EB ADVANCE	COMB.			19	V12	4	4		CAMERA V4	23'
Vz42	EB NEAR	LOCAL			20	V4	4			CAMERA V4	23'
Vz51	NB LT. TURN ADVANCE	COMB.			13	V13	5	5		CAMERA V5	23'
Vz52	NB LEFT TURN	LOCAL			14	V5	5			CAMERA V5	23'
Vz61A&B	SB ADVANCE	LOCAL			5	V6	6			CAMERA V6	74'
Vz62	SB RIGHT TURN	COMB.			6	V14	6	6		CAMERA V1	23'
Vz63	SB OUTSIDE NEAR	COMB.			7	V16	6	8		CAMERA V1	23'
PB2A&B	I-40 EB RAMP E.LEG	PED.				P2	2				
PB4A&B	HWY. 103 S. LEG	PED.				P4	4				
					SPARE 3, 4, 8, 12, 15&16						

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.



PERMANENT WIRING DIAGRAM

NOTES TO CONTRACTOR:

1. ONE SEPARATE 1-5c IS RUN TO EACH POLE FOR THE PEDESTRIAN PUSH BUTTON.
2. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.
3. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

DATE: 10-18-13 FILE NAME: t080340-02.dgn

LOCATION: HWY. 103/I-40 EB RAMPS
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 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.		080340	70	187

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

STAGE 1 TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
SP&701	SYSTEM LOCAL CONTROLLER TS 2-TYPE 2 (8 PHASES)	1	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	7	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	3	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	982	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	426	LIN. FT.
709	GALVANIZED STEEL CONDUIT (1.25")	20	LIN. FT.
709	GALVANIZED STEEL CONDUIT (2")	70	LIN. FT.
710	NON-METALLIC CONDUIT (1.25")	20	LIN. FT.
SS&711	CONCRETE PULL BOX (TYPE 2 HD)	2	EACH
713	SPAN WIRE ASSEMBLY	1	EACH
716	TREATED WOOD POLE (CLASS 2, 40')	4	EACH
733	VIDEO CABLE	1076	LIN. FT.
SP&733	VIDEO EDGE CARD EXTENDER	2	EACH
SP&733	VIDEO DETECTOR (CLR)	5	EACH
733	VIDEO MONITOR (CLR)	1	EACH
SP&733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	3	EACH
SP&733	VEHICLE DETECTOR RACK (20 CHANNEL)	1	EACH
SP	ANTENNA CABLE (TYPE 6)	75	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1c/8 A.W.G., EGC)	20	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2c/6 A.W.G.)	20	LIN. FT.
SP	EMERGENCY BACKUP LOCAL RADIO UNIT	1	EACH
SP	MASTER RADIO WITH ANTENNA	1	EACH
SP	MODEM, HARDENED (33.6K BAUD)	1	EACH
SP	ON-STREET MASTER CONTROLLER	1	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.25	LUMP SUM
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1	EACH

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

STAGE 2 TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
SP&733	VIDEO DETECTOR RELOCATION	1	EACH
SP	TRAFFIC SIGNAL CONTROLLER MODIFICATION	1	EACH
SP	RELOCATION OF TRAFFIC SIGNAL HEAD	4	EACH

STAGE 2
RELOCATE TRAFFIC SIGNAL HEADS AND VIDEO DETECTORS AS SHOWN ON THE STAGE 2 TRAFFIC SIGNAL PLAN.
MAINTAIN THIS TRAFFIC SIGNAL CONFIGURATION AS SHOWN ON THE STAGE 2 TRAFFIC SIGNAL PLAN.
(REFER TO MAINTENANCE OF TRAFFIC DETAILS).

STAGE 3 TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
SP&706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	1	EACH
SP&733	VIDEO DETECTOR RELOCATION	1	EACH
SP&733	VIDEO DETECTOR (CLR)	1	EACH
SP	TRAFFIC SIGNAL CONTROLLER MODIFICATION	1	EACH
SP	RELOCATION OF TRAFFIC SIGNAL HEAD	6	EACH

STAGE 3
RELOCATE TRAFFIC SIGNAL HEADS AND VIDEO DETECTORS AS SHOWN ON THE STAGE 2 TRAFFIC SIGNAL PLAN.
MAINTAIN THIS TRAFFIC SIGNAL CONFIGURATION AS SHOWN ON THE STAGE 3 TRAFFIC SIGNAL PLAN.
(REFER TO MAINTENANCE OF TRAFFIC DETAILS).

PERMANENT TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
SP&706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	7	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	4	EACH
SP&707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED	2	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	940	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	197	LIN. FT.
708	TRAFFIC SIGNAL CABLE (12C/14 A.W.G.)	470	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	340	LIN. FT.
710	NON-METALLIC CONDUIT (2")	50	LIN. FT.
710	NON-METALLIC CONDUIT (3")	397	LIN. FT.
SS&711	CONCRETE PULL BOX (TYPE 2 HD)	3	EACH
SS&711	CONCRETE PULL BOX (TYPE 2)	1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (24')	1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (46')	1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (54')	1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (56')	1	EACH
733	VIDEO CABLE	1286	LIN. FT.
SP&733	VIDEO DETECTOR (CLR)	6	EACH
733	VIDEO MONITOR (CLR)	1	EACH
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES	898	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., EGC)	529	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., EGC)	270	LIN. FT.
SP	LUMINAIRE ASSEMBLY	4	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.25	LUMP SUM
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1	EACH
SP	TRAFFIC SIGNAL CONTROLLER MODIFICATION	1	EACH

PERMANENT TRAFFIC SIGNAL:
THE TEMPORARY TRAFFIC SIGNAL INSTALLATION SHALL REMAIN IN OPERATION UNTIL THE PERMANENT TRAFFIC SIGNAL IS COMPLETED AND OPERATIONAL.
INSTALL PERMANENT TRAFFIC SIGNAL AND REMOVE ALL STAGE 1-3 TEMPORARY TRAFFIC SIGNAL COMPONENTS.
(REFER TO PERMANENT TRAFFIC SIGNAL PLANS).

DATE: 10-18-13 FILE NAME: t080340-04.dgn

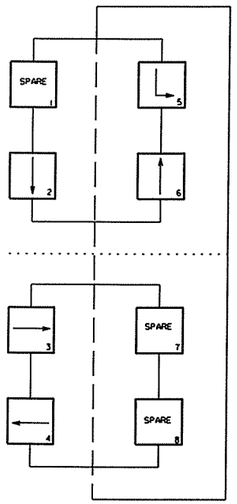
LOCATION: HWY. 103/I-40 WB RAMPS
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 SCALE: N/A DRAWN BY: GWE

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.		080340	71	187

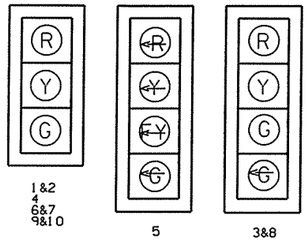
(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

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

DETECTOR SPACING CHART

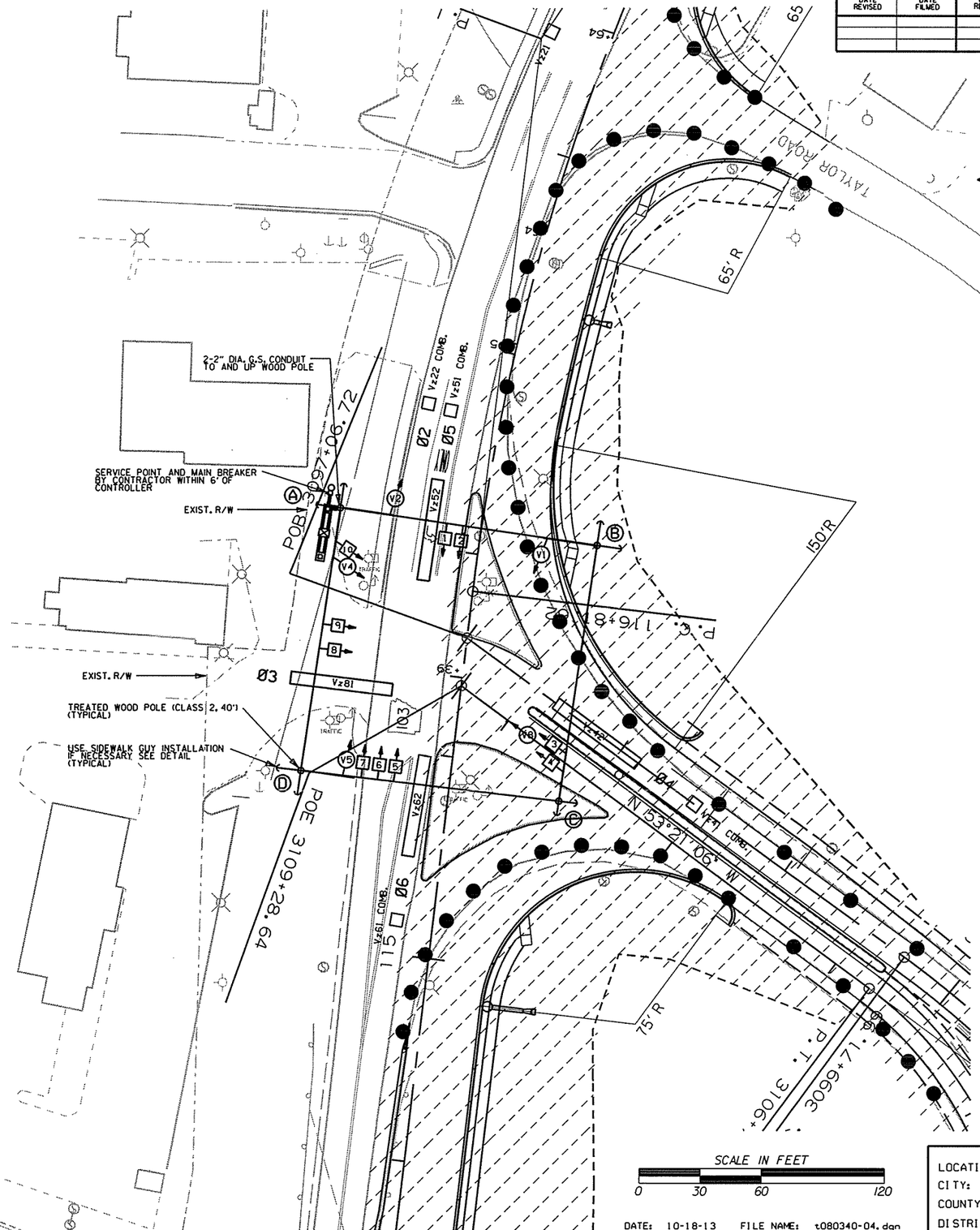
HWY. 103/I-40 EB RAMP		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD VDZ	LAG VDZ
HWY. 103 - 35 MPH	250'	85'
I-40 EB RAMP-30 MPH	85'	0'

VDZ = VIDEO DETECTION ZONE

NOTE TO CONTRACTOR:

1. THE TRAFFIC SIGNAL CABLE PROVIDED IN STAGE 1 SHALL BE OF SUFFICIENT LENGTH TO BE UTILIZED IN STAGES 2 AND 3.

2. THE VIDEO CABLE PROVIDED IN STAGE 1 SHALL BE OF SUFFICIENT LENGTH TO BE UTILIZED IN STAGES 2 AND 3.



STAGE 1 SIGNAL PLAN

LOCATION:	HWY. 103/I-40 WB RAMPS
CITY:	CLARKSVILLE
COUNTY:	JOHNSON
DISTRICT:	8 SCALE: 1"=60' DRAWN BY: GWE

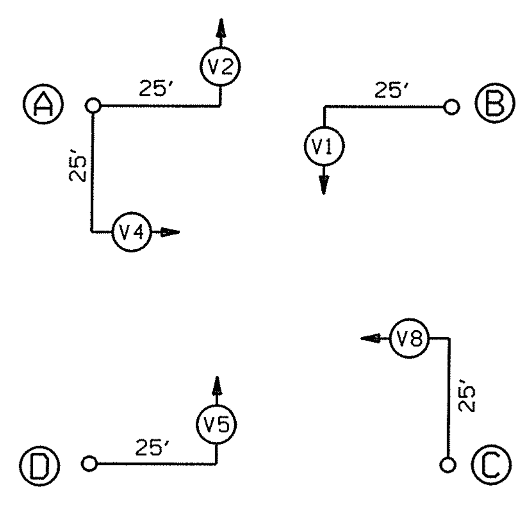
DATE: 10-18-13 FILE NAME: t080340-04.dgn

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.		080340	72	187

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-23-13

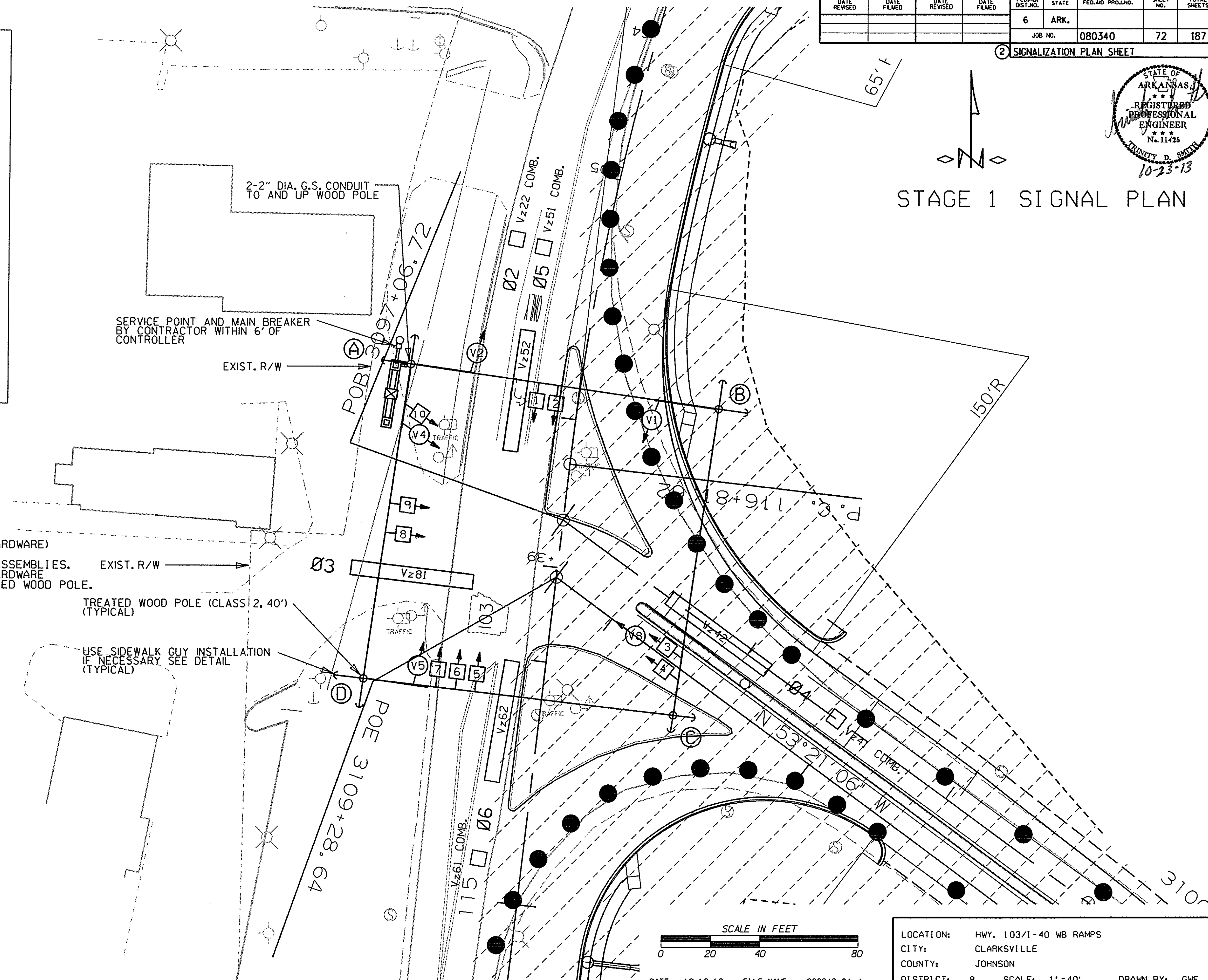
STAGE 1 SIGNAL PLAN



LUMINAIRE ARM LENGTH AND ORIENTATION

NOTE: FIXTURES ARE NOT TO BE PROVIDED WITH LUMINAIRE ARMS.

NOTE TO CONTRACTOR:
25' 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.



DATE: 10-18-13 FILE NAME: t080340-04.dgn

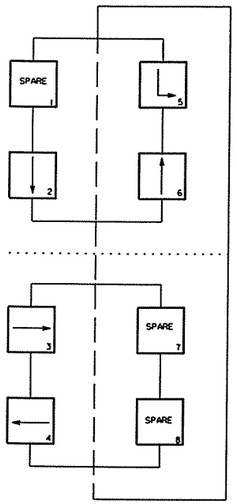
LOCATION:	HWY. 103/I-40 WB RAMPS		
CITY:	CLARKSVILLE		
COUNTY:	JOHNSON		
DISTRICT:	8	SCALE: 1"=40'	DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	73	187

(2) SIGNALIZATION PLAN SHEET

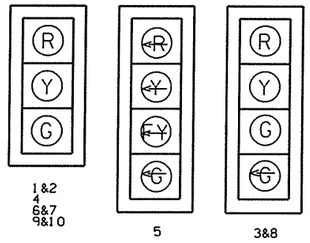
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

PHASING DIAGRAM

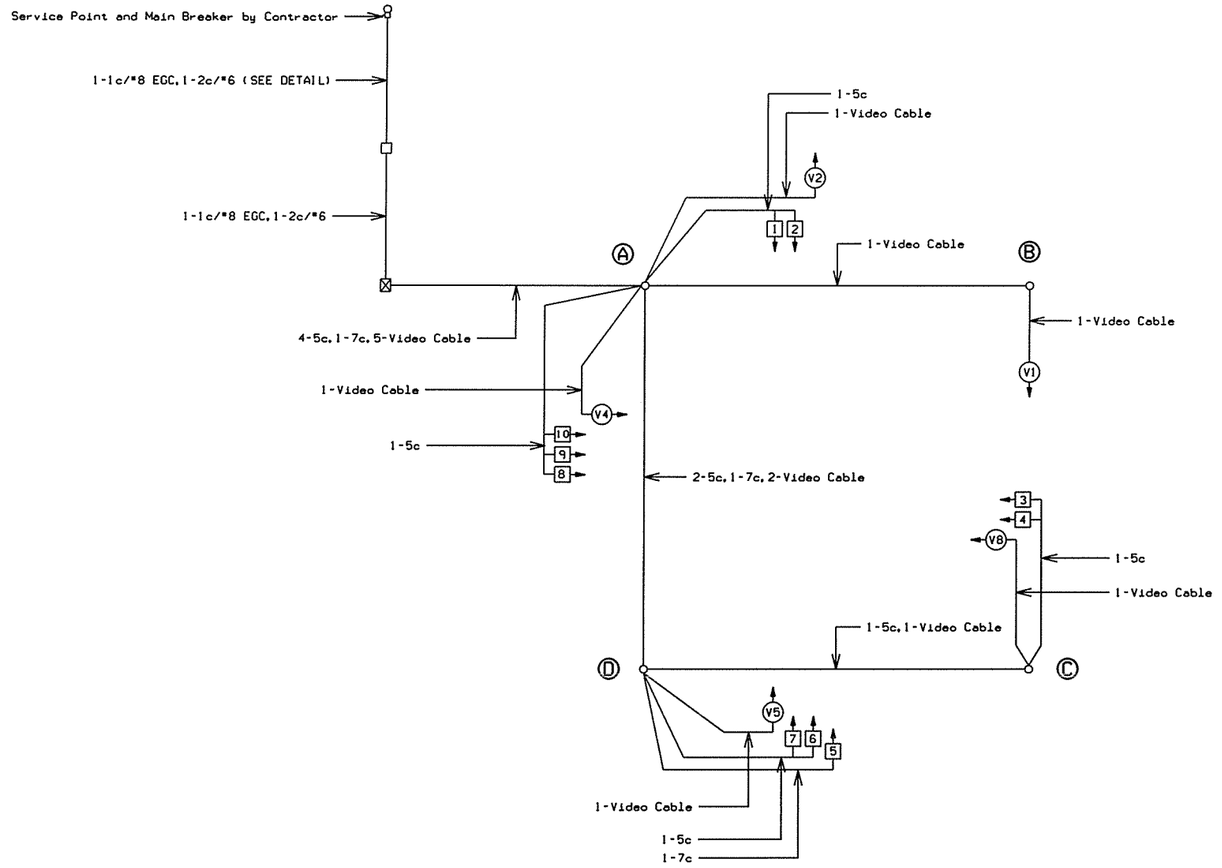


SIGNAL FACES

12" LENSES



NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS



SYSTEM DESCRIPTION: JOB 080340										
CLARKSVILLE - HWY. 103/I-40 WB RAMPS DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS LOCAL		MASTER SYSTEM DETECTOR NUMBERS	COMMENTS	TUBE LENGTH
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *			
Vz21	SB ADVANCE	LOCAL			9	V2	2			CAMERA V2	
Vz22	SB NEAR	COMB.			10	V10	2	2		CAMERA V5	
Vz41	WB ADVANCE	COMB.			17	V12	4	4		CAMERA V4	
Vz42	WB NEAR	LOCAL			18	V4	4			CAMERA V4	
Vz51	SB LT. TURN ADVANCE	COMB.			13	V13	5	5		CAMERA V5	
Vz52	SB LEFT TURN	LOCAL			14	V5	5			CAMERA V5	
Vz61	NB ADVANCE	COMB.			1	V14	6	6		CAMERA V1	
Vz62	NB NEAR	LOCAL			2	V6				CAMERA V1	
Vz81	EB NEAR	LOCAL			19	V8	3			CAMERA V8	
					SPARE 3, 4, 5, 6, 7, 8, 11, 12, 15, 16&20						

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.

STAGE 1 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. 103/I-40 WB RAMPS 2+5	CLR.	2+6	CLR.	3	CLR.	4	CLR.		FLASH SEQ.
1&2	R	R	G	••	R	R	R	R		R
3	R	R	R	R	G/~~G~~	••	R	R		R
4	R	R	R	R	G	••	R	R		R
5	~~FY~~	•••	~~FY~~	•••	~~R~~	~~R~~	~~R~~	~~R~~		~~R~~
6&7	R	R	G	••	R	R	R	R		R
8	R	R	R	••	R	R	G/~~G~~	••		R
9&10	R	R	R	R	R	R	G	••		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

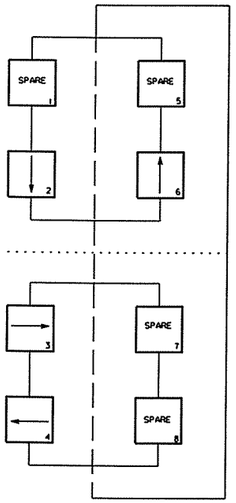
LOCATION: HWY. 103/I-40 WB RAMPS
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 SCALE: N/A DRAWN BY: GWE

DATE: 10-18-13 FILE NAME: t080340-04.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.		080340	74	187

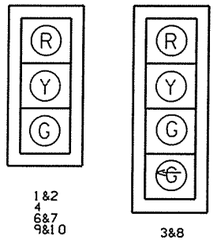
(2) SIGNALIZATION PLAN SHEET

PHASING DIAGRAM



SIGNAL FACES

12" LENSES

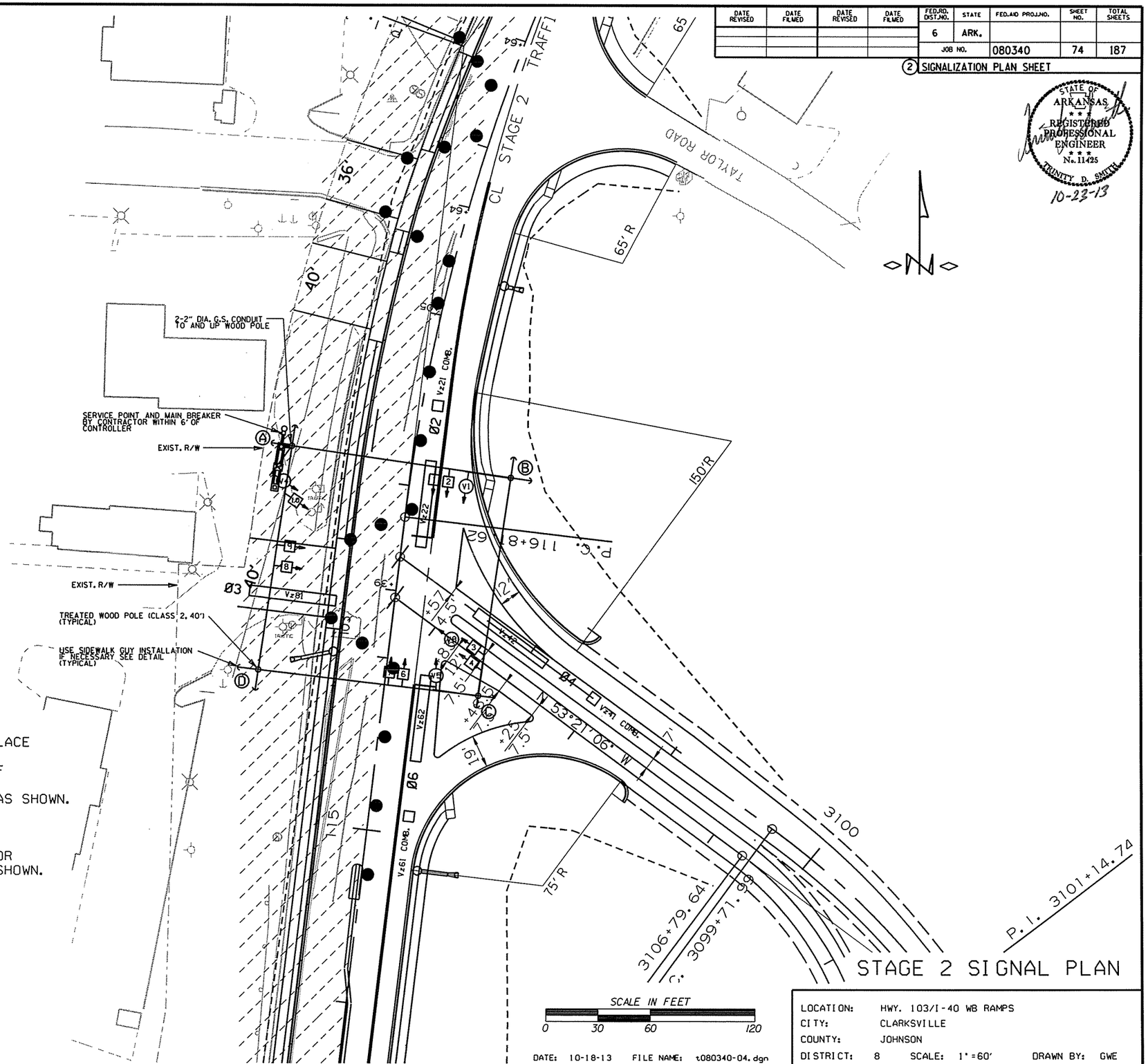


NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS

DETECTOR SPACING CHART

HWY. 103/I-40 EB RAMP		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD VDZ	LAG VDZ
HWY. 103 - 35 MPH	85'	0'
I-40 EB RAMP-30 MPH	85'	0'

VDZ = VIDEO DETECTION ZONE



NOTE TO CONTRACTOR:

1. TRAFFIC SIGNAL HEAD #5 SHALL BE BAGGED AND LEFT IN PLACE DURING STAGE 2. NO SEPARATE PAYMENT SHALL BE MADE. THIS WORK SHALL BE PAID FOR BY THE ITEM RELOCATION OF TRAFFIC SIGNAL HEAD. TRAFFIC SIGNAL HEADS 1, 2, 6 AND 7 SHALL BE RELOCATED AS SHOWN.

2. THE VIDEO DETECTOR V2 SHALL BE DISABLED DURING STAGE 2. NO SEPARATE PAYMENT WILL BE MADE. THIS WORK SHALL BE PAID FOR BY THE ITEM VIDEO DETECTOR RELOCATION. VIDEO DETECTOR V5 SHALL BE RELOCATED AS SHOWN.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

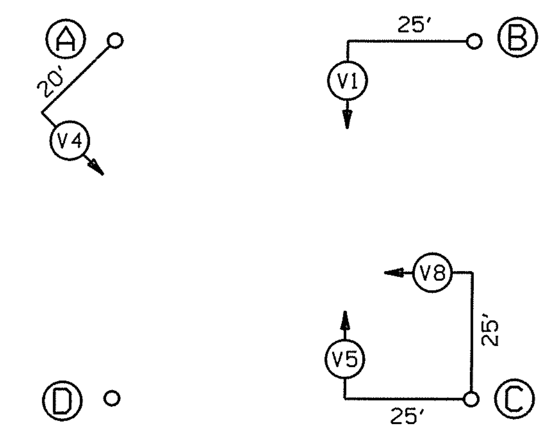
DATE: 10-18-13 FILE NAME: t080340-04.dgn

LOCATION:	HWY. 103/I-40 WB RAMPS		
CITY:	CLARKSVILLE		
COUNTY:	JOHNSON		
DISTRICT:	8	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.		080340	75	187

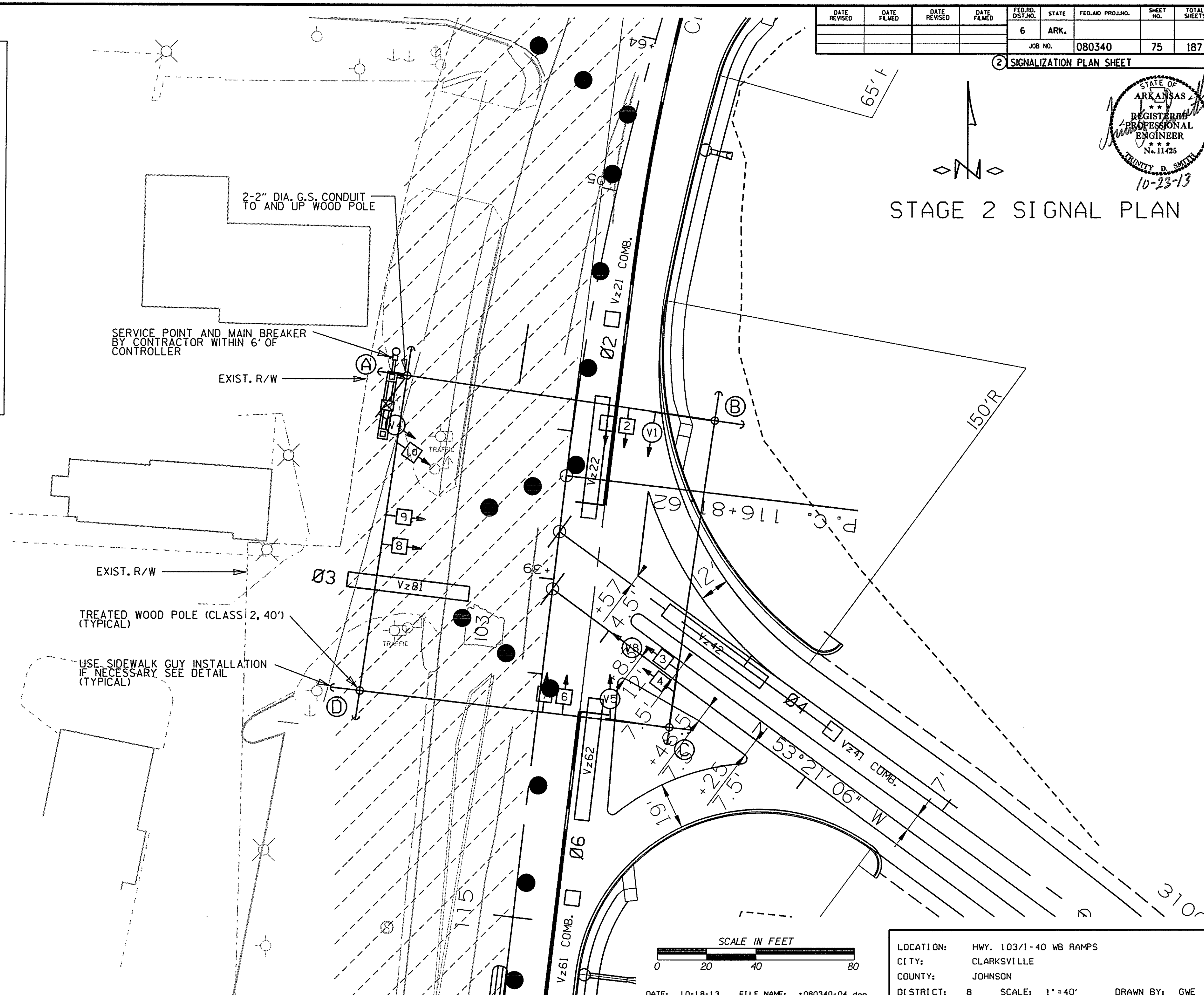
(2) SIGNALIZATION PLAN SHEET

STAGE 2 SIGNAL PLAN



LUMINAIRE ARM LENGTH AND ORIENTATION

NOTE: FIXTURES ARE NOT TO BE PROVIDED WITH LUMINAIRE ARMS.



SCALE IN FEET
0 20 40 80

DATE: 10-18-13 FILE NAME: t080340-04.dgn

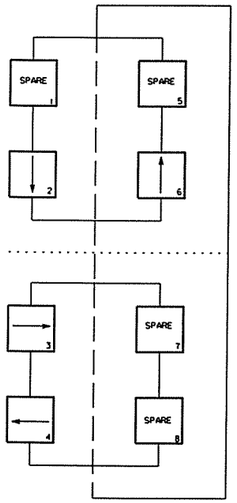
LOCATION:	HWY. 103/I-40 WB RAMPS
CITY:	CLARKSVILLE
COUNTY:	JOHNSON
DISTRICT:	8 SCALE: 1"=40' DRAWN BY: GWE

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.		080340	76	187

(2) SIGNALIZATION PLAN SHEET

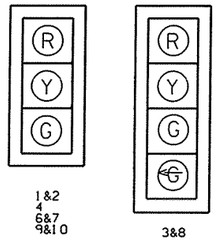
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

PHASING DIAGRAM



SIGNAL FACES

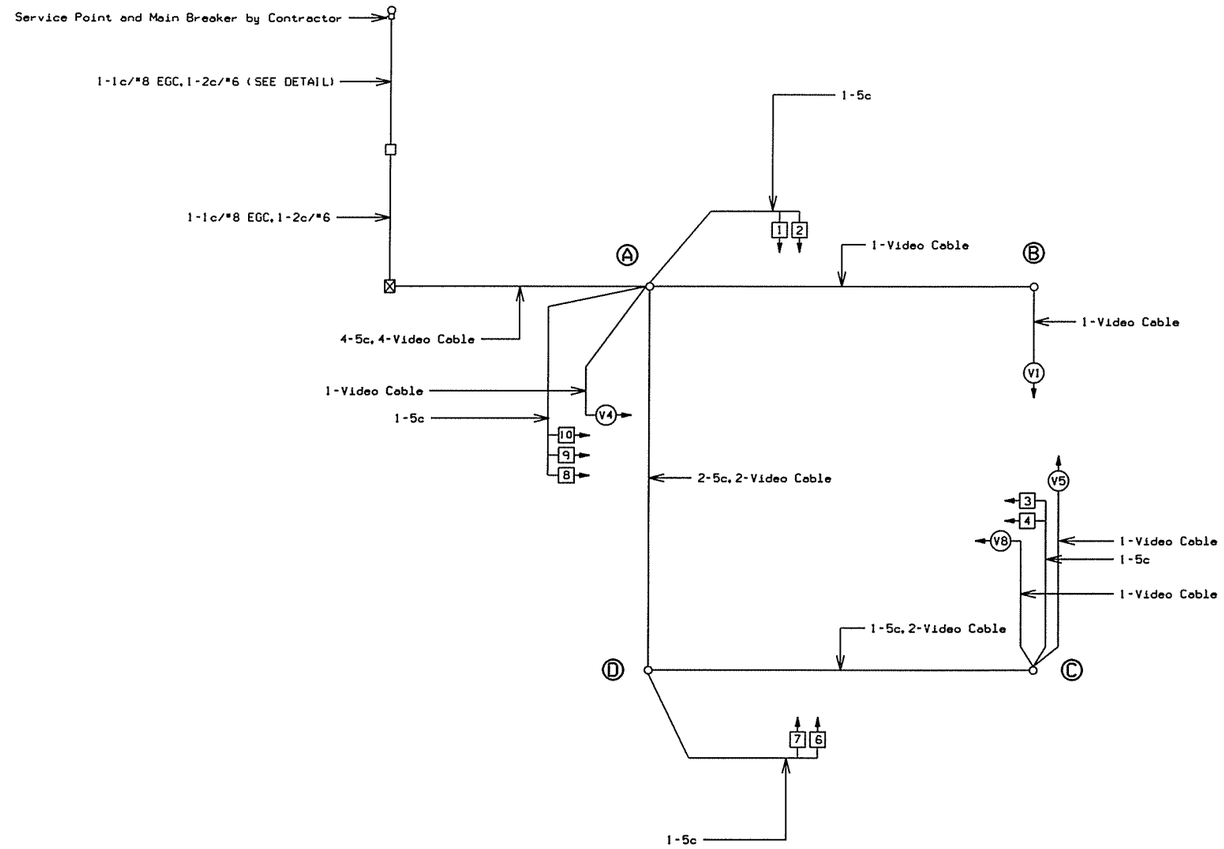
12" LENSES



1&2
4
6&7
9&10

3&8

NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS



SYSTEM DESCRIPTION: JOB 080340											
CLARKSVILLE - HWY. 103/I-40 WB RAMPS DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS LOCAL		MASTER SYSTEM DETECTOR NUMBERS	COMMENTS	TUBE LENGTH
DET. ID#	LOCATION DIRECTION	TYPE	DET. #	CAB. TRM #	AMP CHN. #	CON. INP.#	PHS	SYSTEM DET. #			
Vz21	SB ADVANCE	COMB.			9	V10	2	2		CAMERA V5	
Vz22	SB INSIDE NEAR	LOCAL			10	V2	2			CAMERA V5	
Vz41	WB LEFT ADVANCE	COMB.			17	V12	4	4		CAMERA V4	
Vz42	WB RIGHT TURN	LOCAL			18	V4	4			CAMERA V4	
Vz61	NB ADVANCE	COMB.			5	V14	6	6		CAMERA V1	
Vz62	NB INSIDE NEAR	LOCAL			6	V6	6			CAMERA V1	
Vz81	EB RIGHT ADVANCE	LOCAL			19	V8	3			CAMERA V8	
					SPARE 1, 2, 3, 4, 8, 12, 13, 14, 15, 16, 19&20						

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.

STAGE 2 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. 103/I-40 WB RAMPS 2+6	CLR.	3	CLR.	4	CLR.		FLASH SEQ.
1&2	G	••	R	R	R	R		R
3	R	R	G/G	••	R	R		R
4	R	R	G	••	R	R		R
6&7	G	••	R	R	R	R		R
8	R	••	R	R	G/G	••		R
9&10	R	R	R	R	G	••		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

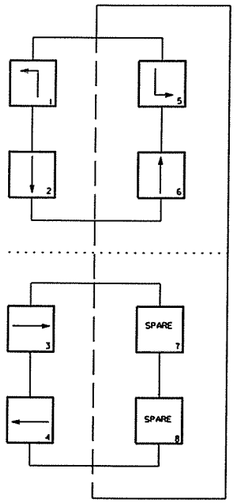
DATE: 10-18-13 FILE NAME: t080340-04.dgn

LOCATION: HWY. 103/I-40 WB RAMPS
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 SCALE: N/A DRAWN BY: GWE

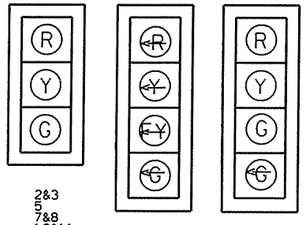
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	77	187

(2) SIGNALIZATION PLAN SHEET

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

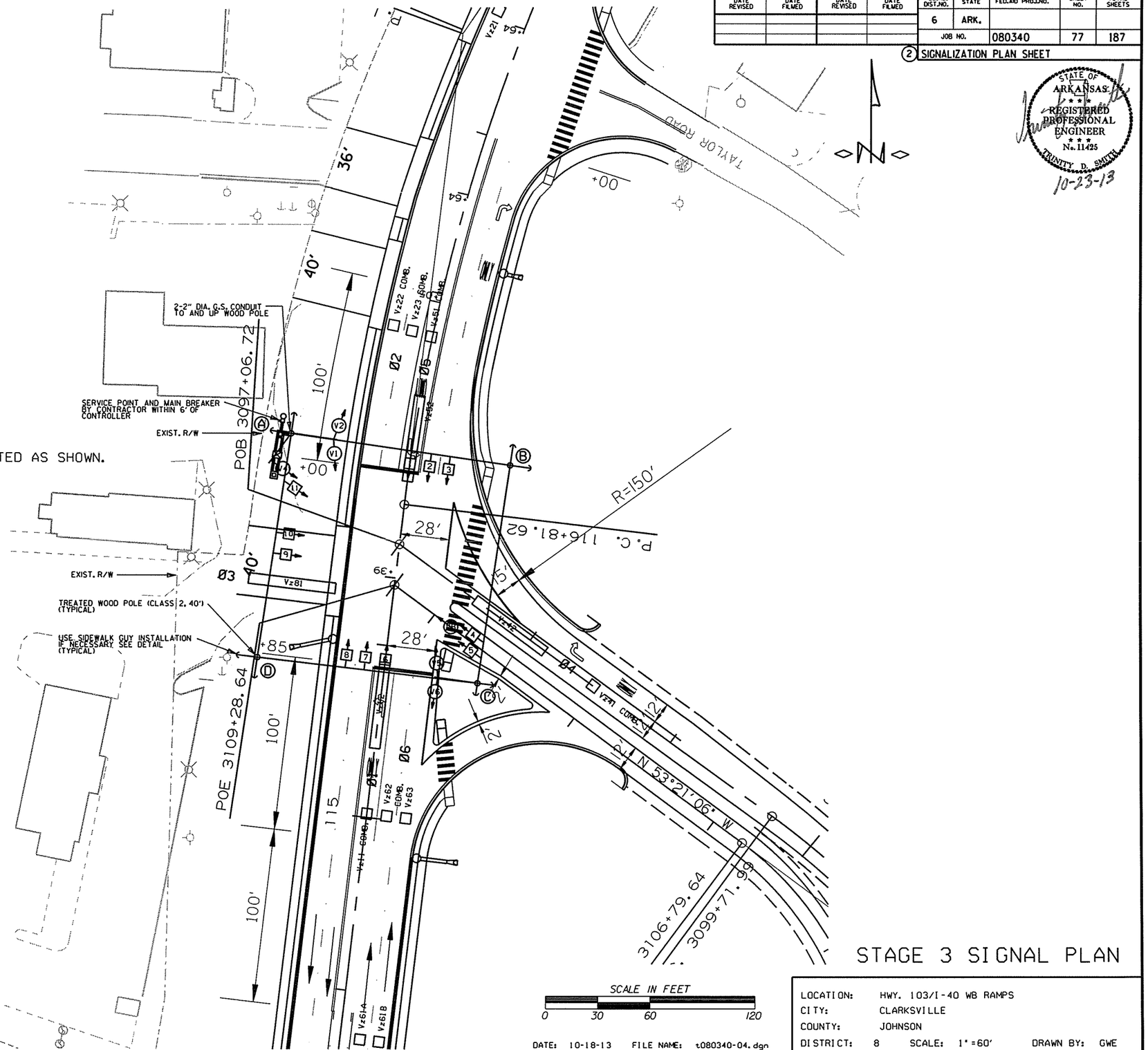
DETECTOR SPACING CHART

HWY. 103/I-40 EB RAMP		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD VDZ	LAG VDZ
HWY. 103 - 35 MPH	250'	85'
I-40 EB RAMP-30 MPH	85'	0'

VDZ = VIDEO DETECTION ZONE

NOTE TO CONTRACTOR:

1. TRAFFIC SIGNAL HEADS 1, 2, 3, 6, 7 AND 8 SHALL BE RELOCATED AS SHOWN.
2. VIDEO DETECTOR V5 SHALL BE RELOCATED AS SHOWN.
   VIDEO DETECTOR V6 SHALL BE INSTALLED AS SHOWN.



STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

STAGE 3 SIGNAL PLAN

SCALE IN FEET
0 30 60 120

DATE: 10-18-13 FILE NAME: t080340-04.dgn

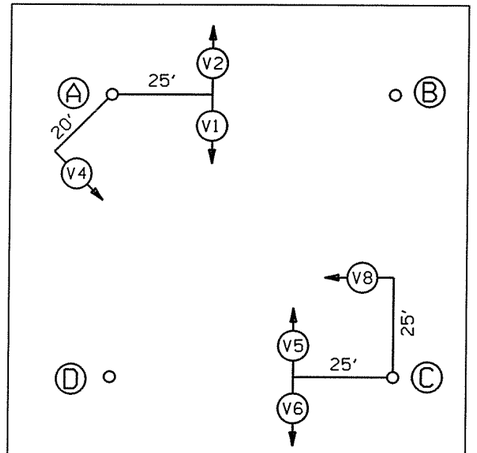
LOCATION: HWY. 103/I-40 WB RAMPS
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 SCALE: 1"=60' DRAWN BY: GWE

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.		080340	78	187

(2) SIGNALIZATION PLAN SHEET

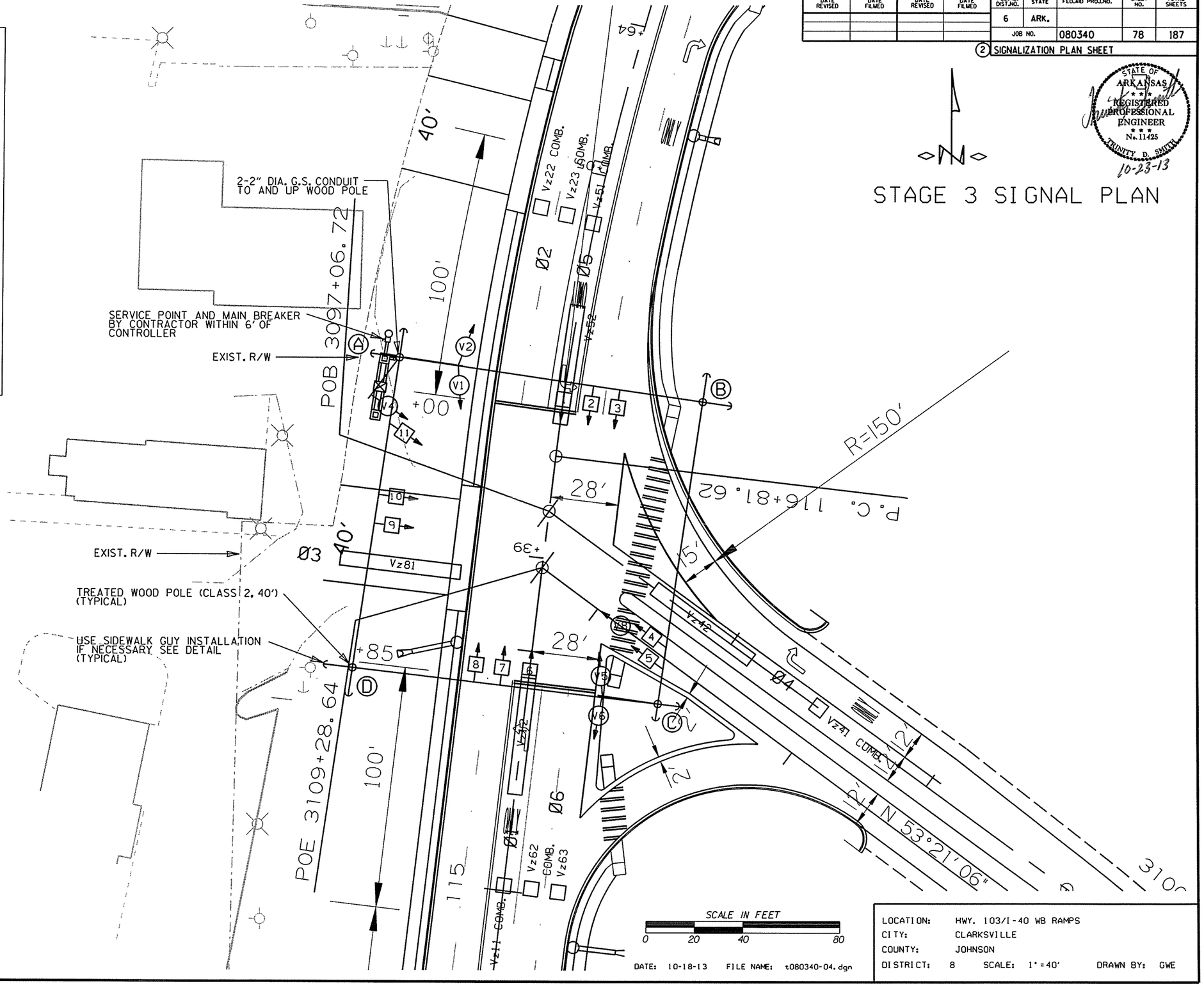
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

STAGE 3 SIGNAL PLAN



LUMINAIRE ARM LENGTH AND ORIENTATION

NOTE: FIXTURES ARE NOT TO BE PROVIDED WITH LUMINAIRE ARMS.



SCALE IN FEET
0 20 40 80

DATE: 10-18-13 FILE NAME: t080340-04.dgn

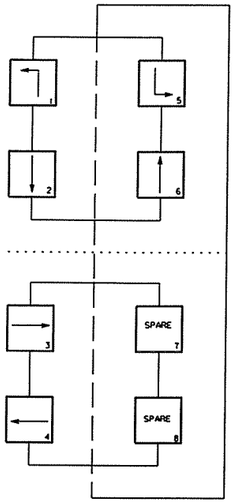
LOCATION:	HWY. 103/I-40 WB RAMPS		
CITY:	CLARKSVILLE		
COUNTY:	JOHNSON		
DISTRICT:	8	SCALE: 1"=40'	DRAWN BY: GWE

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.		080340	79	187

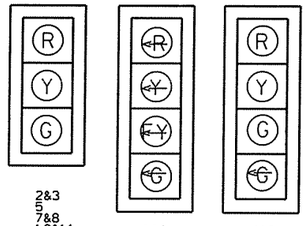
(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

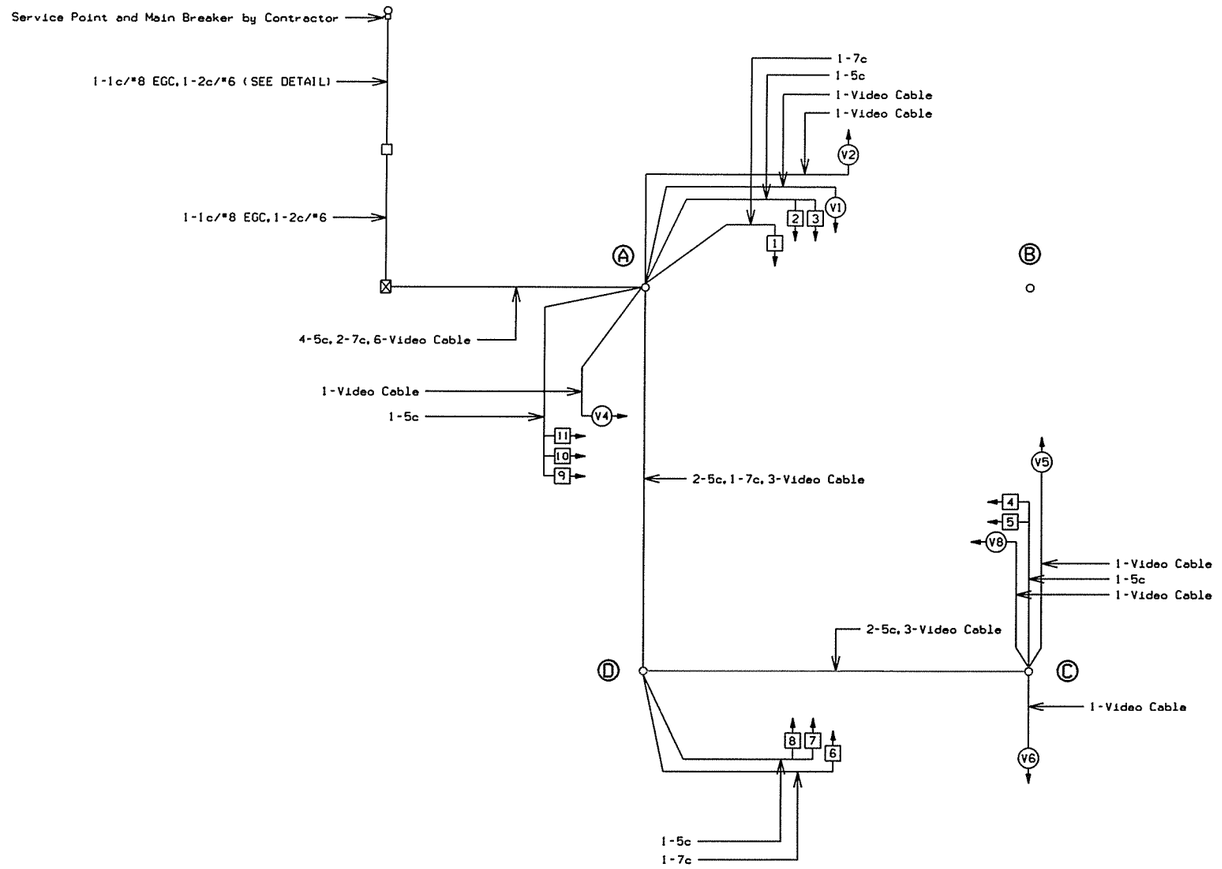
PHASING DIAGRAM



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



STAGE 3
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.

SYSTEM DESCRIPTION: JOB 080340											
CLARKSVILLE - HWY. 103/I-40 WB RAMPS DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS LOCAL		MASTER SYSTEM DETECTOR NUMBERS	COMMENTS	TUBE LENGTH
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *			
Vz11	NB LT. TURN ADVANCE	COMB.			1	V9	1	1		CAMERA V1	23'
Vz12	NB LEFT TURN	LOCAL			2	V1	1			CAMERA V1	23'
Vz21	SB ADVANCE	LOCAL			9	V2	2			CAMERA V2	74'
Vz22	SB INSIDE NEAR	COMB.			10	V10	2	2		CAMERA V5	23'
Vz23	SB OUTSIDE NEAR	COMB.			11	V11	2	3		CAMERA V5	23'
Vz41	WB RIGHT ADVANCE	COMB.			17	V12	4	4		CAMERA V4	23'
Vz42	WB RIGHT TURN	LOCAL			18	V4	4			CAMERA V4	23'
Vz51	SB LT. TURN ADVANCE	COMB.			13	V13	5	5		CAMERA V5	23'
Vz52	SB LEFT TURN	LOCAL			14	V5	5			CAMERA V5	23'
Vz61A&B	NB ADVANCE	LOCAL			5	V6	6			CAMERA V6	74'
Vz62	NB INSIDE NEAR	COMB.			6	V14	6	6		CAMERA V6	23'
Vz63	NB OUTSIDE NEAR	COMB.			7	V15	6	7		CAMERA V6	23'
Vz81	EB RIGHT ADVANCE	LOCAL			19	V8	3			CAMERA V8	23'
					SPARE 3, 4, 8, 12, 15, 16&20						

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.

INTERVAL CHART

SIGNAL FACES	HWY. 103/I-40 WB RAMPS												FLASH SEQ.
	1+5	CLR.	1+6	CLR.	2+5	CLR.	2+6	CLR.	3	CLR.	4	CLR.	
1	~~G~~	•	~~FY~~	•••	~~G~~	•	~~FY~~	•••	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
2&3	R	R	G	••	R	R	G	••	R	R	R	R	R
4	R	R	R	R	R	R	R	R	~~G~~	•	R	R	R
5	R	R	R	R	R	R	R	R	G	••	R	R	R
6	~~G~~	•	~~G~~	•	~~FY~~	•••	~~FY~~	•••	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
7&8	R	R	R	R	G	••	G	••	R	R	R	R	R
9	R	R	R	R	R	R	R	R	R	R	~~G~~	•	R
10&11	R	R	R	R	R	R	R	R	R	R	G	••	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

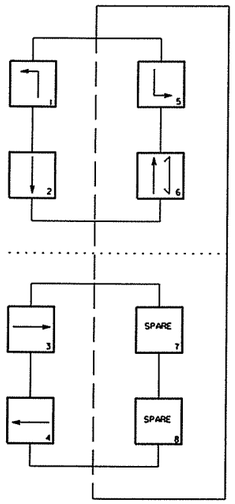
DATE: 10-18-13 FILE NAME: t080340-04.dgn

LOCATION: HWY. 103/I-40 WB RAMPS
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 SCALE: N/A DRAWN BY: GWE

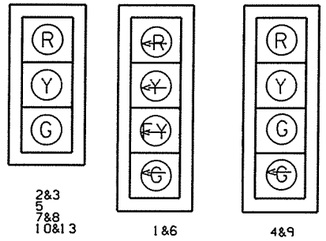
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	80	187

(2) SIGNALIZATION PLAN SHEET

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

DETECTOR SPACING CHART

HWY. 103/I-40 EB RAMP		
POSTED SPEED	DISTANCE FROM STOP BAR	
	LEAD VDZ	LAG VDZ
HWY. 103 - 35 MPH	250'	85'
I-40 EB RAMP-30 MPH	85'	0'

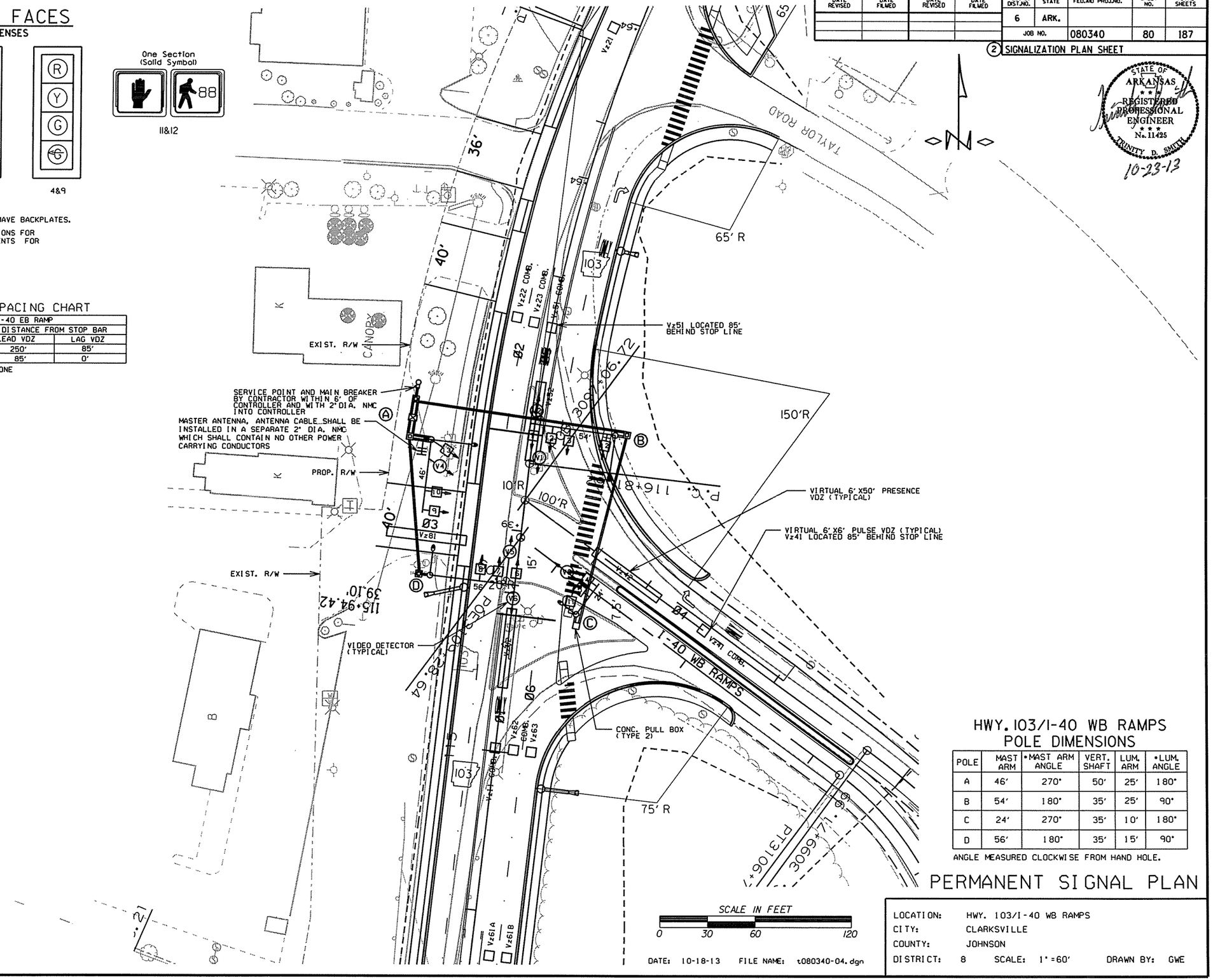
VDZ = VIDEO DETECTION ZONE

DESIGN PARAMETERS

POSTED SPEED LIMIT:
35 MPH NORTH AND SOUTH APPROACH
25 MPH EAST 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.



HWY. 103/I-40 WB RAMPS POLE DIMENSIONS

POLE	MAST ARM	•MAST ARM ANGLE	VERT. SHAFT	LUM. ARM	•LUM. ANGLE
A	46'	270°	50'	25'	180°
B	54'	180°	35'	25'	90°
C	24'	270°	35'	10'	180°
D	56'	180°	35'	15'	90°

ANGLE MEASURED CLOCKWISE FROM HAND HOLE.

PERMANENT SIGNAL PLAN

SCALE IN FEET
0 30 60 120

DATE: 10-18-13 FILE NAME: t080340-04.dgn

LOCATION: HWY. 103/I-40 WB RAMPS
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 SCALE: 1"=60' DRAWN BY: GWE

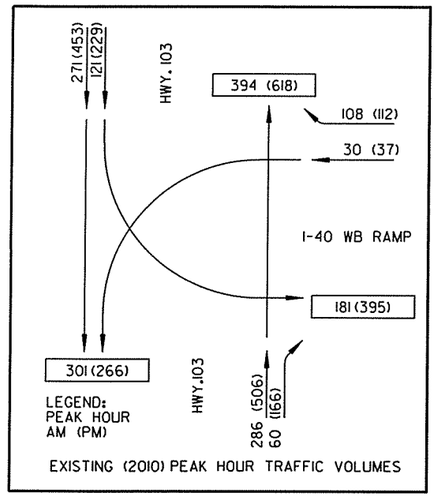
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

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.		080340	81	187

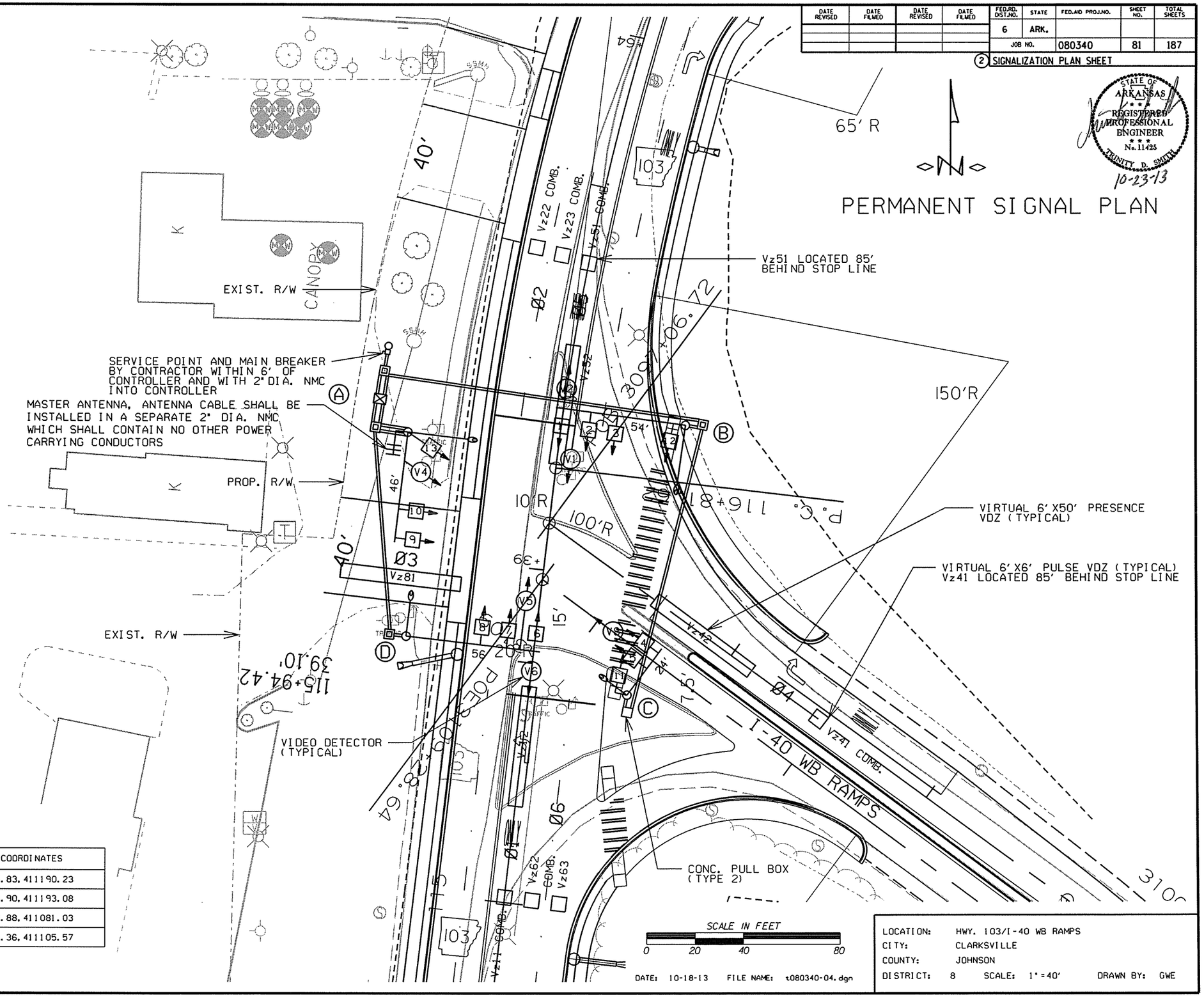
(2) SIGNALIZATION PLAN SHEET

PERMANENT SIGNAL PLAN

TRAFFIC FLOW DIAGRAM



EXISTING (2010) PEAK HOUR TRAFFIC VOLUMES



HWY. 103/I-40 WB RAMPS POLE LOCATIONS

POLE	LOCATION & STATION	OFFSET	X, Y COORDINATES
A	HWY. 103 - STA. 116+88.77	63' LT.	876063.83, 411190.23
B	HWY. 103 - STA. 117+06.58	51' RT.	876178.90, 411193.08
C	HWY. 103 - STA. 115+91.38	40' RT.	876154.88, 411081.03
D	HWY. 103 - STA. 116+05.03	54' LT.	876063.36, 411105.57

LOCATION: HWY. 103/I-40 WB RAMPS
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 SCALE: 1"=40' DRAWN BY: GWE

DATE: 10-18-13 FILE NAME: t080340-04.dgn

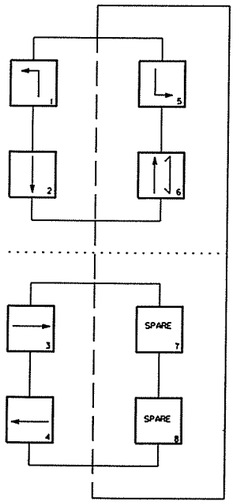
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 10-23-13

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.		080340	82	187

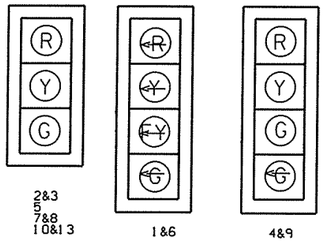
(2) SIGNALIZATION PLAN SHEET

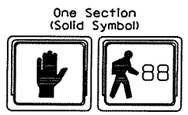
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
10-23-13

PHASING DIAGRAM

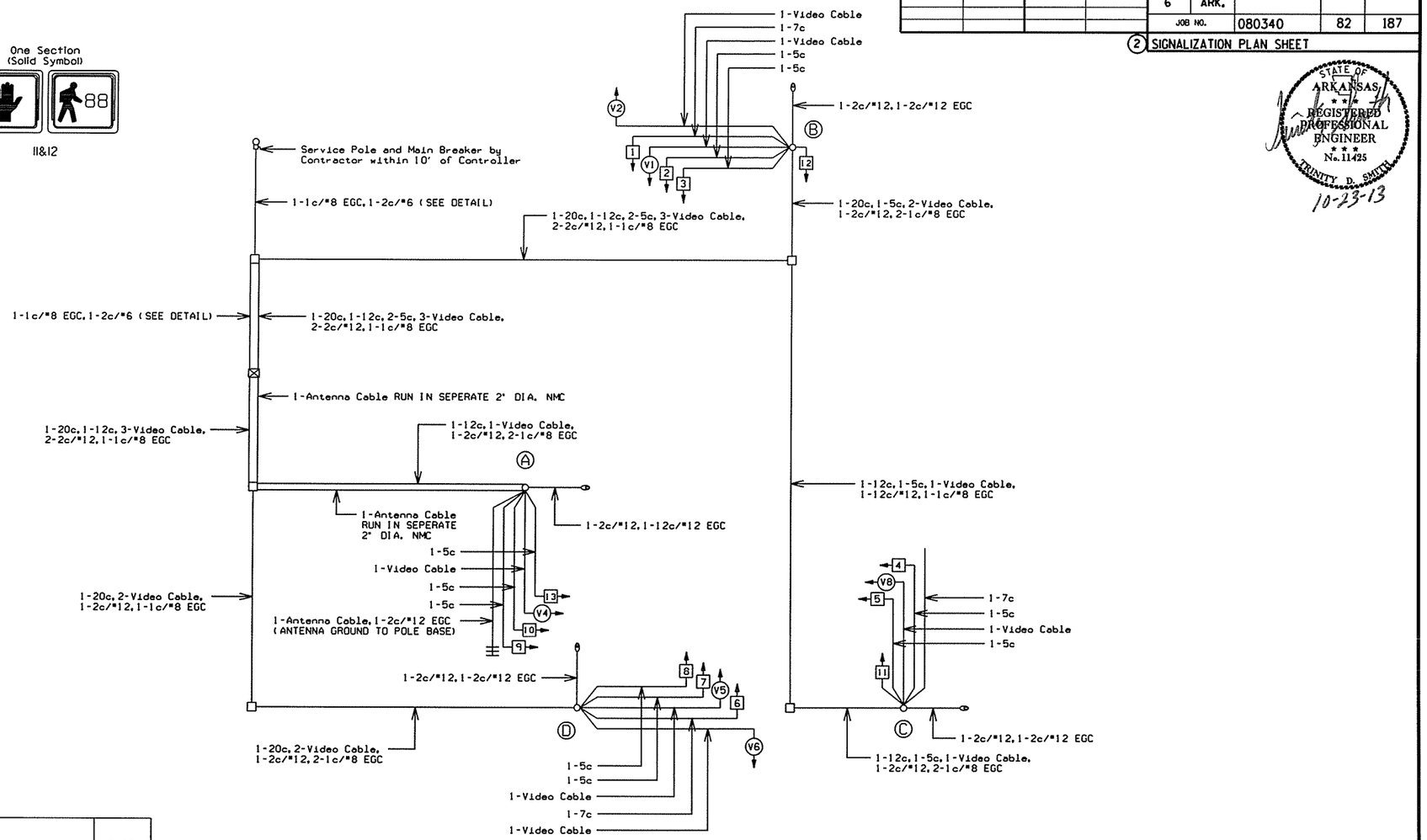


SIGNAL FACES
12" LENSES





NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS



PERMANENT WIRING DIAGRAM

NOTES TO CONTRACTOR:

1. ONE SEPARATE 1-5c IS RUN TO EACH POLE FOR THE PEDESTRIAN PUSH BUTTON.
2. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.
3. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.

SYSTEM DESCRIPTION: JOB 080340											
CLARKSVILLE - HWY. 103/I-40 WB RAMPS DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS LOCAL		MASTER SYSTEM DETECTOR NUMBERS	COMMENTS	TUBE LENGTH
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *			
Vz11	NB LT. TURN ADVANCE	COMB.			1	V9	1	1		CAMERA V1	23'
Vz12	NB LEFT TURN	LOCAL			2	V1	1			CAMERA V1	23'
Vz21	SB ADVANCE	LOCAL			9	V2	2			CAMERA V2	74'
Vz22	SB INSIDE NEAR	COMB.			10	V10	2	2		CAMERA V5	23'
Vz23	SB OUTSIDE NEAR	COMB.			11	V11	2	3		CAMERA V5	23'
Vz41	WB RIGHT ADVANCE	COMB.			17	V12	4	4		CAMERA V4	23'
Vz42	WB RIGHT TURN	LOCAL			18	V4	4			CAMERA V4	23'
Vz51	SB LT. TURN ADVANCE	COMB.			13	V13	5	5		CAMERA V5	23'
Vz52	SB LEFT TURN	LOCAL			14	V5	5			CAMERA V5	23'
Vz61A&B	NB ADVANCE	LOCAL			5	V6	6			CAMERA V6	74'
Vz62	NB INSIDE NEAR	COMB.			6	V14	6	6		CAMERA V1	23'
Vz63	NB OUTSIDE NEAR	COMB.			7	V15	6	7		CAMERA V1	23'
Vz81	EB RIGHT ADVANCE	LOCAL			19	V8	3			CAMERA V8	23'
PB6A&B	I-40 WB RAMPS E. LEG	PED.					6				
					SPARE 3, 4, 8, 12, 15, 16&20						

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.

INTERVAL CHART

SIGNAL FACES	HWY. 103/I-40 WB RAMPS												FLASH SEQ.
	I+5	CLR.	I+6	CLR.	2+5	CLR.	2+6	CLR.	3	CLR.	4	CLR.	
1	~~G~~	•	~~FY~~	•••	~~G~~	•	~~FY~~	•••	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
2&3	R	R	G	••	R	R	G	••	R	R	R	R	R
4	R	R	R	R	R	R	R	R	~~G~~	•	R	R	R
5	R	R	R	R	R	R	R	R	G	••	R	R	R
6	~~G~~	•	~~G~~	•	~~FY~~	•••	~~FY~~	•••	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
7&8	R	R	R	R	G	••	G	••	R	R	R	R	R
9	R	R	R	R	R	R	R	R	R	R	~~G~~	•	R
10&11	R	R	R	R	R	R	R	R	R	R	G	••	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: 10-18-13 FILE NAME: t080340-04.dgn

LOCATION: HWY. 103/I-40 WB RAMPS
CITY: CLARKSVILLE
COUNTY: JOHNSON
DISTRICT: 8 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.		080340	83	187

(2) SIGNING SUMMARY AND SIGNING QUANTITIES

SIGNING SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM	TOTAL	UNIT
SP	STEEL BRIDGE MOUNTED SIGN STRUCTURE (BM-040-36-03)	1	EACH
SS & 725	GUIDE SIGN - OVERHEAD MOUNTED (DEMOUNTABLE LEGEND)	147	SQ. FT.
SS & 727	EXIT NUMBER PANEL (TYPE A)	20	SQ. FT.

MAIN LANES SIGNING QUANTITIES

SIGN NO./ LOCATION	STRUCTURE TYPE						SIGN				BREAKAWAY SIGN SUPPORT											EXIT NUMBER PANEL			
	ST	CL	OH	BM	G-1	G-2	STANDARD SIGN SQ. FT.	GUIDE SIGN Length LIN. FT.	GUIDE SIGN Height LIN. FT.	SQ. Ft.	STEEL SECT. A-572 BEAM	STEEL SECT. A-572 LBS	SIGN POST LENGTH H-1 LIN FT	SIGN POST LENGTH H-2 LIN FT	SIGN POST LENGTH H-3 LIN FT	STUB POST H-1 LIN FT	STUB POST H-2 LIN FT	STUB POST H-3 LIN FT	FOOTINGS DIA. LIN FT	FOOTINGS DEPTH LIN FT	FOOTINGS EMBED. LIN FT	SIGN POST AND STUB POUND	LEGEND	TYPE A SQ. FT.	TYPE B SQ. FT.	TYPE C SQ. FT.
EXIT 58																										
BM-040-36-03				1				15.50	9.50	147.25													58	20.00		
GUIDE SIGNS OVERHEAD MOUNTED TOTALS;										147.25																
TOTALS:				1						147.25														20.00		

THE CONTRACTOR WILL BE REQUIRED TO INSTALL OVERHEAD SIGNS AND SIGN STRUCTURES OVER SOME ROADWAYS OPEN TO TRAFFIC. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE TRAFFIC CONTROL. PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN ITEM 604 OF THE STANDARD SPECIFICATIONS.

STATE OF ARKANSAS ★★★ REGISTERED PROFESSIONAL ENGINEER ★★★ No. 5851 10/21/13 TONY SULLIVAN

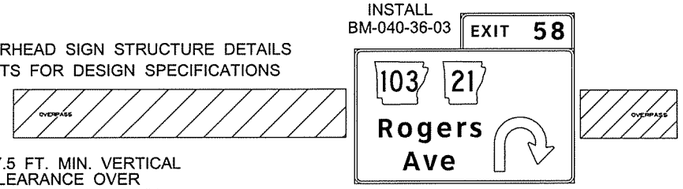
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	84	107

(2) SIGN PLACEMENT SHEET

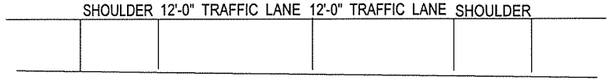
BM-040-36-03
EXIT 58

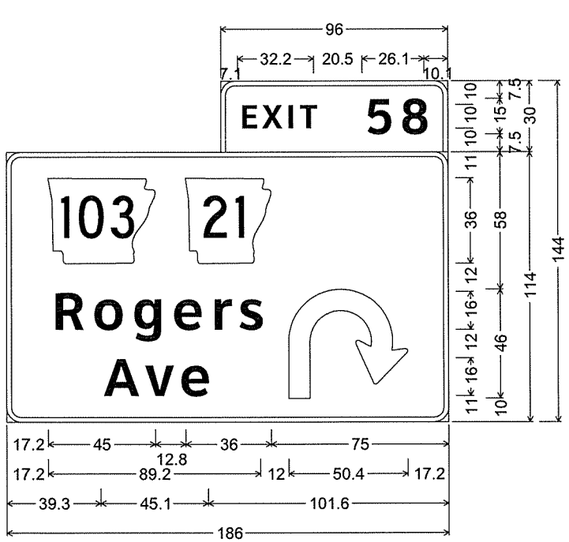
SEE OVERHEAD SIGN STRUCTURE DETAILS SHEETS FOR DESIGN SPECIFICATIONS

INSTALL BM-040-36-03

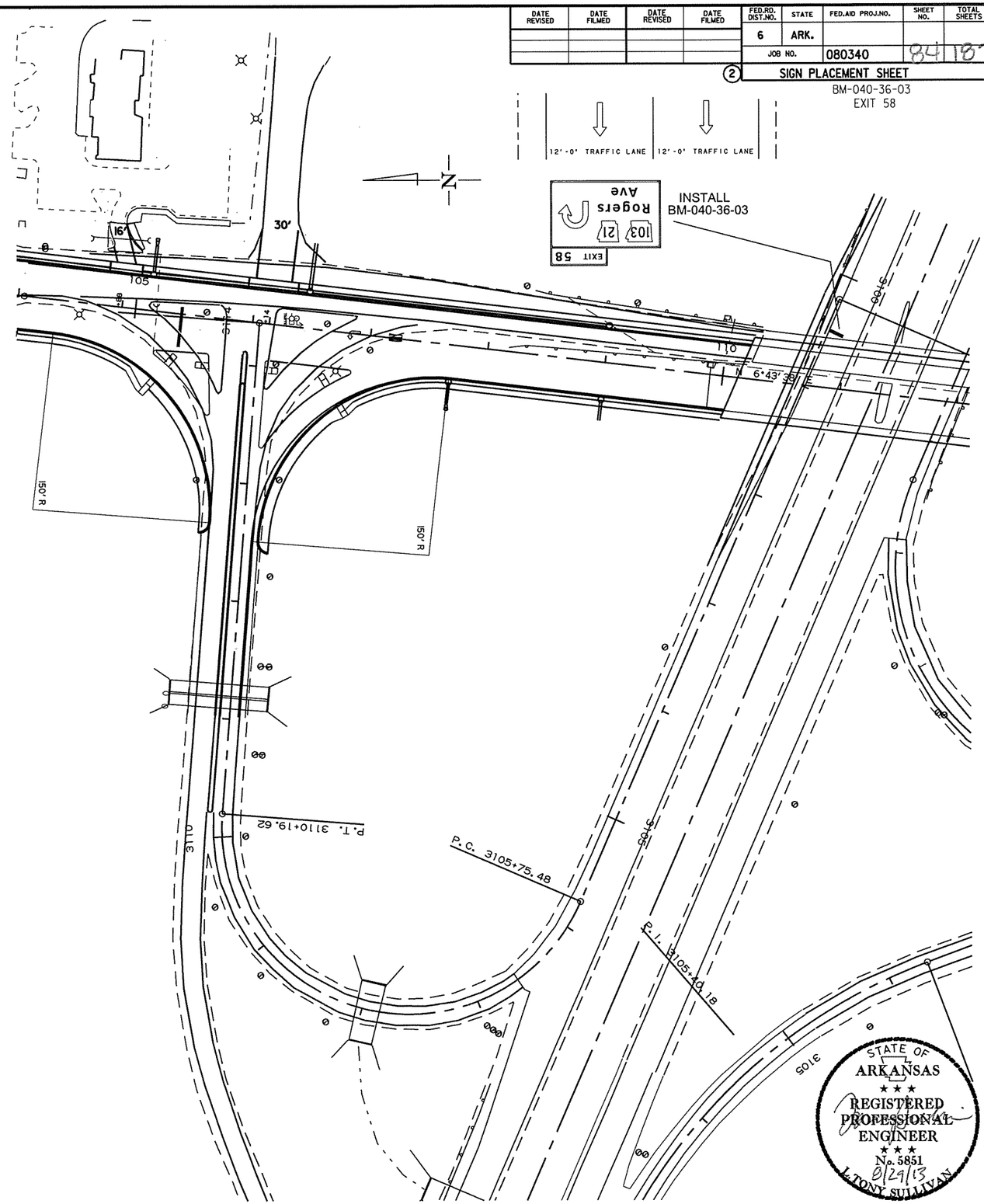


17.5 FT. MIN. VERTICAL CLEARANCE OVER THE HIGHEST POINT OF ROADWAY



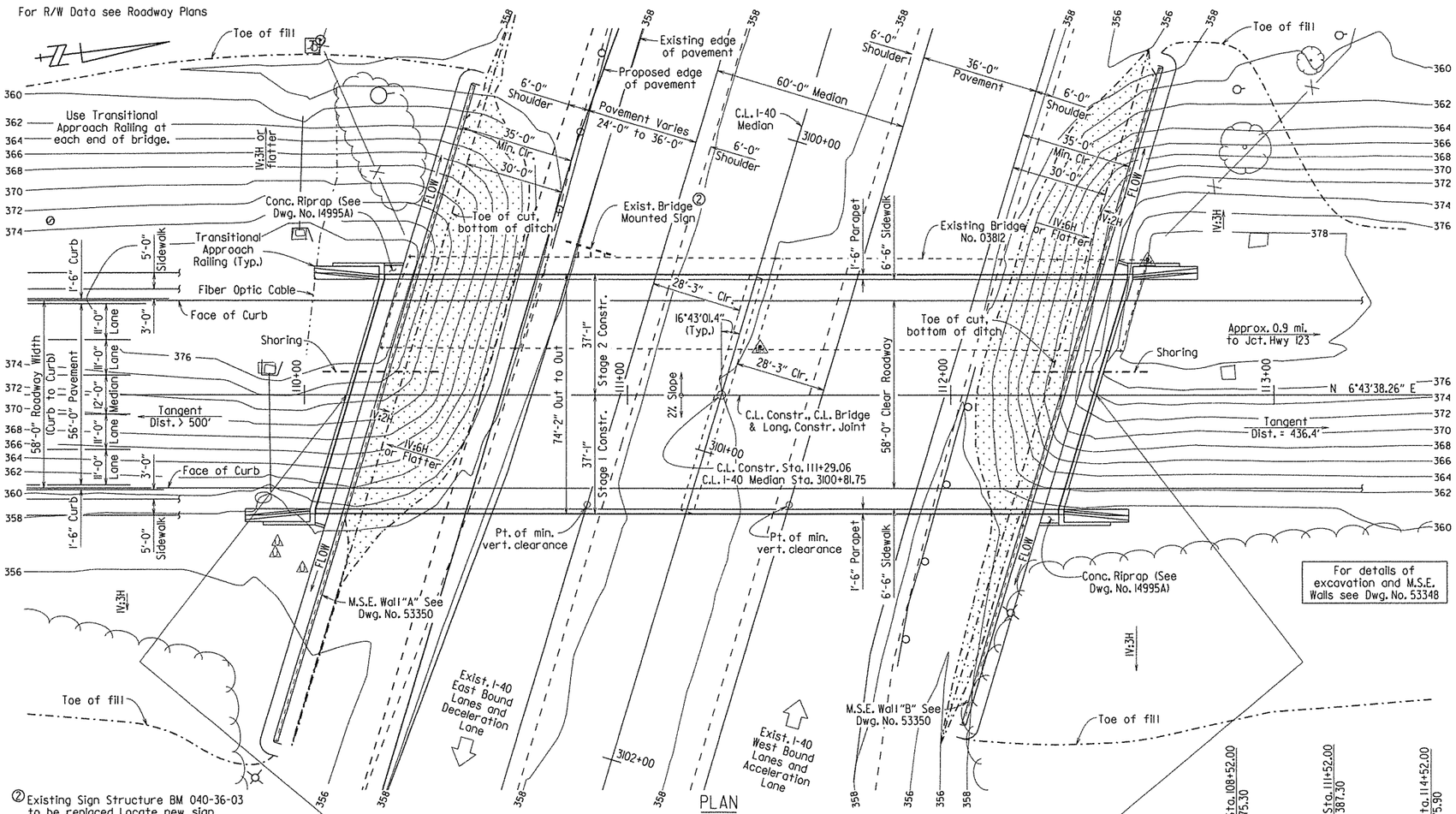


BM-040-36-03;
6.0" Radius, 2.0" Border, White on Green;
[EXIT] ClearviewHwy-5-W; [58] ClearviewHwy-5-W;
6.0" Radius, 2.0" Border, White on Green;
M1-6; M1-6; [Rogers] ClearviewHwy-5-W;
[Ave] ClearviewHwy-5-W; Turn Arrow Custom;



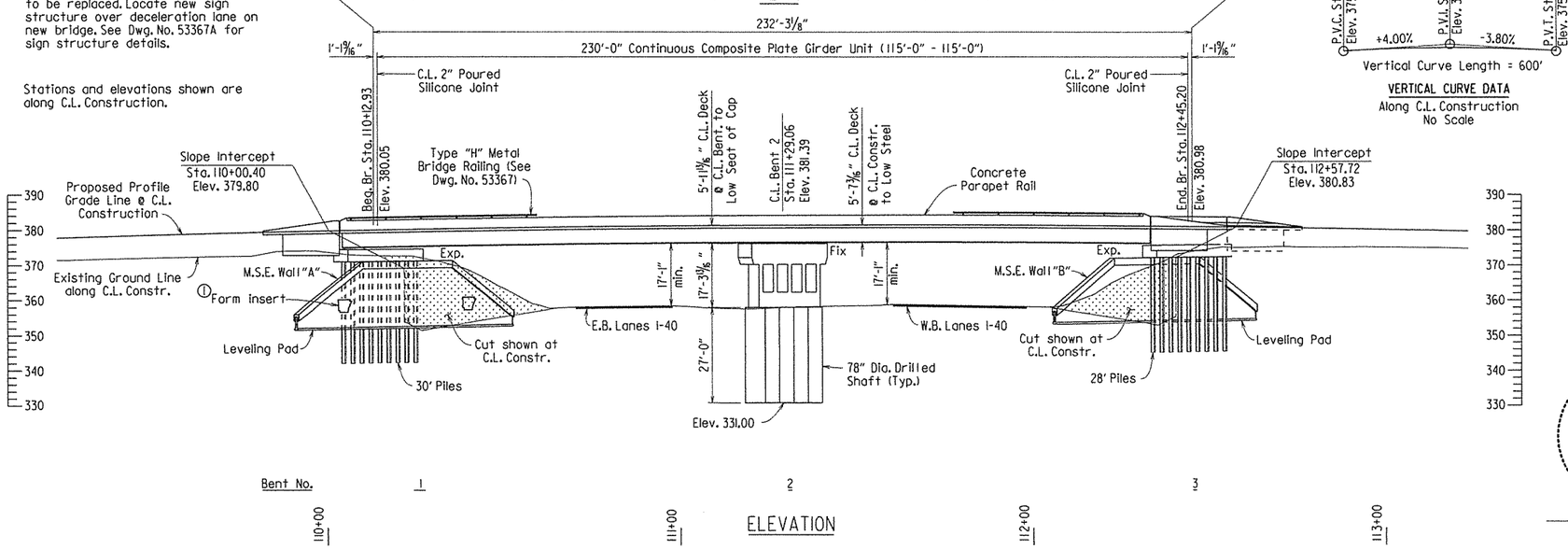
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	83	187
				① 07270	-	LAYOUT	-	53347

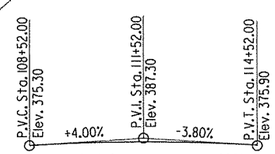
For R/W Data see Roadway Plans



② Existing Sign Structure BM 040-36-03 to be replaced. Locate new sign structure over deceleration lane on new bridge. See Dwg. No. 53367A for sign structure details.

Stations and elevations shown are along C.L. Construction.





GENERAL NOTES

BENCH MARK: BM 914 Square in NW corner of bridge on HWY 103 41.7' right of Sta. 112+60.95, Elev. 379.33.

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 edition) with applicable supplemental specifications and special provisions. Unless otherwise noted on the plans, section and subsection numbers refer to the Construction Specifications.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, 6th Edition (2012).

LIVE LOADING: HL-93

SEISMIC ZONE: 1 S_{D1}=0.064 SITE CLASS = A

MATERIALS AND STRENGTHS:

Class S(AE) Concrete (superstructure)	f'c = 4,000 psi
Class S Concrete (substructure)	f'c = 3,500 psi
Reinforcing Steel (Grade 60, AASHTO M31 or M322, Type A)	fy = 60,000 psi
Structural Steel (AASHTO M270, Gr. 36)	Fy = 36,000 psi
Structural Steel (AASHTO M270, Gr. 50)	Fy = 50,000 psi

BORING LOGS: Boring logs may be obtained from the Programs and Contracts Division.

STEEL PILING: Piling in Bents 1 & 3 shall be HP12X53, and shall be driven with an approved air, steam, or diesel hammer to a minimum safe bearing capacity of 70 tons and into the material designated as Shale on the boring legend. Piling in Bents 1 & 3 shall be driven after excavation to top of leveling pad is complete, and prior to backfilling. Lengths of piling shown are for estimating quantities and for use in determining payment for cut-off and build-up in accordance with the standard specifications.

DRILLED SHAFTS: All drilled shafts shall have a minimum embedment into Shale as shown in drawing number 53356. No adjustments in plan tip elevation shall be made without prior approval of the Engineer. Methods of construction of the drilled shafts shall be in accordance with Special Provision Job No. 080340 "Drilled Shaft Foundations".

BRIDGE DECK: The concrete bridge deck shall be given a tine finish as specified for final finishing in subsection 802.19 for Class 5 Tined Bridge Roadway Surface Finish. The 6'-6" Sidewalk shall receive a broomed finish as specified for final finishing in subsection 802.19 for Class 6, Broomed Finish.

TEXTURED COATING FINISH: Class 3 Textured Coating Finish shall be applied to the bridge surfaces and M.S.E. Walls as specified in Special Provision Job No. 080340 "Textured Coating Finish" and in accordance with subsection 802.19(b)(3). Textured Coating Finish shall not be applied to the surfaces where Class 1 Protective Surface Treatment is applied.

PAINTING: All structural steel except galvanized members and surfaces in contact with concrete shall be painted as specified in Section 807. Color of paint shall be Brown Federal Std. 595B, color chip 20059.

DETAIL DRAWINGS:

	DRAWING NO.
Stage Construction	53349
M.S.E. Walls	53350 & 53351
Arkansas Form Insert	53350
Stage Construction	53349
Bent 1	53352 – 53354
Transitional Railing Detail	53355
Intermediate Bent	53356 – 53358
Bent 3	53359
230' Plate Girder Unit	53360 – 53365
Elastomeric Bearing	53366
Concrete Riprap & Steel Piles	14995A

SHORING: Shoring will be required to retain existing and/or new embankments to maintain traffic during removal of Bridge No. 03812, construction of Bridge No. 07270, and construction of Retaining Walls. Shoring shall be constructed in accordance with Special Provision Job No. 080340 "Shoring". Payment shall be as specified in Special Provision Job No. 080340 "Shoring".

EXISTING BRIDGE: Existing Bridge No. 03812 (Log Mile 1.70) is 33'-6" wide and 231' long consisting of simple I-Beam spans, supported by concrete intermediate bents on spread footings and end bents on steel piling. The existing bridge is located approximately 27' West of the proposed centerline.

REMOVAL OF EXISTING BRIDGE STRUCTURE: After Stage 1 Construction is complete and open to traffic, the Contractor shall remove existing Bridge No. 03812 in accordance with Section 205. All material shall become the property of the Contractor.

MAINTENANCE OF TRAFFIC: See Roadway Plans.

① State of Arkansas Form Insert to be used at both M.S.E. Wall "A" & "B" (4 locations). See Dwg. No. 53350. Paint insert with Class 3 Textured Coating Finish as specified in Special Provision Job No. 080340 "Textured Coating Finish" and in accordance with subsection 802.19(b)(3).

STATE OF ARKANSAS
Carl J. Puseller
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. PUSELLER
2/7/13
BRIDGE ENGINEER

SHEET 1 OF 2
LAYOUT OF OVERPASS S.H. 103 OVER I-40
MARKET ST. - I-40 WB RAMPS (CLARKSVILLE)(S)
JOHNSON COUNTY

ROUTE 103 SEC. 0

ARKANSAS STATE HIGHWAY COMMISSION

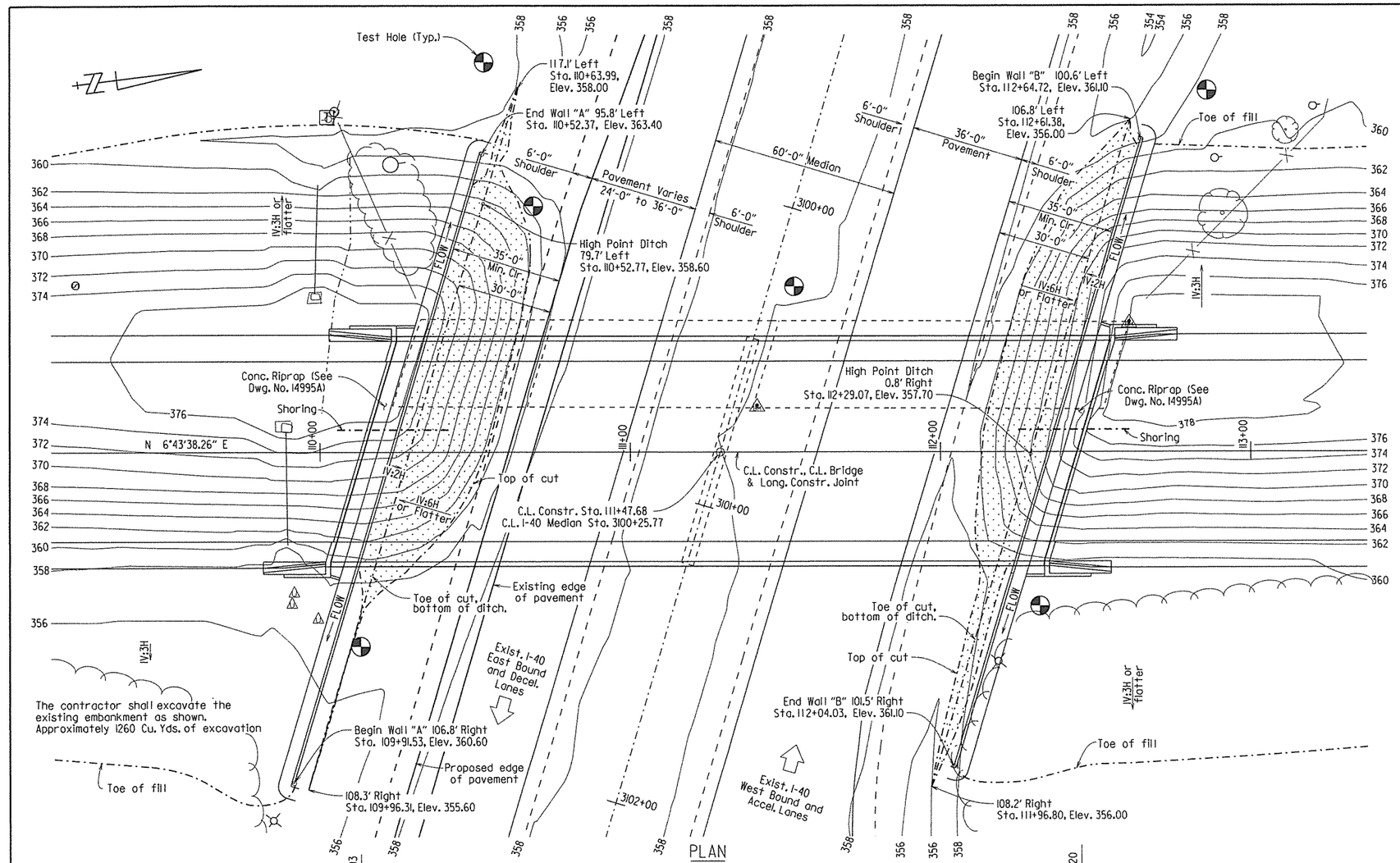
LITTLE ROCK, ARK.

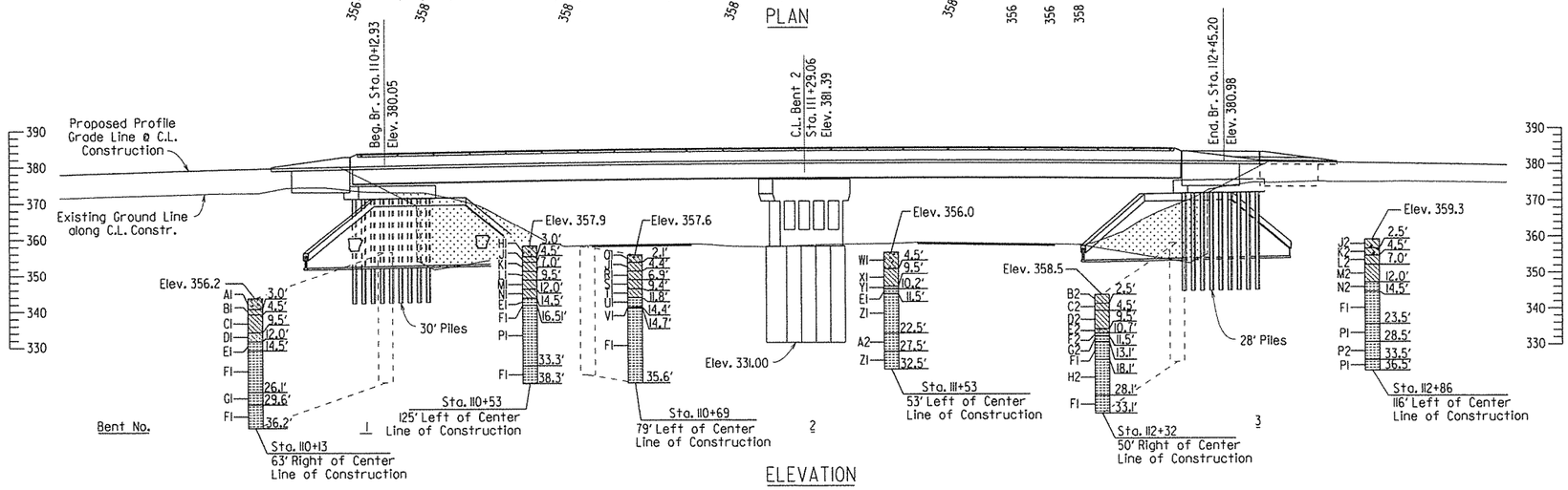
DRAWN BY: RBR DATE: 2/1/12 FILENAME: b080340_ll.dgn
CHECKED BY: DHP DATE: 2-7-13 SCALE: 1"=20'-0"
DESIGNED BY: CSL DATE: Apr. / 2012

BRIDGE NO. 07270 DRAWING NO. 53347

PRINT DATE: 07-FEB-2013

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.		080340	80187	
				(1) 07270	-	LAYOUT	-	53348





ELEVATION

BORING LEGEND

A1-Moist, Hard, Brown Clay with Gravel (Sandstone Fragments)
B1-Moist, Very Stiff, Reddish Brown and Gray Clay with Iron Nodules
C1-Moist, Stiff, Brown and Gray Clay with Sand
D1-Moist to Wet, Medium Dense Gray and Brown Sand with Clay
E1-SHALE - Dark Gray, Weathered, Medium Hard
F1-SHALE - Dark Gray, Laminated, Slightly Weathered, Hard, with Slight Dip
G1-SHALE - Dark Gray, Laminated, Slightly Weathered, Hard, with Slight Dip and Vertically Fractured Layers
H1-Dry, Stiff, Brown Clay with Gravel (Sandstone Fragments)
J1-Moist, Medium Stiff, Brown Clay
K1-Moist, Stiff, Brown Clay
L1-Moist, Very Stiff, Brown and Gray Clay with Iron Nodules
M1-Moist, Very Stiff, Brown and Gray Sandy Clay with Iron Nodules
N1-Moist, Very Stiff, Brown and Gray Clay with Highly Weathered Shale
P1-SHALE - Dark Gray, Laminated, Hard, with Slight Dip
Q1-Moist, Very Stiff, Brown Clay with Gravel (Sandstone Fragments)
R1-Moist, Stiff, Gray and Brown Clay
S1-Moist, Stiff, Gray and Brown Clay with Iron Nodules
T1-Moist, Very Stiff, Brown Clay with Sand
U1-SHALE - Gray, Weathered, Medium Hard
V1-SHALE - Dark Gray, Medium Hard
W1-Moist, Very Stiff, Brown Clay with Sand and Gravel (Sandstone Fragments)
X1-Moist, Very Stiff, Gray and Brown Clay with Sand
Y1-SHALE - Brown and Gray, Highly Weathered, Medium Hard
Z1-SHALE - Dark Gray, Laminated, Slightly Weathered, Hard, with Slight Dip and Fractured Layers
A2-SHALE - Dark Gray, Laminated, Slightly Weathered, Hard, with Slight Dip
B2-Moist, Medium Stiff, Brown and Gray Clay
C2-Moist, Stiff, Brown and Gray Clay
D2-Moist, Stiff, Brown and Gray Clay with some Iron Nodules
E2-Moist, Hard, Brown and Gray Clay with Gravel (Shale Fragments)
F2-SHALE - Brown and Gray, Weathered, Medium Hard
G2-SHALE - Dark Gray and Brown, Laminated, Weathered, Medium Hard, with Slight Dip
H2-SHALE - Dark Gray, Laminated, Slightly SHALE - Dark Gray, Laminated, Hard, with Slight Dip
J2-Moist, Soft, Brown Clay with Organic Matter
K2-Moist, Medium Stiff, Brown and Gray Clay with Organic Matter
L2-Moist, Very Stiff, Brown and Gray Clay with some Iron Nodules
M2-Moist, Very Stiff, Brown and Dark Gray Clay with Highly Weathered Shale
N2-SHALE - Gray, Medium Hard
P2-SHALE - Dark Gray, Laminated, Slightly Weathered, Hard, with Slight Dip and occasional Fractured Layers

"N" VALUES

Sta. 110+13 - 63' Right of Center Line of Construction
0.5- 1.5, N=34
3.5- 4.5, N=25
5.0- 6.0, N=15
7.5- 8.5, N=9
10.0- 11.0, N=17
12.0- 12.4, N=60(5")

Sta. 110+53 - 125' Left of Center Line of Construction
0.5- 1.5, N=13
3.5- 4.5, N=6
5.0- 6.0, N=9
7.5- 8.5, N=16
10.0- 11.0, N=16
12.5- 13.5, N=17
15.0- 15.4, N=60(5")
16.5- 16.5, N=15(.01")

Sta. 110+69 - 79' Left of Center Line of Construction
0.5- 1.5, N=25
2.6- 3.6, N=5
4.9- 5.9, N=9
7.4- 8.4, N=14
9.9- 10.9, N=27
14.4- 14.7, N=60(4")

Sta. 111+53 - 53' Left of Center Line of Construction
5.0- 6.0, N=19
10.0- 10.8, N=102(10")
11.5- 11.5, N=20(.01")

Sta. 112+32 - 50' Right of Center Line of Construction
1.5- 2.5, N=7
3.0- 4.0, N=10
5.0- 6.0, N=10
7.5- 8.5, N=9
10.0- 11.0, N=37

Sta. 112+86 - 116' Left of Center Line of Construction
1.5- 2.5, N=3
3.0- 4.0, N=8
5.0- 6.0, N=19
7.5- 8.5, N=20
10.0- 11.0, N=24
12.5- 12.9, N=60(5")
14.5- 14.5, N=60(0.01")

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2-7-13
CARL J. FUSELIER
BRIDGE ENGINEER

SHEET 2 OF 2
LAYOUT OF OVERPASS S.H. 103 OVER I-40
MARKET ST. - I-40 WB RAMPS (CLARKSVILLE)(S)
JOHNSON COUNTY

ROUTE 103 SEC. 0

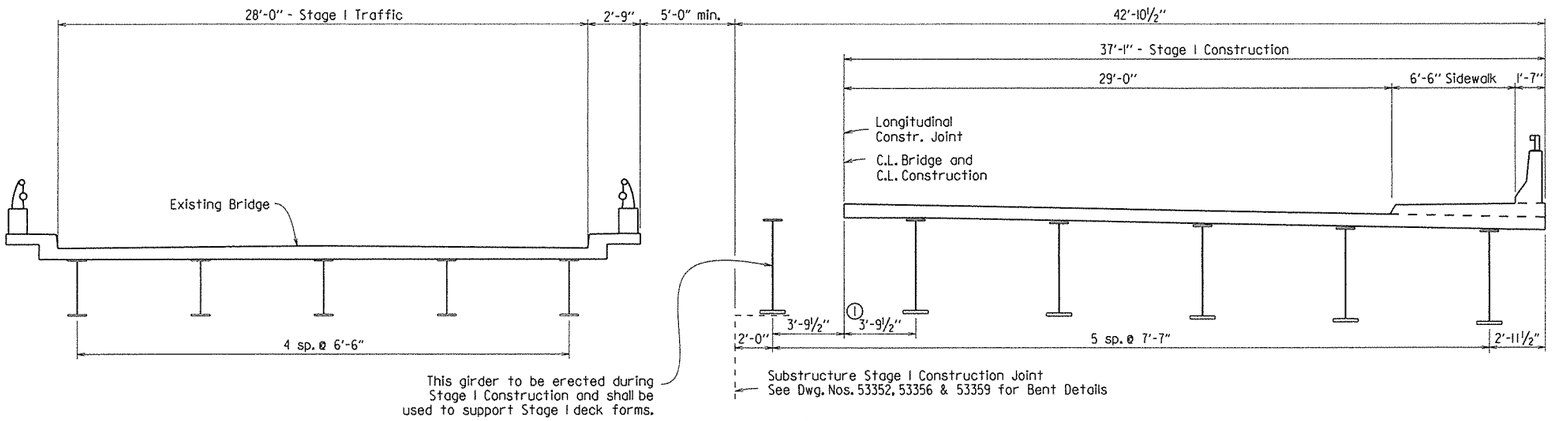
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 2/1/12 FILENAME: b080340_11.dgn
CHECKED BY: DHP DATE: 2-1-13 SCALE: 1"=20'-0"
DESIGNED BY: CSL DATE: April 2012

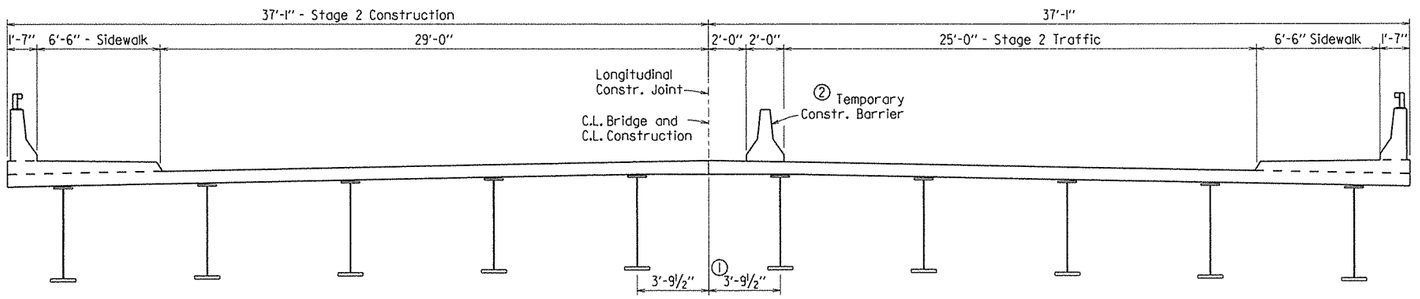
BRIDGE NO. 07270 DRAWING NO. 53348

PRINT DATE: 01-FEB-2013

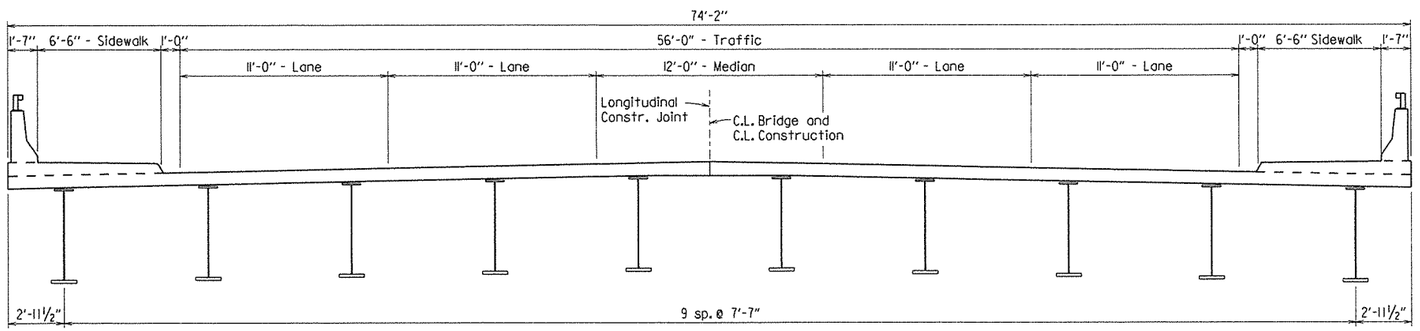
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	87	107
				① 07270 - STAGE CONSTRUCTION - 53349				



STAGE 1
Looking Ahead



STAGE 2
Looking Ahead



FINAL
Looking Ahead

① Construction vehicles shall not travel on the cantilever portion of the deck.

② Connect Temporary Construction Barrier to new deck (See Dwg. No. TC-4).

NOTES:
Details which relate to Maintenance of Traffic are shown on bridge plans for information only. See Roadway plans for Maintenance of Traffic.

For Details of Temporary Barrier, see Dwg. Nos. TC-4 and TC-5.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF STAGE CONSTRUCTION

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

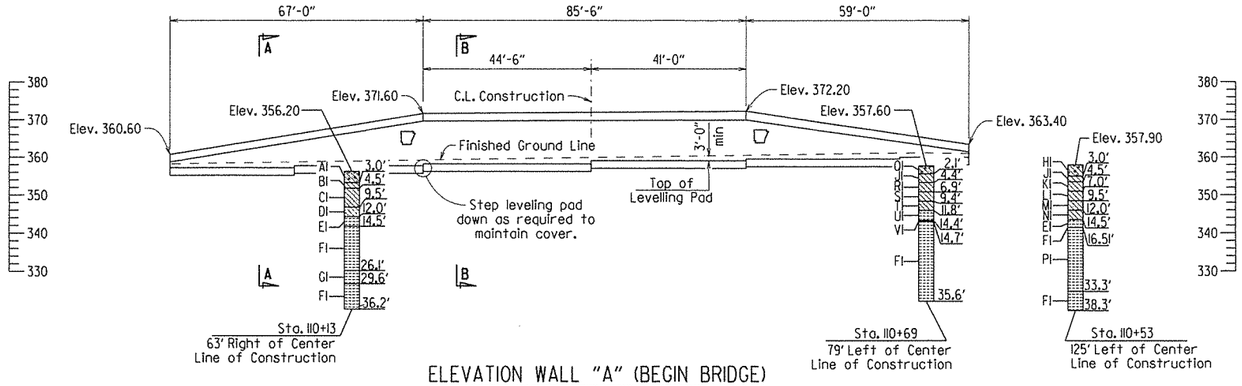
LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 4-30-2012 FILENAME: b080340_sc.dgn
CHECKED BY: DHP DATE: 2-1-13 SCALE: 1/4" = 1'-0"
DESIGNED BY: CSL DATE: April 2012

BRIDGE NO. 07270 DRAWING NO. 53349

PRINT DATE: 01-FEB-2013

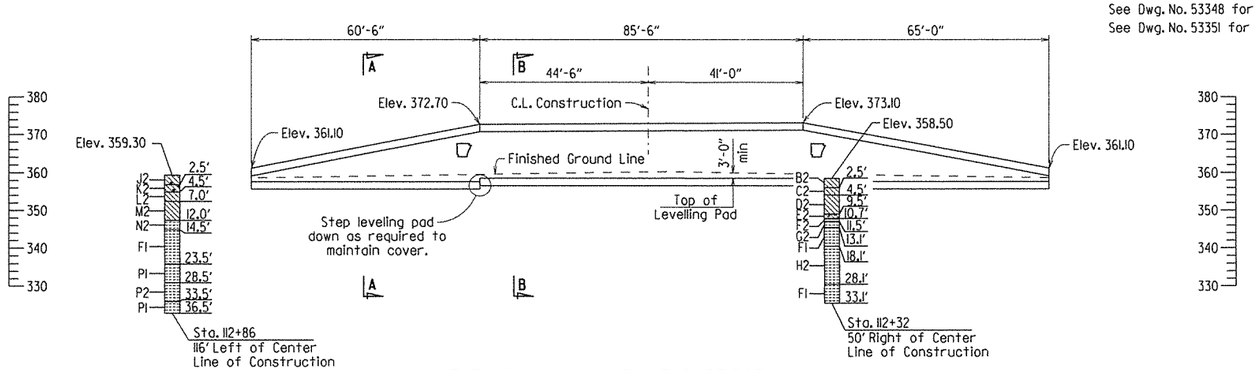
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	86	181
				(1)	07270	- MSE WALLS -	53350	



ELEVATION WALL "A" (BEGIN BRIDGE)

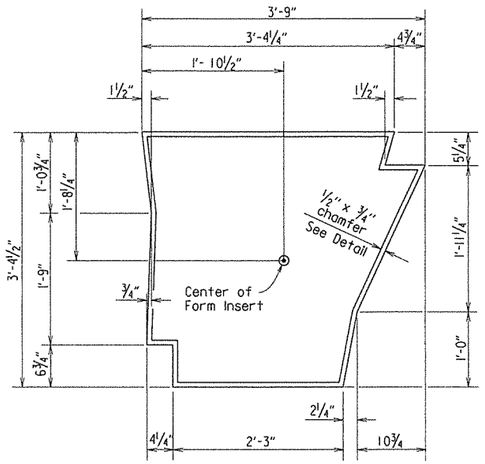
(Looking Back)
1"=20'-0"

See Dwg. No. 53348 for Boring Legend
See Dwg. No. 53351 for Sections A-A & B-B.



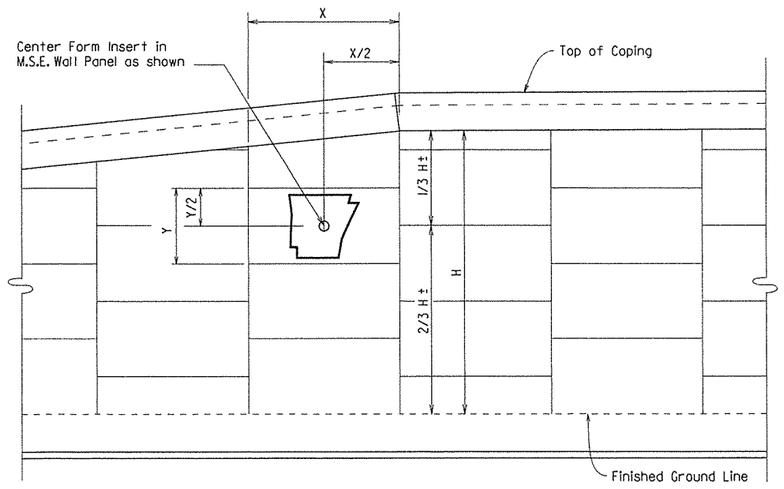
ELEVATION WALL "B" (END BRIDGE)

(Looking Forward)
1"=20'-0"



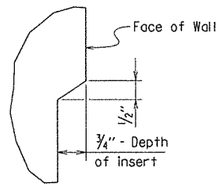
FORM INSERT DETAILS AT M.S.E. WALLS

Scale: 1" = 1'-0"



FORM INSERT DETAILS AT M.S.E. WALL "A" or "B"

No Scale



CHAMFER DETAILS

No Scale

GENERAL NOTES

Fabricate form insert as a one piece unit, without the use of splices, joints or glue.

Wash and clean multi-use form inserts before each use.

All work and materials for form inserts shall be included in the unit price bid for Class S Concrete-Bridge.

Damaged or worn form inserts shall be replaced at the contractor's expense.

The form inserts shall be approved by the Engineer before its use.

Paint insert with a Class 3 Textured Coating Finish as specified in Special Provision Job No. 080340 "TEXTURED COATING FINISH".

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 1 OF 2
DETAILS OF MECHANICALLY STABILIZED EARTH WALLS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

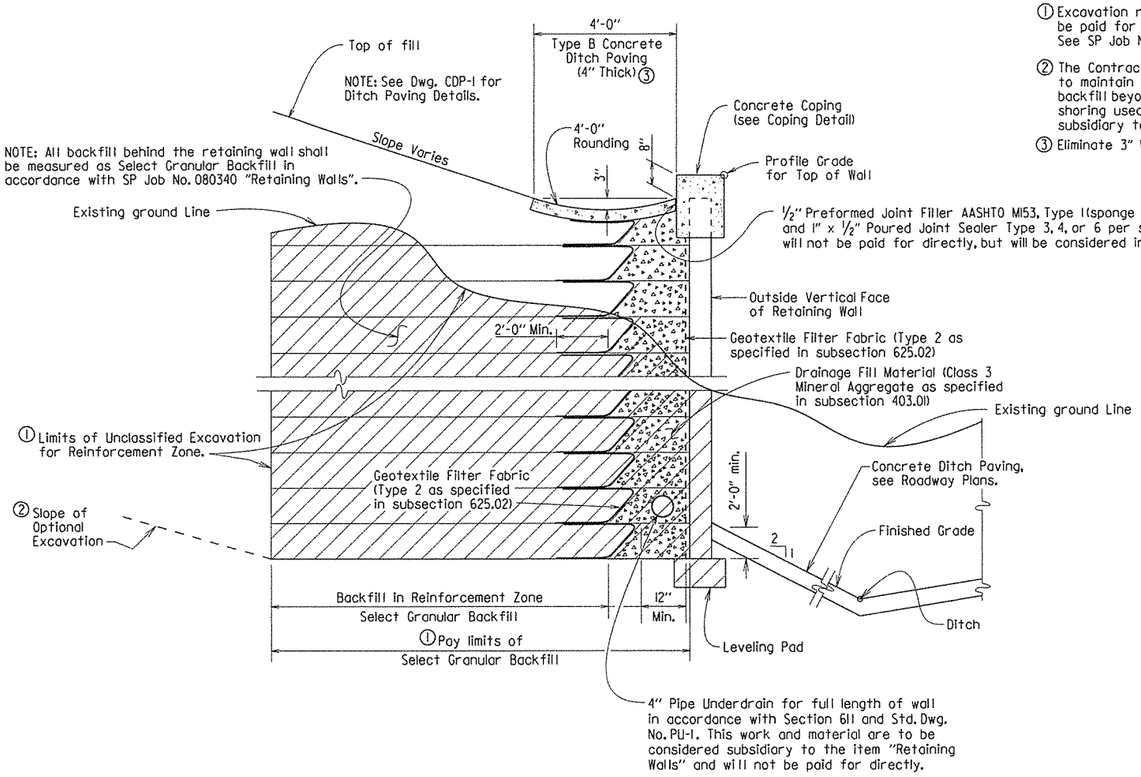
DRAWN BY: RBR DATE: 10/18/12
CHECKED BY: D H P DATE: 2-4-13
DESIGNED BY: RBR DATE: 12/12

FILENAME: b080340_mse.dgn
SCALE: As shown

BRIDGE NO. 07270 DRAWING NO. 53350

PRINT DATE: 2/1/2013

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.		080340	89	187
				①	07270	- MSE WALLS -	53351	



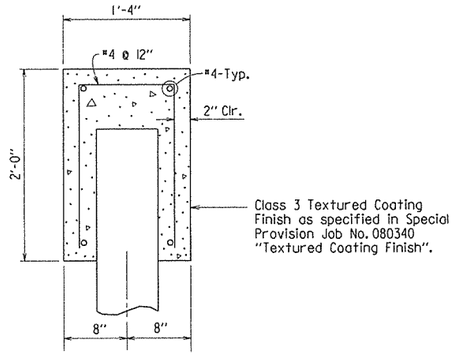
SECTION A-A

No Scale

① Excavation required for reinforcing zone and Leveling Pad will be paid for under pay item 210, "Unclassified Excavation", See SP Job No. 080340 "Retaining Walls".

② The Contractor has the option of using a cut slope or shoring to maintain stability of cut. Any excavation and subsequent backfill beyond the limits of the Reinforcing Zone and/or any shoring used will not be paid for directly but will be considered subsidiary to various pay items, See SP Job No. 080340 "Retaining Walls".

③ Eliminate 3" Weep Holes.

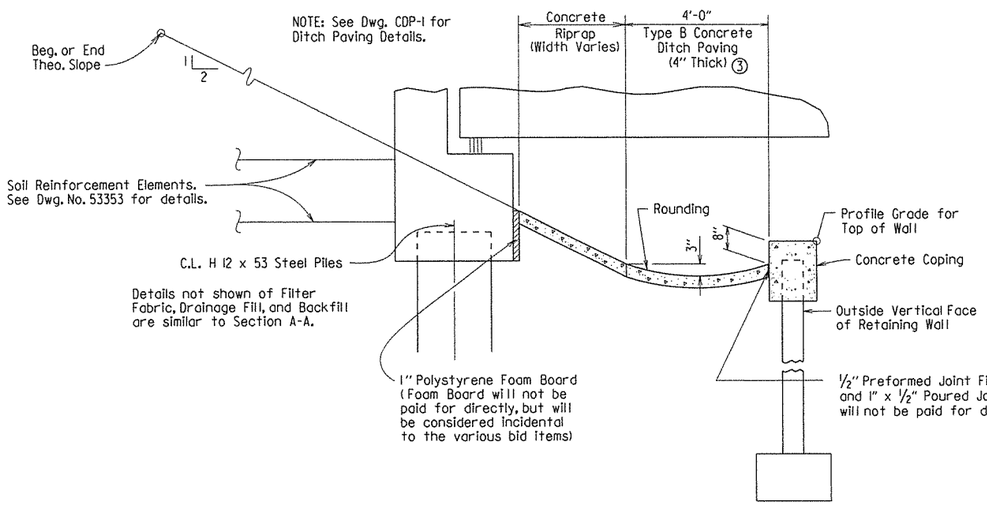


COPING DETAIL

No Scale

NOTE: Reinforcing Steel for Concrete Coping shall not be paid for directly but will be considered subsidiary to the item "Retaining Walls".

Precast concrete coping may be substituted for the cast in place coping shown.



SECTION B-B

No Scale

FOR INFORMATION ONLY
TABLE OF QUANTITIES FOR WALLS A & B

Retaining Walls	5500 Sq. Ft.
Concrete Ditch Paving (Type B)	190 Sq. Yds.
Texture Coating Finish	500 Sq. Yds.
Unclassified Excavation	2,100 Cu. Yds.
Select Granular Backfill	2,700 Cu. Yds.

BACKFILL FOR RETAINING WALLS:

Based on the borings shown the wall can be founded on existing material. If isolated soft and unstable materials are encountered beneath the wall's reinforcing zone they shall be removed and backfilled with Select Granular Backfill. Depth and length of any required undercutting shall be as determined by the Engineer in the field. Payment shall be in accordance with SP Job No. 080340 "Retaining Walls".

The excavated material may be utilized at other locations within the project area if approved by the Engineer. Excavated material that cannot be utilized shall be disposed of by the Contractor in accordance with subsection 210.08.

All backfilled areas that will be seeded will require a 1'-6" thick plating material measured perpendicular to the finished ground. The plating material shall be a suitable silty clay or clayey silt with a minimum Plasticity Index of 6 and maximum Plasticity Index of 25 which will support vegetation and not be highly susceptible to erosion. All work and materials required for plating will not be paid for directly, but shall be considered incidental to the item "Select Granular Backfill".

GENERAL NOTES:

Design Specifications: AASHTO LRFD Bridge Design Specifications 6th Edition

Seismic Performance Zone: 1

Elevations are approximate. Wall dimensions may vary depending on wall design selected.

Placement of reinforcing for retaining walls may be affected by end bent construction and Proposed Roadway Drainage Structures. See End Bent Details for pile locations and wingwall details. See Roadway Plans for locations and details of Drainage Structures.

For ditch paving see Standard Dwg. No. CDP-1.

See SP Job No. 080340 "Retaining Walls" for additional information.

State of Arkansas Form Inserts shall be placed on each section of retaining wall in accordance with Dwg. No. 53350.

Boring Logs can be otained from Programs and Contracts Division upon request.

For Concrete Riprap See Dwg. No. 14995A

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 2 OF 2
DETAILS OF MECHANICALLY STABILIZED EARTH WALLS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 10/18/2012 FILENAME: b080340_mse.dgn

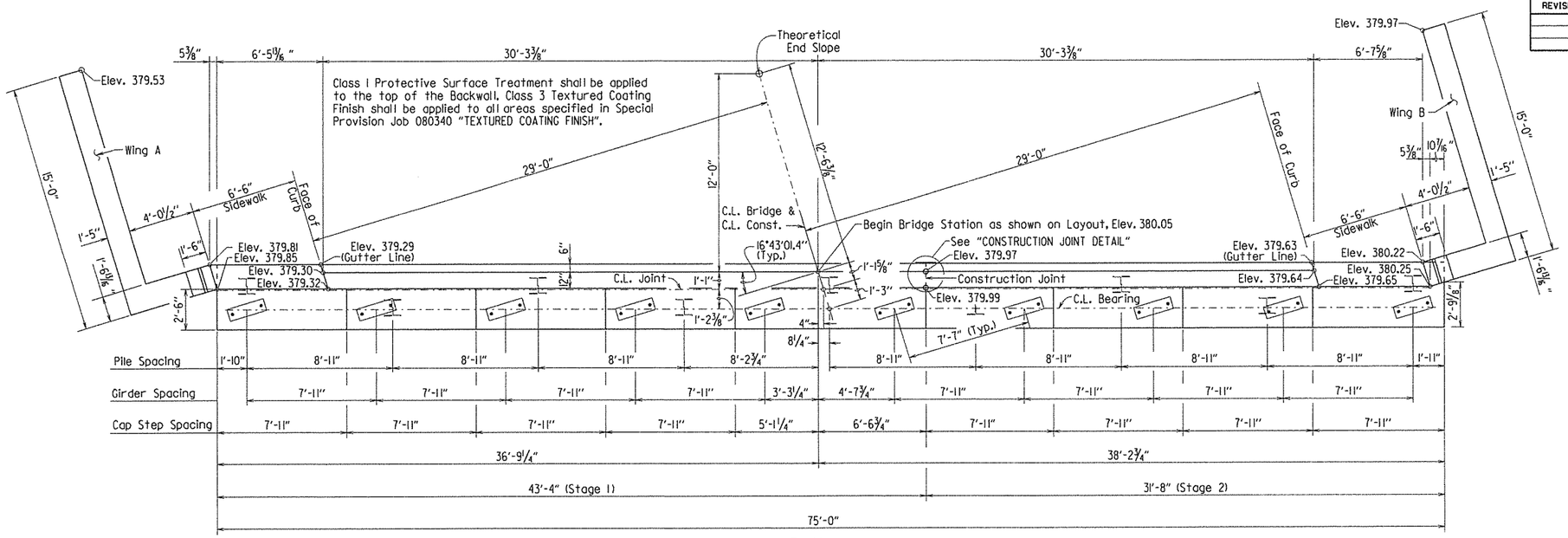
CHECKED BY: DHT DATE: 2-7-13 SCALE:

DESIGNED BY: RBR DATE: 12/12

BRIDGE NO. 07270 DRAWING NO. 53351

PRINT DATE: 2/7/2013

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.		080340	90	1857
				(1)	07270 -	BENT 1 -	53352	



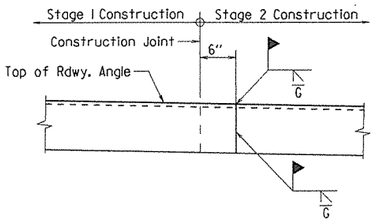
PLAN

1/4" = 1'-0"

For "SECTION A-A" thru "SECTION C-C" that include notes for soil reinforcement, and details of Wing A and Wing B, see Dwg. No. 53353.

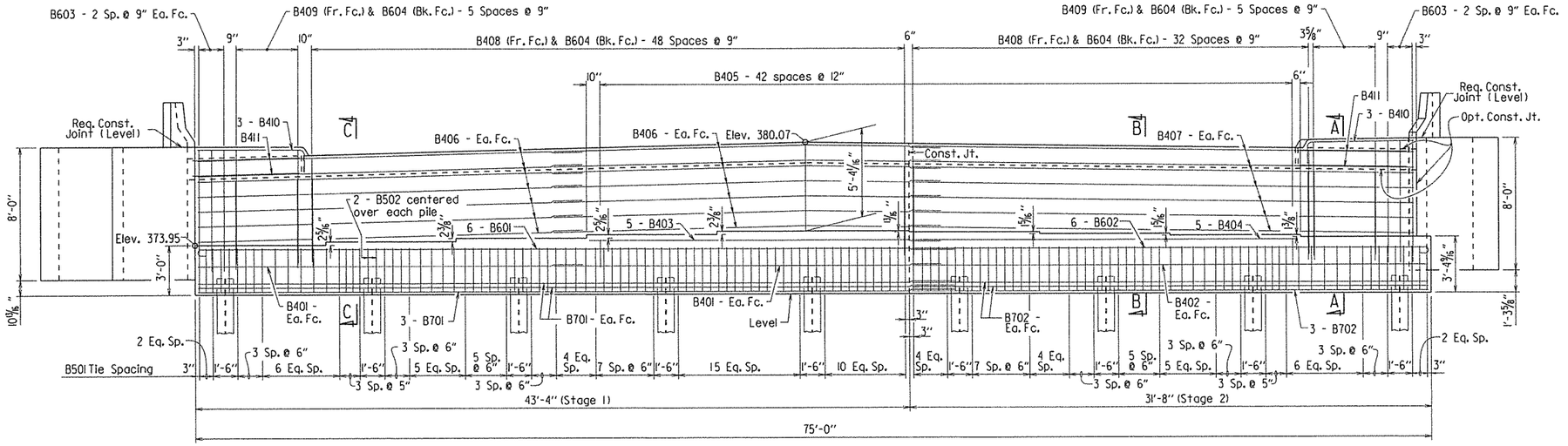
For General Notes, Sidewalk details, and Section thru Parapet Rail and Curb, see Dwg. No. 53354.

For Details of Elastomeric Bearings, see Dwg. No. 53366.



DETAIL OF WELD LOCATION FOR EXPANSION DEVICE

NO SCALE



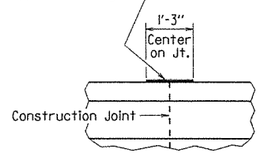
ELEVATION

1/4" = 1'-0"

(Looking Back)

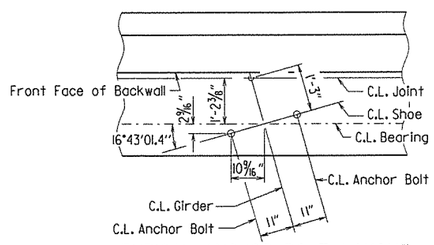
Unless otherwise noted.
Min. Lap for #4 bar = 1'-9"
Min. Lap for #6 bar = 2'-7"
Min. Lap for #7 bar = 3'-5"

Membrane Waterproofing System Type C or an approved equal to extend full height of backwall and cap. See Section 815. No direct payment shall be made for this work. Payment will be subsidiary to the item "Class S Concrete-Bridge".



CONSTRUCTION JOINT DETAIL

1/2" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT

NO SCALE

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF BENT 1

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: 08/27/2012 FILENAME: b080340_bl.dgn

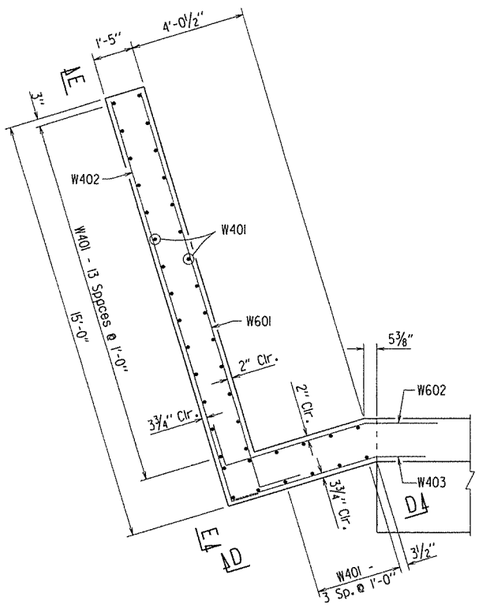
CHECKED BY: RBR DATE: 4/2/13 SCALE: As Shown

DESIGNED BY: RBR DATE: 9/12

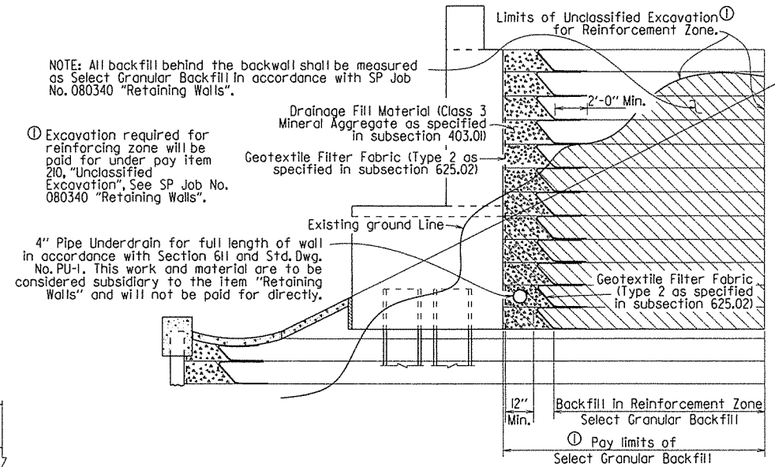
BRIDGE NO. 07270 DRAWING NO. 53352

PRINT DATE: 2/4/2013

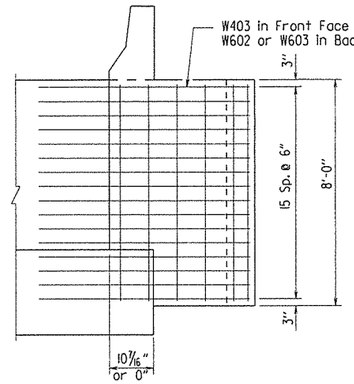
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	91	1617
				(1)	07270 -	BENT DETAILS	- 53353	



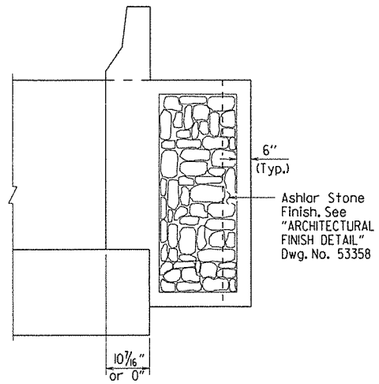
PLAN VIEW
(WING A)
⅜" = 1'-0"



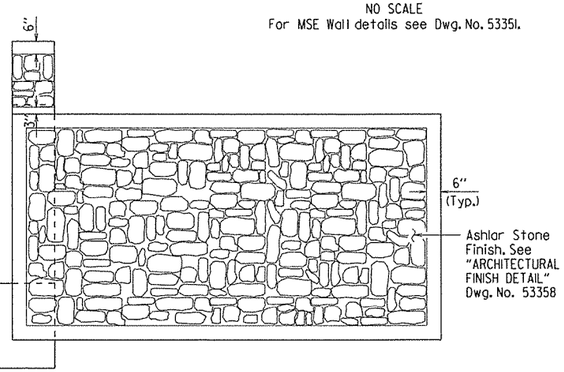
BACKWALL SOIL REINFORCEMENT
NO SCALE
For MSE Wall details see Dwg. No. 53351.



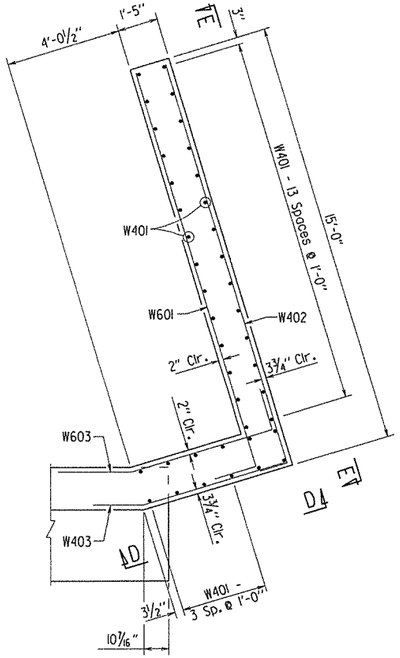
VIEW D-D
(REINFORCING)
⅜" = 1'-0"



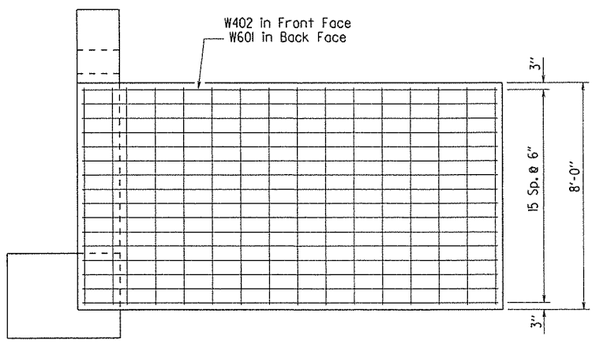
VIEW D-D
(WALL TREATMENT)
⅜" = 1'-0"



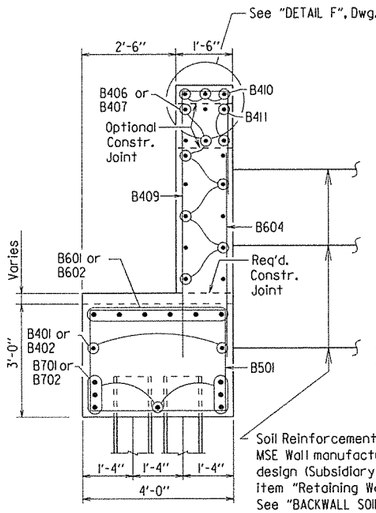
VIEW E-E
(WALL TREATMENT)
⅜" = 1'-0"



PLAN VIEW
(WING B)
⅜" = 1'-0"

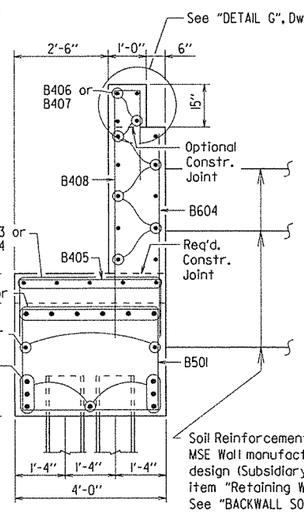


VIEW E-E
(REINFORCING)
⅜" = 1'-0"



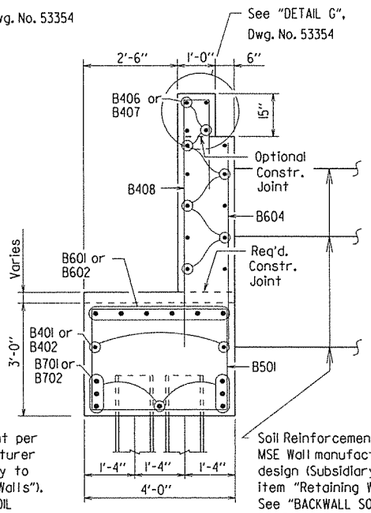
SECTION A-A
½" = 1'-0"

Soil Reinforcement per MSE Wall manufacturer design (Subsidiary to item "Retaining Walls"). See "BACKWALL SOIL REINFORCEMENT", Soil Reinforcement Note, and Dwg. No. 53351 for additional details.



SECTION B-B
½" = 1'-0"

Soil Reinforcement per MSE Wall manufacturer design (Subsidiary to item "Retaining Walls"). See "BACKWALL SOIL REINFORCEMENT", Soil Reinforcement Note, and Dwg. No. 53351 for additional details.



SECTION C-C
½" = 1'-0"

Soil Reinforcement per MSE Wall manufacturer design (Subsidiary to item "Retaining Walls"). See "BACKWALL SOIL REINFORCEMENT", Soil Reinforcement Note, and Dwg. No. 53351 for additional details.

Soil Reinforcement Note:

The Contractor shall provide soil reinforcement elements to resist the following concurrent horizontal forces and pressures, perpendicular to Bent 1 and 3.

65 psf per foot of depth equivalent fluid pressure

A lateral force of 550 lb/ft at the top of cap

A lateral live load surcharge of 260 psf

Soil reinforcement shall be attached at the back of End Bents. Type, size, and spacing of soil reinforcement shall be designed by the contractor. The design details and computations shall accompany the wall design submittal for review by the Engineer. Cost included with item Special Provision Job 080340 "Retaining Walls". See Special Provision Job 080340 "Retaining Walls" for details.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/1/13
CARL J. FUSELIER
BRIDGE ENGINEER

SHEET 1 OF 2
COMMON DETAILS OF BENTS 1 AND 3

ROUTE SEC.

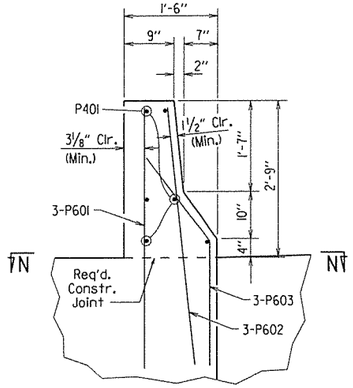
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: 08/27/2012 FILENAME: b080340_b1.dgn
CHECKED BY: RBR DATE: 2/1/13 SCALE: As Shown
DESIGNED BY: RBR DATE: 9/12

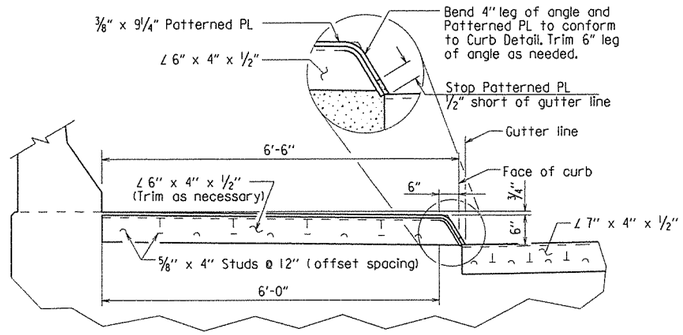
BRIDGE NO. 07270 DRAWING NO. 53353

PRINT DATE: 2/6/2013

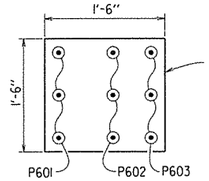
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	92	187
				(1)	07270 -	BENT DETAILS	- 53354	



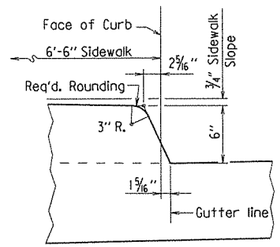
SECTION THRU PARAPET RAIL AT SIDEWALK
NO SCALE



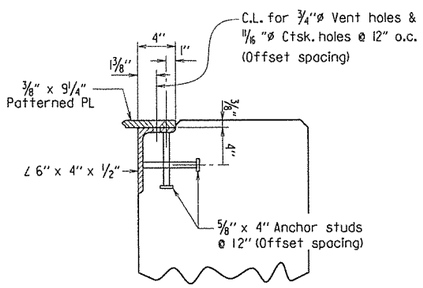
SIDEWALK DETAIL
Perpendicular to C.L. Bridge
NO SCALE



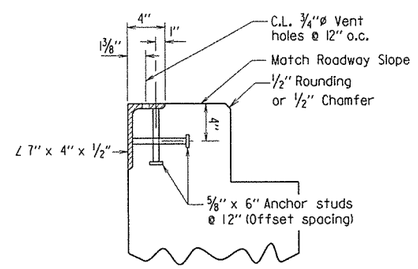
SECTION N-N
NO SCALE



SIDEWALK CURB DETAIL
Perpendicular to C.L. Bridge
NO SCALE



DETAIL F
1 1/2" = 1'-0"



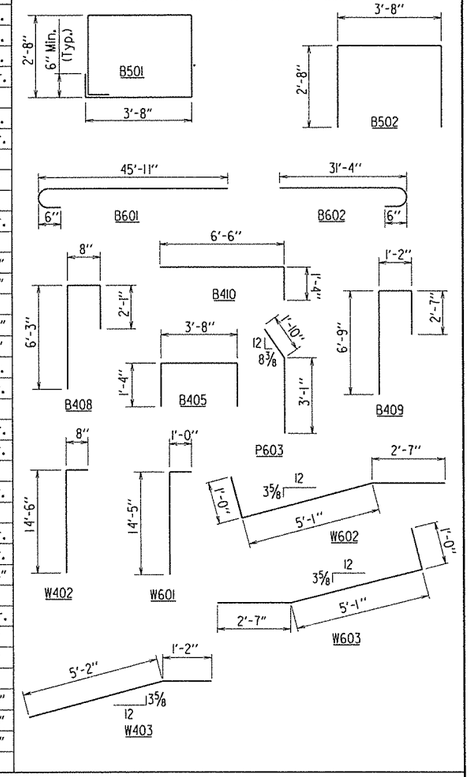
DETAIL G
1 1/2" = 1'-0"

BAR LIST - PER BENT

MARK	NO. REQ'D. STAGE 1	NO. REQ'D. STAGE 2	LENGTH	PIN. DIA.
B401	4	—	23'-5"	Str.
B402	—	2	31'-4"	Str.
B403	5	—	"A"	Str.
B404	—	5	"B"	Str.
B405	"C"	"D"	6'-2"	2"
B406	28	—	23'-5"	Str.
B407	—	14	"E"	Str.
B408	"F"	"G"	8'-10"	2"
B409	6	6	10'-4"	2"
B410	3	3	7'-9"	3"
B411	2	2	6'-6"	Str.
B501	72	50	13'-2"	2 1/2"
B502	12	8	8'-10"	2 1/2"
B601	6	—	46'-7"	4 1/2"
B602	—	6	32'-0"	4 1/2"
B603	6	6	7'-4"	Str.
B604	"H"	"I"	5'-6"	Str.
B701	7	—	46'-9"	Str.
B702	—	7	31'-4"	Str.
P401	6	6	1'-2"	Str.
P601	3	3	5'-4"	Str.
P602	3	3	5'-5"	Str.
P603	3	3	4'-11"	4 1/2"
W401	40	40	7'-8"	Str.
W402	16	16	15'-1"	2"
W403	16	16	6'-4"	2"
W601	16	16	15'-4"	4 1/2"
W602	"J"	"K"	8'-7"	4 1/2"
W603	"L"	"M"	8'-7"	4 1/2"

BENDING DIAGRAMS

(DIMENSIONS ARE OUT TO OUT OF BARS)



VARIABLE TABLE

VARIABLE	A	B	C	D	E	F	G	H	I
BENT 1	21'-4"	23'-5"	19	24	30'-5"	49	33	55	39
BENT 3	29'-3"	7'-7"	27	8	31'-4"	48	34	54	40

VARIABLE	J	K	L	M
BENT 1	16	-	-	16
BENT 3	-	16	16	-

GENERAL NOTES:

All concrete shall be Class "S" with a minimum 28 day compressive strength f'c = 3,500 psi and shall be poured in the dry. All exposed corners to be chamfered 3/4" unless otherwise noted.

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

No portion of the backwall shall be poured before girders are in place. The portion of the backwall above the paving bracket shall not be placed until the adjacent deck pour has been made.

Structural steel in end bents shall be AASHTO M270, Gr. 50 and shall be paid for as "STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270, Gr. 50)". Structural steel shall be cleaned and painted as specified in Section 807.

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

For additional information, See Layout.

Transverse spacing between vent holes and vertical studs shall be 6"

Concrete shall be hand packed under the joint armor.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 2 OF 2
COMMON DETAILS OF BENTS 1 AND 3

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

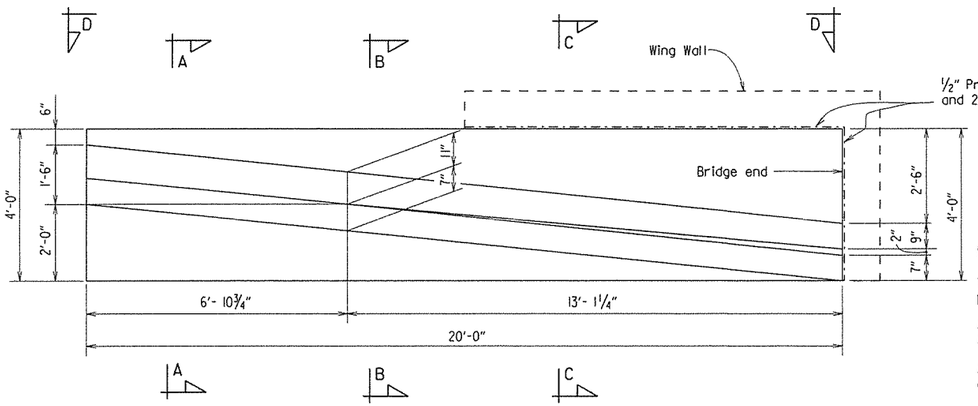
LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: 08/27/2012 FILENAME: b080340_bl.dgn
CHECKED BY: RBR DATE: 2/1/2013 SCALE: As Shown
DESIGNED BY: RBR DATE: 9/12

BRIDGE NO. 07270 DRAWING NO. 53354

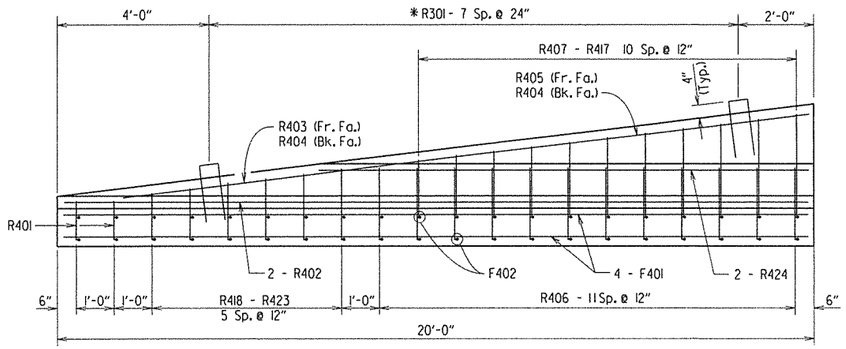
PRINT DATE: 2/1/2013

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.		080340	93	187
				(1)	07270 ~ TRANS. APPR. RAIL ~ 53355			



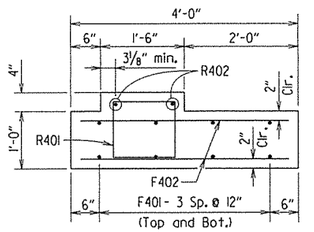
PLAN OF TRANSITIONAL APPROACH RAIL

½" = 1'-0"



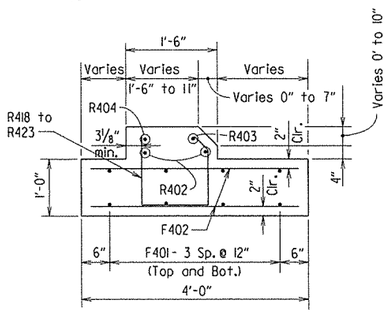
ELEVATION OF TRANSITIONAL APPROACH RAIL

½" = 1'-0"



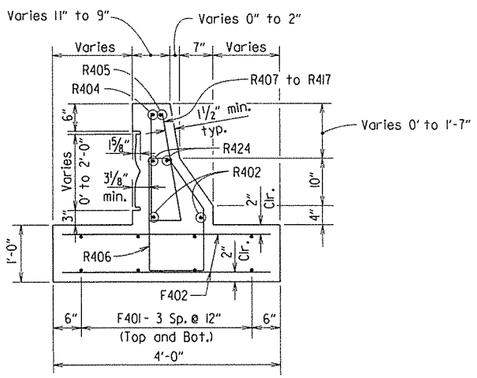
SECTION A-A

¾" = 1'-0"



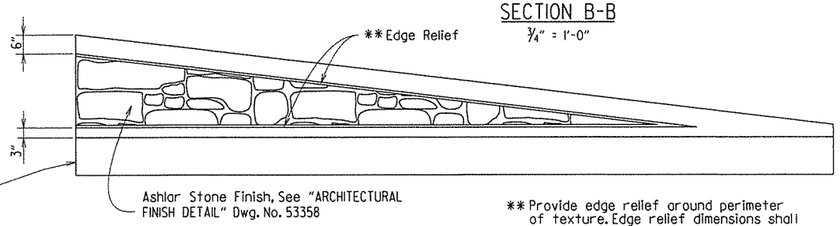
SECTION B-B

¾" = 1'-0"



SECTION C-C

¾" = 1'-0"



VIEW D-D

½" = 1'-0"

**Provide edge relief around perimeter of texture. Edge relief dimensions shall match manufacturer edge distance.

GENERAL NOTES:

Transitional Approach Railing shall be placed at ends of parapet rails at locations shown on the layout.

All Concrete shall be Class "S" or Class "S"(AE) and be poured in the dry. All exposed corners are to be chamfered ¾" unless otherwise noted.

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

Reinforcing steel designated as galvanized shall be galvanized in accordance with ASTM A767.

Class 3 Textured Coating Finish shall be applied to meet the requirements specified in SP Job No. 080340 "Textured Coating Finish".

Architectural Finish shall meet the requirements specified in SP Job No. 080340 "Architectural Finish".

Transitional Approach Railing shall be paid for at the contract unit price bid per each for "Transitional Approach Railing". See SP Job No. 080340 "Transitional Approach Railing".

FOR INFORMATION ONLY
SCHEDULE OF QUANTITIES PER RAIL UNIT

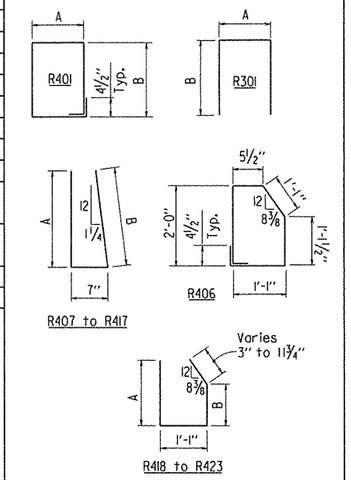
CLASS "S" CONCRETE	REINFORCING STEEL (GRADE 60)	CLASS 3 TEXTURED FINISH	ARCHITECTURAL FINISH
4.3 Cu. Yds.	381 Lbs.	15.3 Sq. Yds.	15 Sq. Ft.

BAR LIST - ONE TRANSITIONAL RAIL

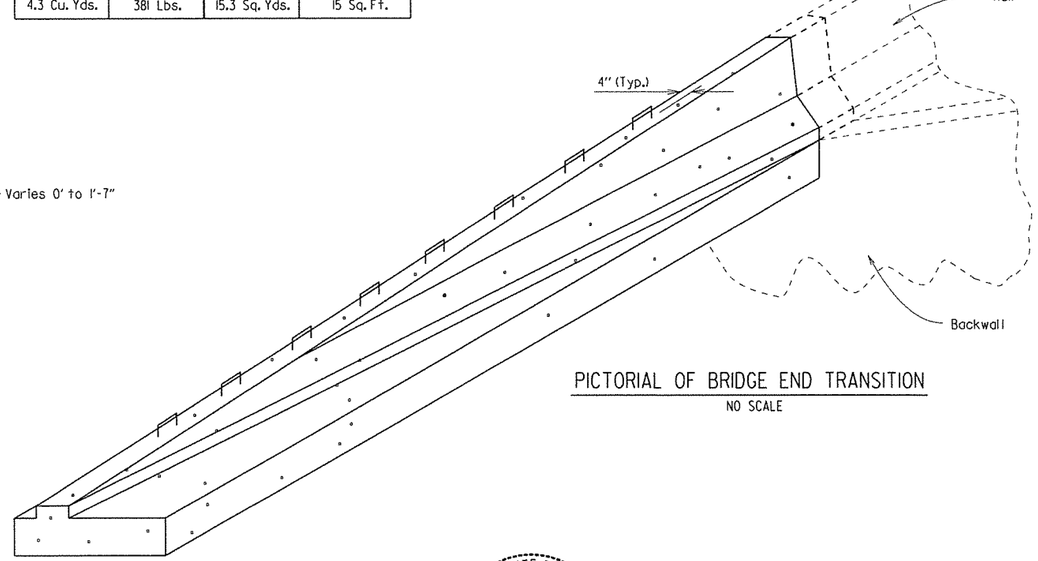
Mark	No. Req'd.	Length	A	B	Pin Dia.
F401	8	19'-8"			Str.
F402	40	3'-8"			Str.
*R301	8	3'-5"	6"	1'-6"	1½"
R401	2	4'-10"	1'-1"	1'-1"	2"
R402	2	19'-8"			Str.
R403	1	5'-1"			Str.
R404	1	18'-3"			Str.
R405	1	12'-10"			Str.
R406	12	6'-3"			2"
R407 to R417	1ea.	2'-11" to 5'-4"	1'-3" to 2'-5½"	1'-3" to 2'-5½"	2"
R418 to R423	1ea.	3'-8" to 5'-0"	1'-4" to 1'-11¼"	1'-1½"	2"
R424	2	10'-9"			Str.

*R301 reinforcing steel shall be galvanized.

Bending Diagram



Dimensions are out to out of bars.



PICTORIAL OF BRIDGE END TRANSITION

NO SCALE

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF TRANSITIONAL APPROACH RAILING

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: 08/21/2012 FILENAME: b080340_trl.dgn

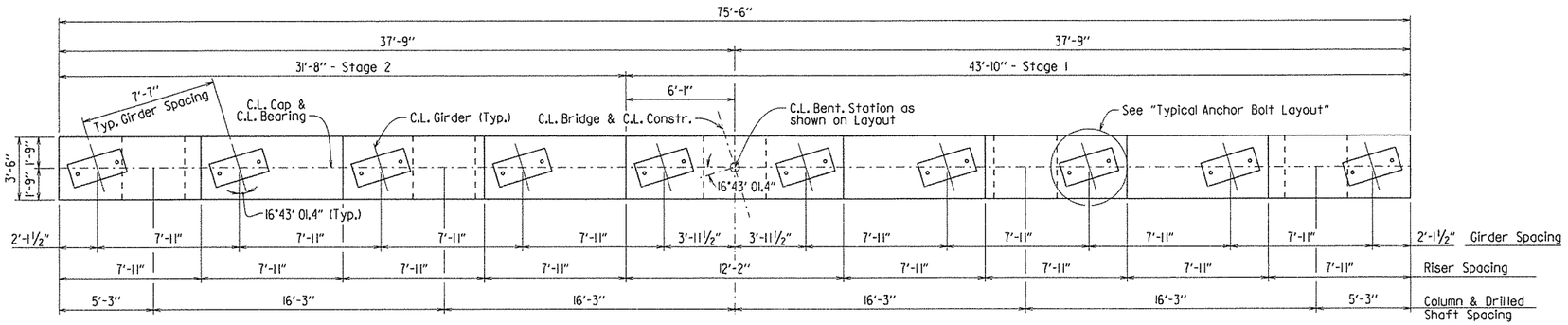
CHECKED BY: RBR DATE: 4/2/13 SCALE: As Shown

DESIGNED BY: - DATE: -

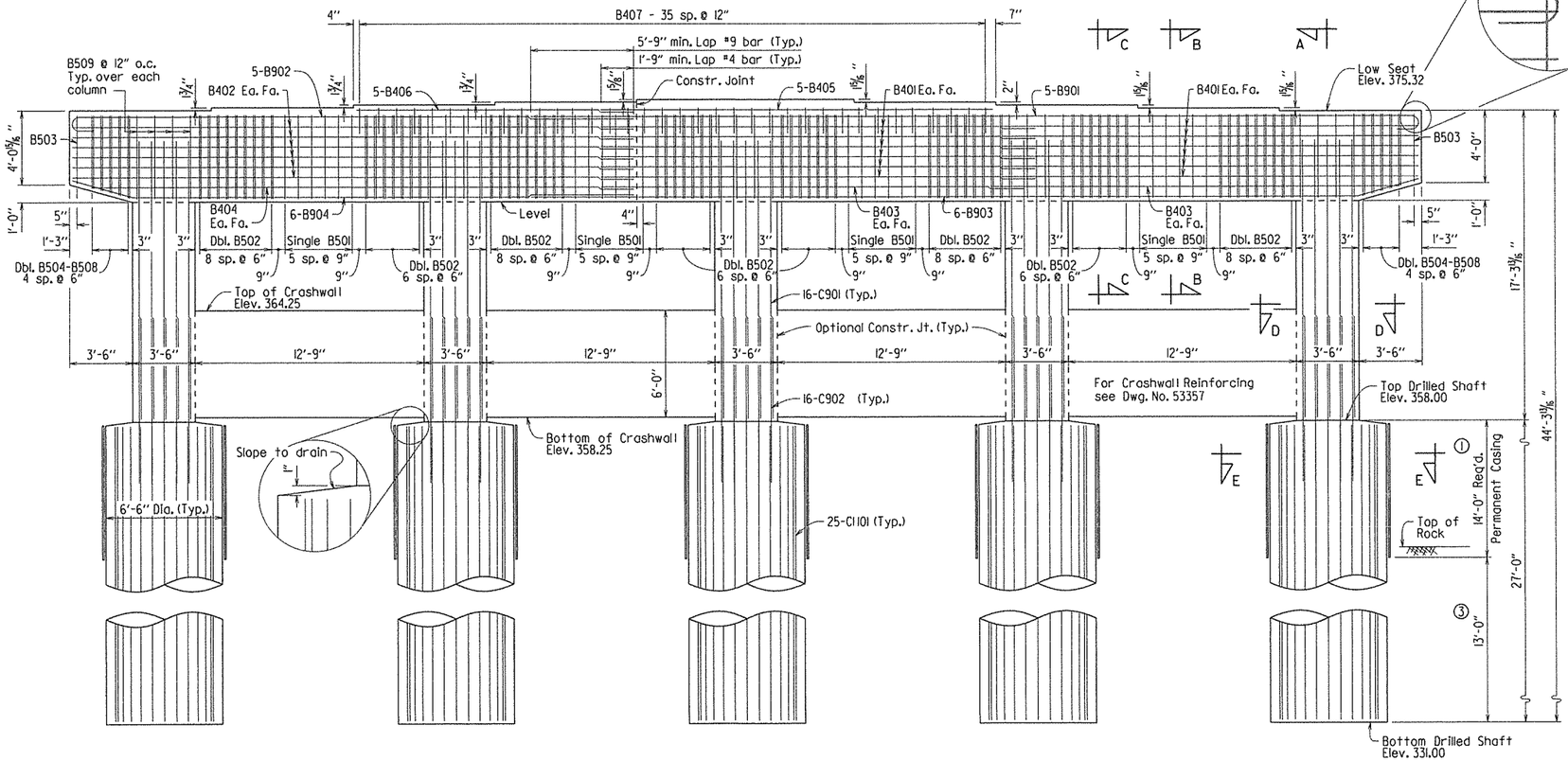
BRIDGE NO. 07270 DRAWING NO. 53355

PRINT DATE: 2/4/2013

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.		080340	94	187
				①		07270 - INT. BENT DETAIL - 53356		

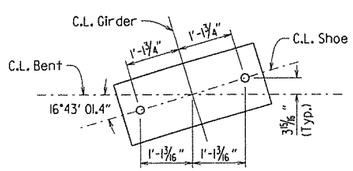


PLAN
1/4" = 1'-0"

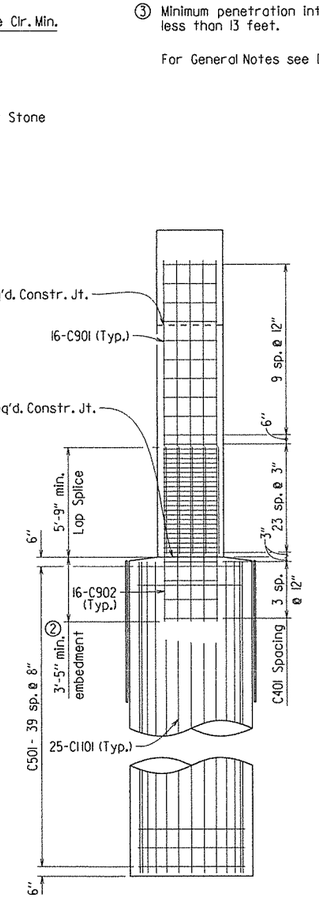


ELEVATION
Looking Ahead
1/4" = 1'-0"

For Sections B-B, C-C, D-D & E-E, see Dwg. No. 53357.



TYPICAL ANCHOR BOLT LAYOUT
NO SCALE



SECTION A-A
1/4" = 1'-0"

STATE OF ARKANSAS
Carl J. Ruselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/1/13
CARL J. RUSELIER

BRIDGE ENGINEER

SHEET 1 OF 3
DETAILS OF BENT 2

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 10/4/2012
CHECKED BY: CSG DATE: 2/4/2013
DESIGNED BY: RBR DATE: 9/12

FILENAME: b080340_b2.dgn
SCALE: As shown

BRIDGE NO. 07270 DRAWING NO. 53356

PRINT DATE: 2/1/2013

① Length of Permanent Casing shown is for estimating quantities only. Actual lengths are to be determined in the field.

② The column reinforcing cage, consisting of bars C401 & C902, may be placed before or after concrete placement in the shaft is complete. Vibration of concrete in the top 10 feet of the shaft will be needed to ensure the consolidation of the concrete around the reinforcing steel and to insert the column reinforcing cage. The contractor will be responsible for obtaining satisfactory results.

③ Minimum penetration into competent rock shall not be less than 13 feet.

For General Notes see Dwg. No. 53357.

GENERAL NOTES

Concrete in the cap, column and crashwall shall be Class S with a minimum 28 day compressive strength, f'c = 3500 psi., and shall be poured in the dry. Concrete in the drilled shaft shall be Class S as modified by SP Job 080340 "Drilled Shaft Foundations". All exposed corners to be chamfered ¾" unless otherwise noted.

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

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

For additional information see layout.

Drilled shafts shall conform to SP Job 080340 "Drilled Shaft Foundations" and shall be paid for at the unit bid price for "Drilled Shaft (78" Dia.)".

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.		080340	95	1807
				(1)	07270 - INT. BENT DETAILS - 53357			

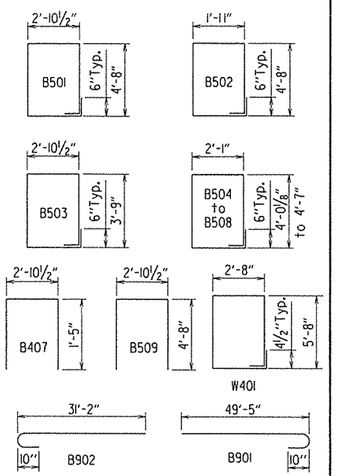
BAR LIST

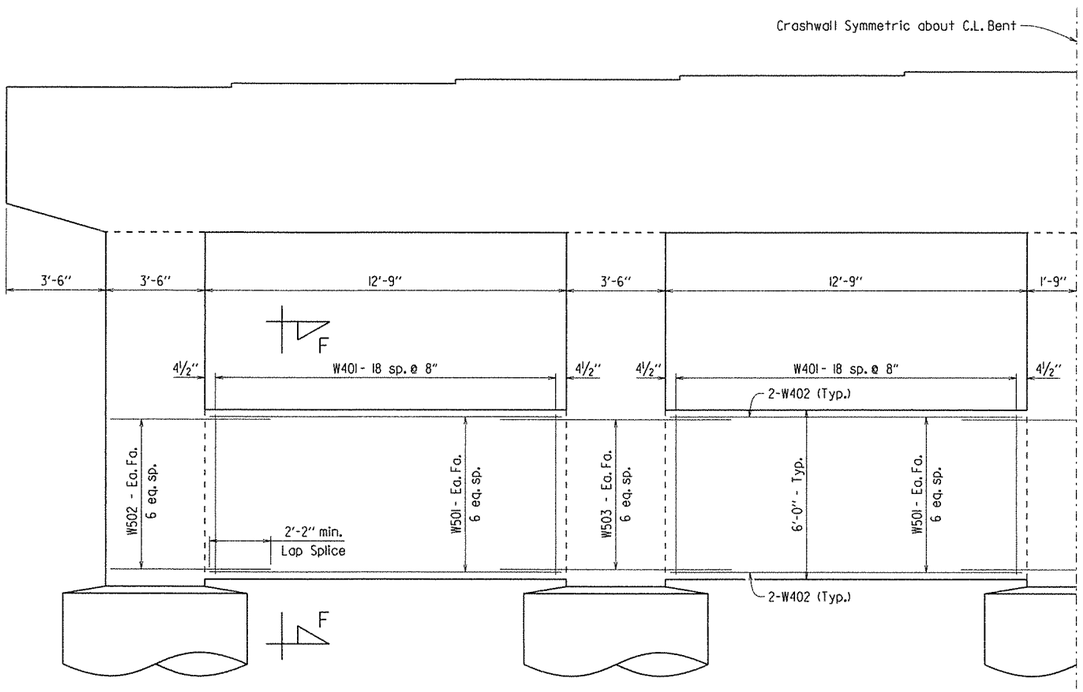
MARK	NO. REQ'D. STAGE 1	NO. REQ'D. STAGE 2	LENGTH	P.D.
B401	24	-	23'-8"	Str.
B402	-	12	31'-2"	Str.
B403	4	-	23'-2"	Str.
B404	-	2	30'-4"	Str.
B405	5	-	21'-10"	Str.
B406	-	5	15'-6"	Str.
B407	20	16	5'-7"	Str.
B501	13	11	15'-7"	2½"
B502	78	50	13'-8"	2½"
B503	1	1	13'-9"	2½"
B504 - B508	2 each	2 each	Var. 12'-8" to 13'-10"	2½"
B509	12	8	12'-0"	2½"
B901	5	-	50'-8"	9"
B902	-	5	32'-5"	9"
B903	6	-	49'-9"	9"
B904	-	6	31'-6"	9"
C401	114	76	12'-0"	3"
* C501	120	80	19'-2"	3¾"
C901	48	32	15'-9"	Str.
C902	48	32	9'-4"	Str.
* CH01	75	50	26'-8"	Str.
W401	38	38	17'-0"	2"
W402	8	8	12'-5"	Str.
W501	28	28	12'-5"	Str.
W502	14	14	5'-7"	Str.
W503	28	14	8'-2"	Str.

* Non-pay item - subsidiary to pay item "Drilled Shaft (78" Dia.)."

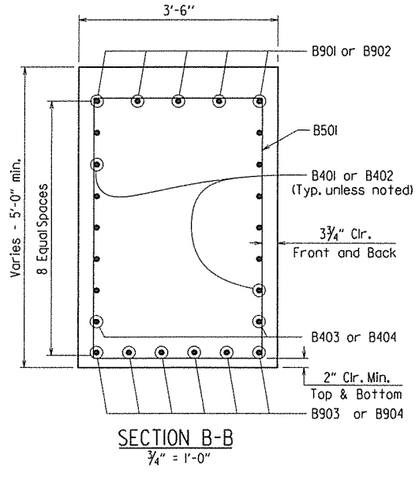
BENDING DIAGRAMS

Dimensions are out to out of bars.

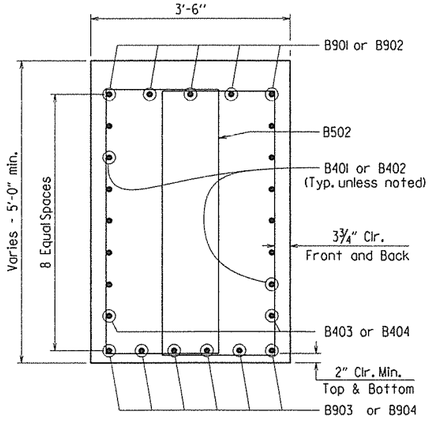




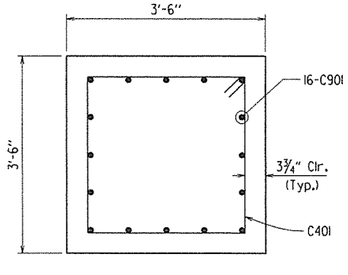
CRASH WALL ELEVATION
Looking Ahead
⅜" = 1'-0"



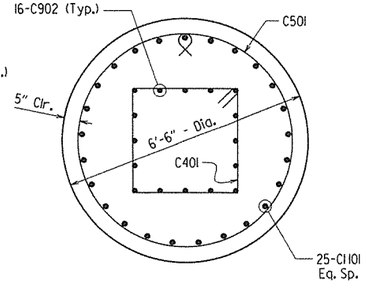
SECTION B-B
¾" = 1'-0"



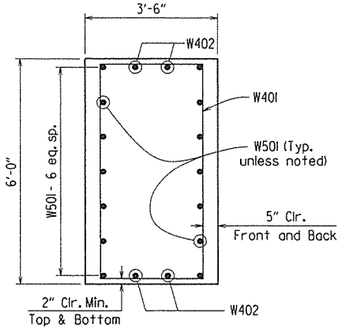
SECTION C-C
¾" = 1'-0"



SECTION D-D
¾" = 1'-0"



SECTION E-E
½" = 1'-0"



SECTION F-F
½" = 1'-0"

STATE OF ARKANSAS
Carl J. Puseller
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. PUSELLER

BRIDGE ENGINEER

SHEET 2 OF 3
DETAILS OF BENT 2

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 10/4/2012 FILENAME: b080340_b2.dgn
CHECKED BY: CSG DATE: 2/4/2013 SCALE: As shown
DESIGNED BY: RBR DATE: 9/12

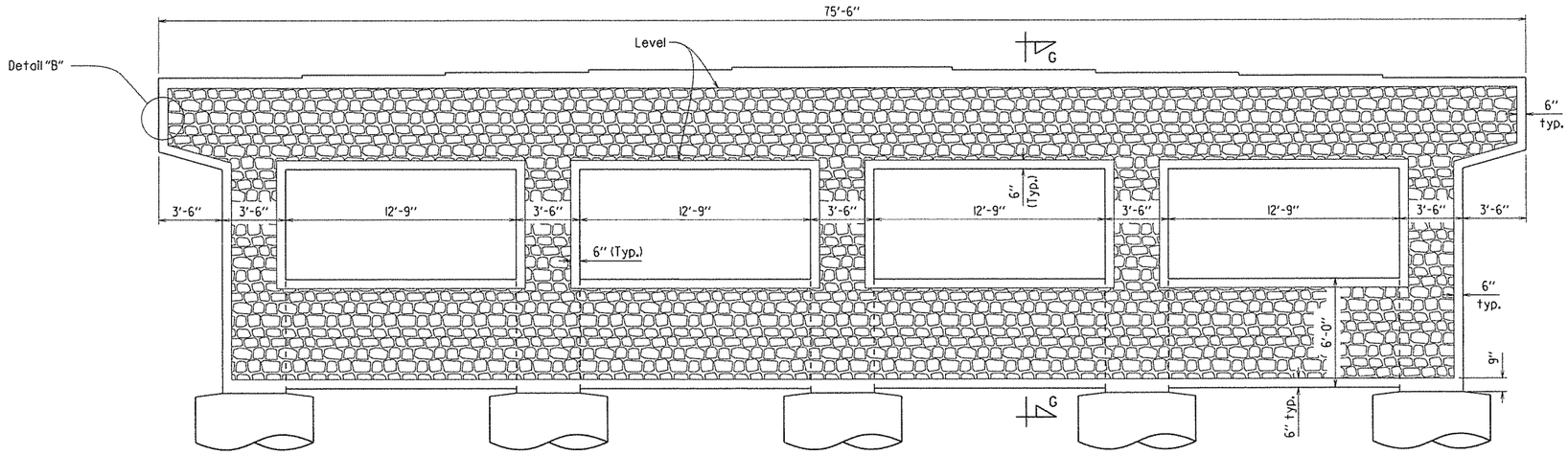
BRIDGE NO. 07270 DRAWING NO. 53357

PRINT DATE: 2/1/2013

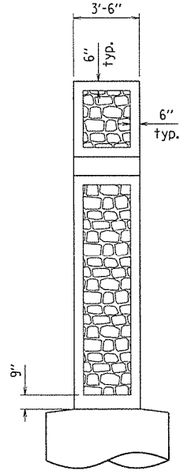
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		080340	96	187

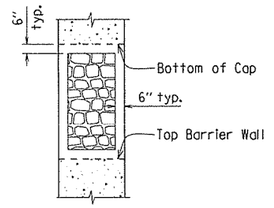
(1) 07270 - INT. BENT DETAILS - 53358



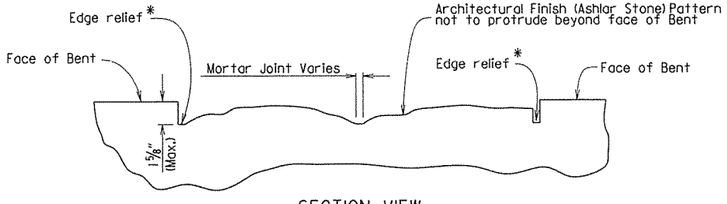
ELEVATION
Looking Ahead
1/4" = 1'-0"



END ELEVATION
1/4" = 1'-0"

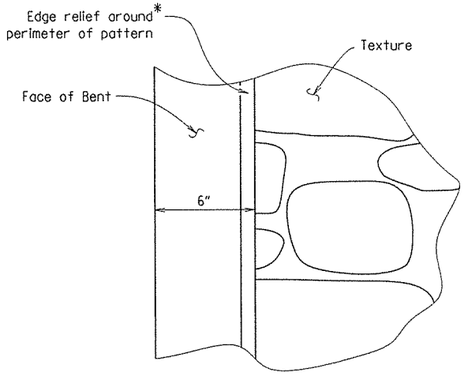


VIEW G-G
1/4" = 1'-0"

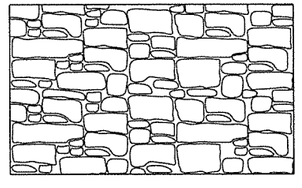


SECTION VIEW
NO SCALE

* Provide edge relief around perimeter of pattern. Edge relief dimensions shall match manufacturers edge distance.



DETAIL "B"
NO SCALE



ARCHITECTURAL FINISH DETAIL
(Ashlar Stone)
NO SCALE

General Notes:

The pattern finish shall be applied to the exposed surfaces in accordance with Special Provision Job No. 080340 "Architectural Finish" and as shown in the plans. Care shall be taken with form liner handling and installation to insure aesthetic quality of the pattern finish 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 pattern finish shall be in accordance with Special Provision Job No. 080340 "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 bent surfaces as specified in Special Provision Job No. 080340 "Textured Coating Finish".

For details and dimensions not shown, see Dwg. Nos. 53356 & 53357.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 3 OF 3
DETAILS OF BENT 2

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 10/4/2012 FILENAME: b080340_b2.dgn
CHECKED BY: CSF DATE: 2/4/2013 SCALE: As shown
DESIGNED BY: RBR DATE: 9/12

BRIDGE NO. 07270 DRAWING NO. 53358

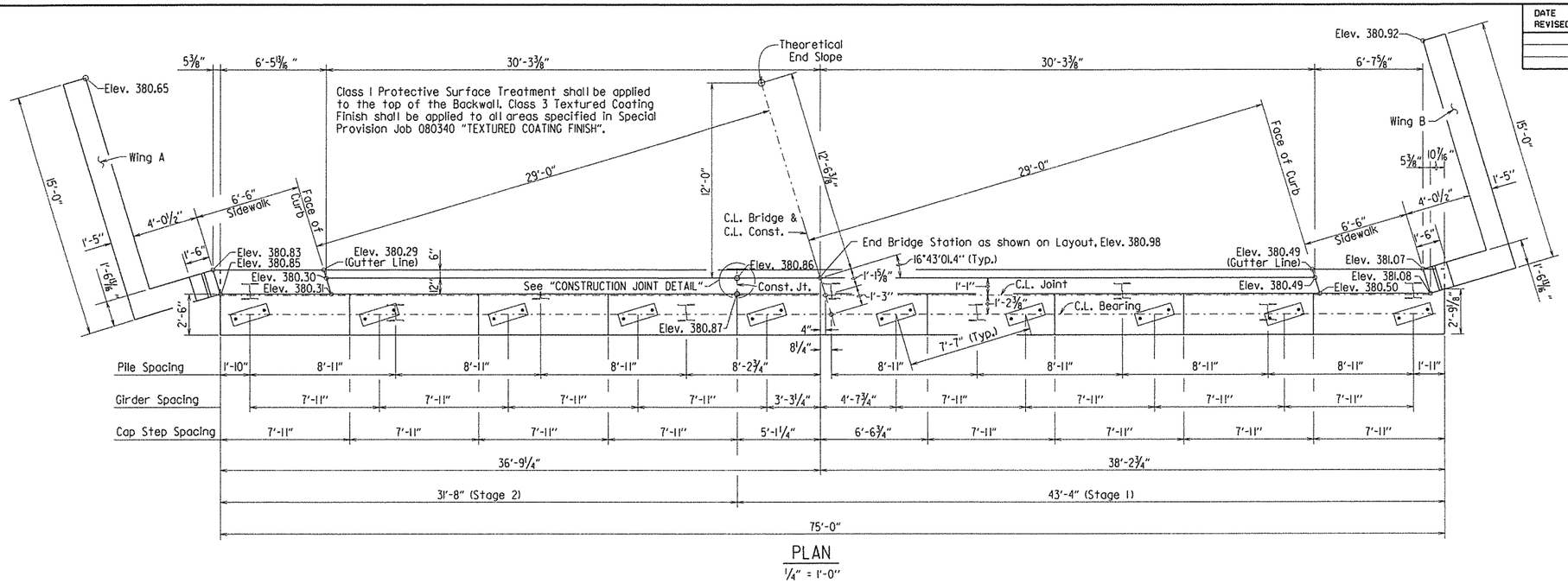
PRINT DATE: 2/1/2013

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.		080340	97	187
				(1)	07270 -	BENT 3	- 53359	

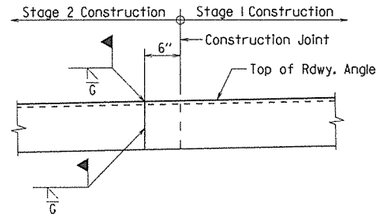
For "SECTION A-A" thru "SECTION C-C" that include notes for soil reinforcement, and details of Wing A and Wing B, see Dwg. No. 53353.

For General Notes, Sidewalk details, and Section thru Parapet Rail and Curb, see Dwg. No. 53354.

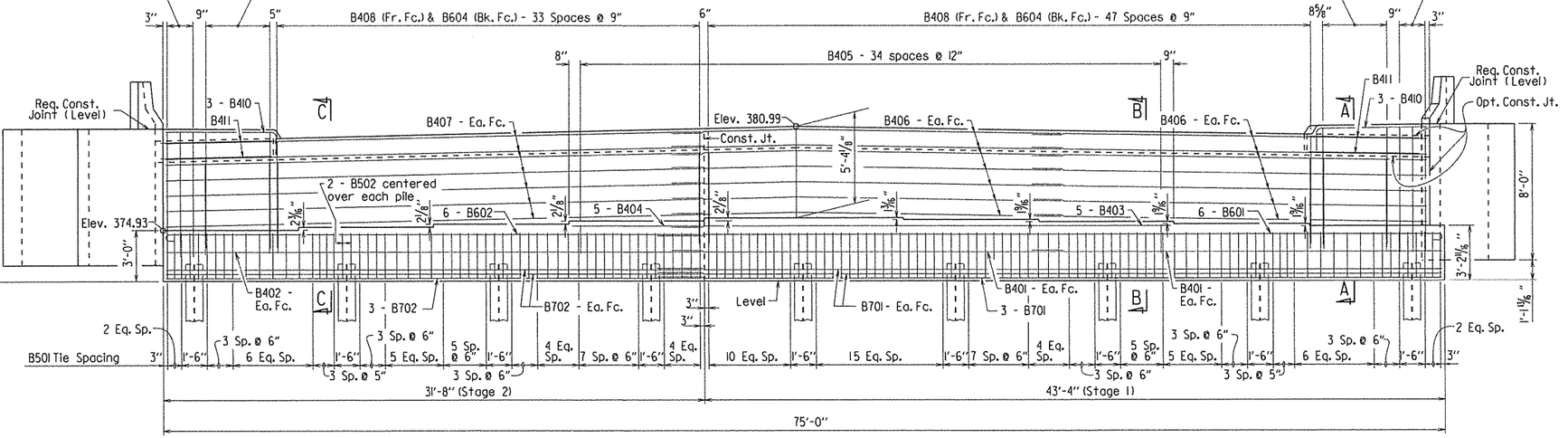
For Details of Elastomeric Bearings, see Dwg. No. 53366.



PLAN
1/4" = 1'-0"



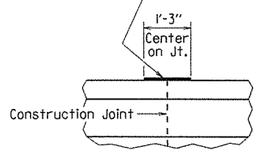
DETAIL OF WELD LOCATION FOR EXPANSION DEVICE
NO SCALE



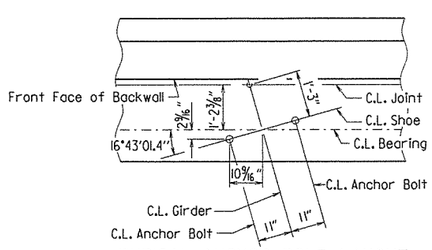
ELEVATION
1/4" = 1'-0"
(Looking Forward)

Unless otherwise noted.
Min. Lap for #4 bar = 1'-9"
Min. Lap for #6 bar = 2'-7"
Min. Lap for #7 bar = 3'-5"

Membrane Waterproofing System Type C or an approved equal to extend full height of backwall and cap. See Section 815. No direct payment shall be made for this work. Payment will be subsidiary to the item "Class S Concrete-Bridge".



CONSTRUCTION JOINT DETAIL
1/2" = 1'-0"



TYPICAL ANCHOR BOLT LAYOUT
NO SCALE

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF BENT 3

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: 08/27/2012 FILENAME: b080340_bl.dgn
CHECKED BY: RBR DATE: 2/1/13 SCALE: As Shown
DESIGNED BY: RBR DATE: 9/12

BRIDGE NO. 07270 DRAWING NO. 53359

PRINT DATE: 2/6/2013

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.		080340	98	107
				①	07270 -	230' UNIT	- 53360	

SLAB REINFORCING:

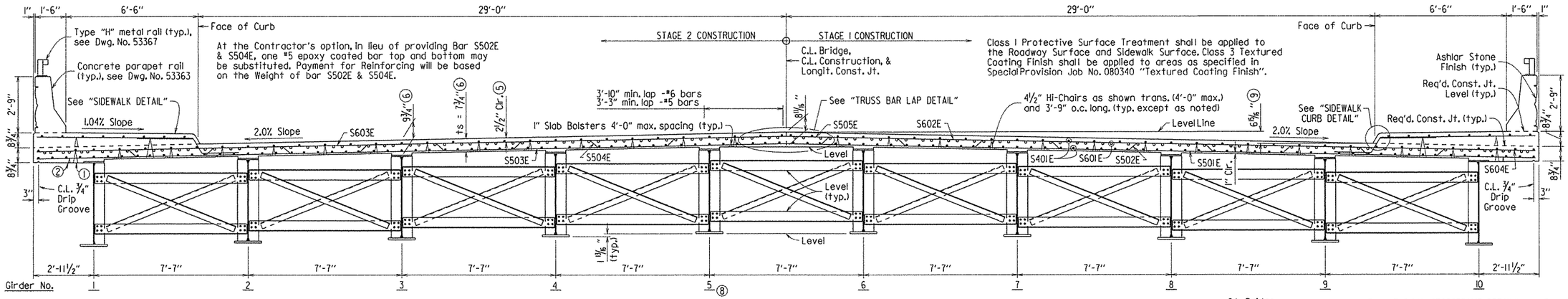
Longitudinal: S401E in top (Place as shown)
S401E in bottom (Place as shown)
S601E centered over Int.
Supports and placed as shown

Transverse: S502E or S504E @ 15" o.c. bent up over girders
S505E @ 15" o.c. in top across C.L. Bridge
S501E or S503E @ 15" o.c. in bottom
S602E or S603E @ 15" o.c. in top
S604E @ 7½" o.c. in Overhang

SIDEWALK REINFORCING:

Longitudinal: K401E in top (placed as shown)
Transverse: K402E & K403E @ 15" o.c.

The superstructure details shown are for use when removable deck forming is used and are the basis for measurement of Class S(AE) Concrete.



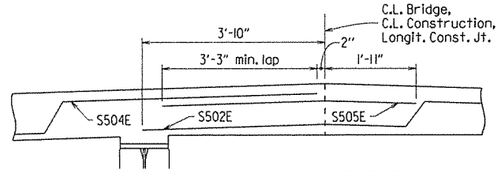
TYPICAL ROADWAY SECTION

(LOOKING AHEAD)

For "TYPICAL CROSSFRAME DETAIL" see Dwg. No. 53364

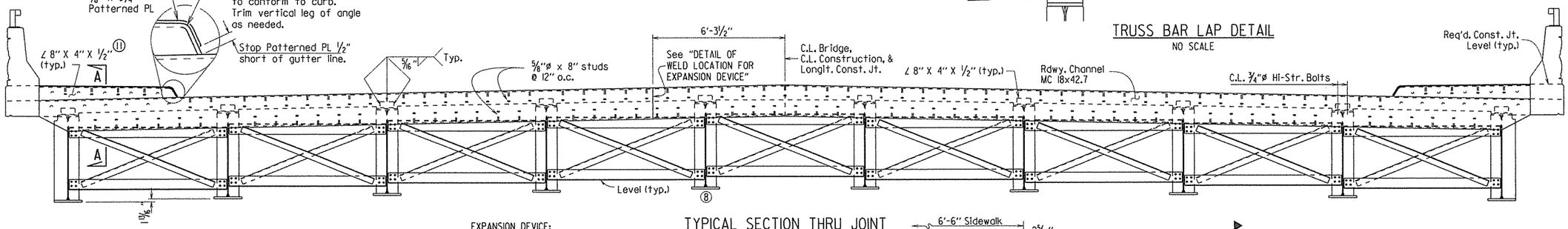
① 6¼" Max. Hi-chairs at 3'-9" o.c. long.
② 2" Max. Hi-chairs at 3'-9" o.c. long.

⑤ Tolerance: Minus = ¼"; Plus = The amount of slab thickening used to meet slab thickness tolerance.
⑥ See "ADJUSTMENT FOR SLAB THICKNESS TOLERANCE".
⑧ Girder Five is to be erected as part of Stage 1 Construction.
⑨ Measured from gutter line to top of deck at C.L. Bridge.

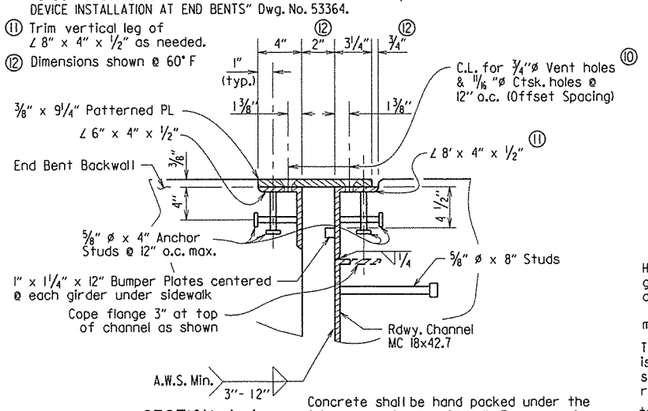


TRUSS BAR LAP DETAIL

NO SCALE



⑩ Ctsk. 11/16 "ø holes in ⅜" Patterned Plate. Tap 4" leg of angles for ASTM A449 ⅝" ø screws @ 12" o.c. Install screws in the shop and ship as a unit. Screws on the span side to be removed. Screws on backwall side to remain in place after erection. See "EXPANSION DEVICE INSTALLATION AT END BENTS" Dwg. No. 53364.
⑪ Trim vertical leg of ∠ 8" x 4" x ½" as needed.
⑫ Dimensions shown @ 60° F



SECTION A-A

NO SCALE

Concrete shall be hand packed under the joint armor in the sidewalk. For expansion joint detail see "Detail of Poured Silicone Joint Seal" Dwg. No. 53364

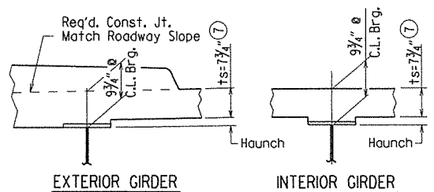
For additional details of joint not at sidewalk see Dwg. No. 53364.

EXPANSION DEVICE:
Rdwy. Channel MC18 X 42.7
Conn. ∠'s 8" X 4" X ½"
Detail Device ⅛" high and provide ¼" shims using 2 - 1/16" PL's and 1 - ⅛" PL

TYPICAL SECTION THRU JOINT

(LOOKING AHEAD)

⑦ Tolerance when removable deck forming is used is + ½", - ¼". Haunch forming is required and shall be adjusted to maintain slab thickness tolerance.



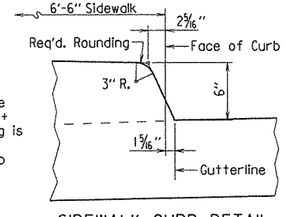
Haunch dimension may vary within the following limits to maintain the grade and slab thickness tolerance : Minimum - occurs when top flange contacts bottom reinforcing steel; Maximum - top flange thickness plus 1¾". No increase in concrete and structural steel quantities will be made to maintain tolerances.

Tolerances shown are applicable only when removable deck forming is used. See Standard Drawing No. 14991 for tolerances when permanent steel deck forms are used. Payment for concrete shall be based on removable deck forming.

ts = Slab thickness as shown in "TYPICAL ROADWAY SECTION".

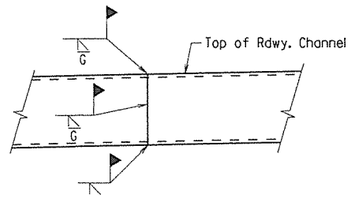
ADJUSTMENT FOR SLAB THICKNESS TOLERANCE

NO SCALE



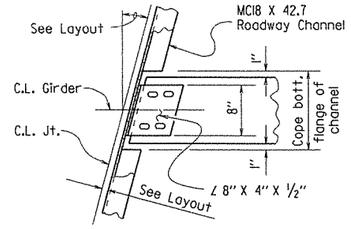
SIDEWALK CURB DETAIL

Perpendicular to C.L. Bridge
NO SCALE



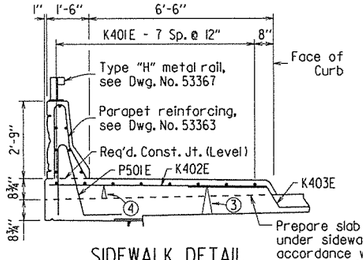
DETAIL OF WELD LOCATION FOR EXPANSION DEVICE

(LOOKING AHEAD)
NO SCALE



CHANNEL CONNECTION DETAIL

NO SCALE



SIDEWALK DETAIL

Perpendicular to C.L. Bridge

③ 1½" Max. Hi-chairs at 3'-9" o.c. long.
④ 5" Max. Hi-chairs at 3'-9" o.c. long.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 1 OF 6
DETAILS OF 230'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

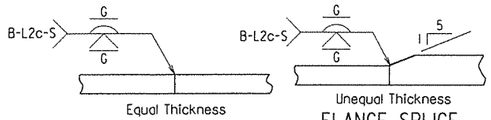
LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: 09/20/2012 FILENAME: b080340_sl.dgn
CHECKED BY: RBR DATE: 2/6/13 SCALE: ⅜" = 1'-0"
DESIGNED BY: RBR DATE: 9/12

BRIDGE NO. 07270 DRAWING NO. 53360

PRINT DATE: 2/6/2013

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.		080340	99	1857
				(1) 07270 -		230' UNIT	- 53361	

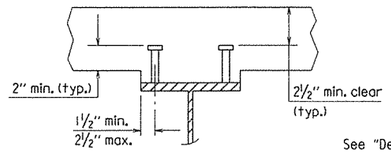


DETAILS OF WELDED SPLICES
NO SCALE

TABLE FOR WELDS

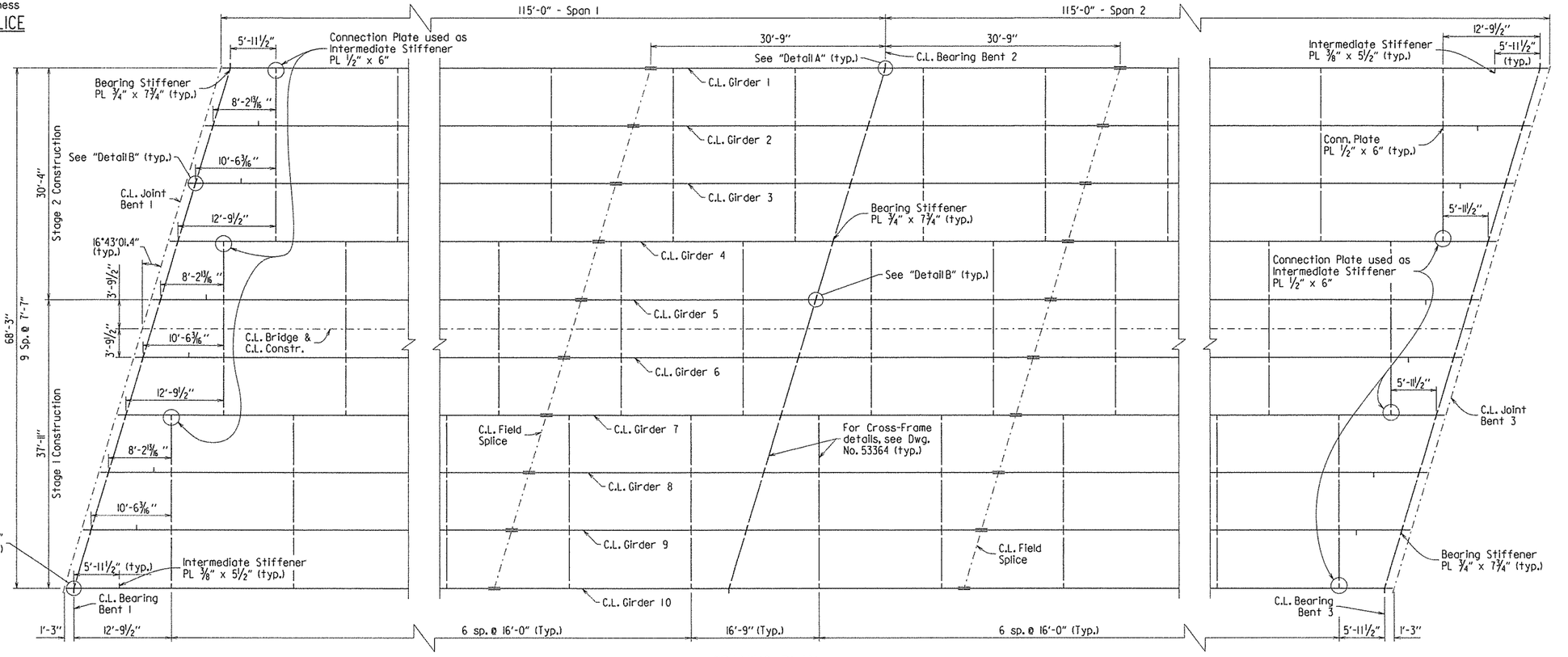
Material Thickness of Thicker Part Joined (Inches)	Minimum Size of Fillet Weld (Inches)	Single Pass Weld Must Be Used
To ¾" Inclusive	¼"	
Over ¾"	5/16"	

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



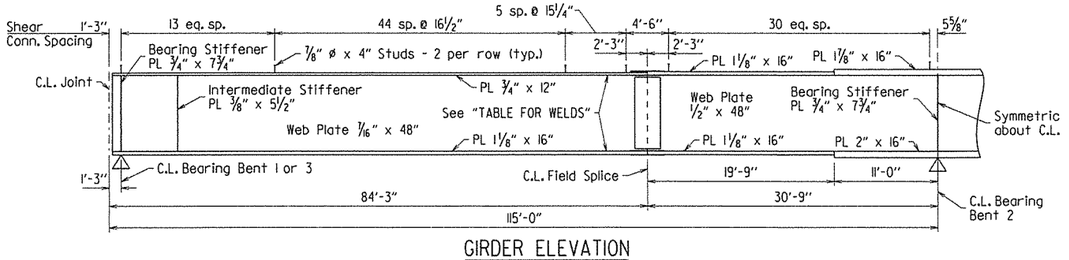
Stud Shear Connectors shown shall be ⅞"ø x 4" long, granular flux filled, solid fluxed or equal, and automatically end welded to the girder flange in accordance with the recommendations of the Manufacturer. ¾"ø studs may be used in place of the ⅞"ø studs shown, at the ratio of 1.361 - ¾"ø studs in place of one ⅞"ø stud. ⅞"ø studs will be used as basis for measurement of structural steel in shear connectors. Maximum stud spacing = 24".

SHEAR CONNECTOR DETAIL
NO SCALE

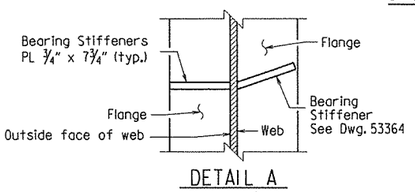


FRAMING PLAN
NO SCALE

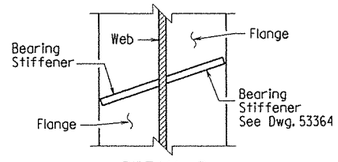
All structural Steel shall be AASHTO M270, Gr. 50 unless otherwise noted. Bolted field splices may be eliminated or shop welded splices may be substituted with the approval of the Engineer. Payment will be made on the basis of plan quantities.



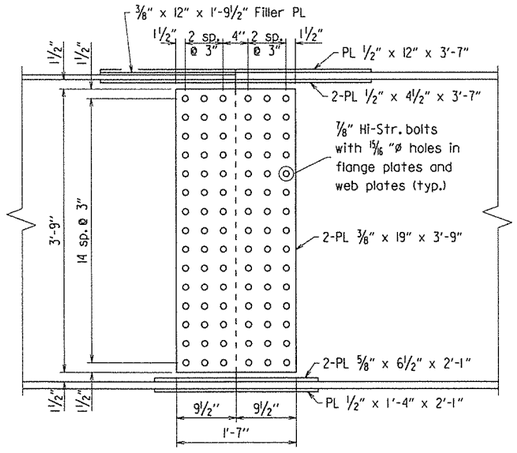
GIRDER ELEVATION
NO SCALE



DETAIL A
Girders 1 & 10
NO SCALE



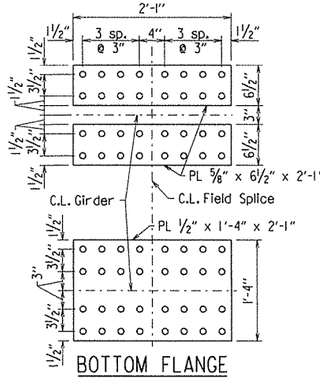
DETAIL B
Girders 2 - 9
NO SCALE



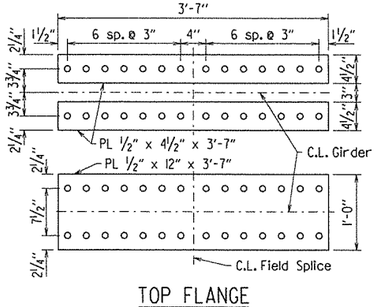
WEB SPLICE

All field splice plates shall be AASHTO M270, Gr. 50 steel.
All field splice bolts shall be ⅞"ø H.S. Bolts
All field splice bolts shall be 15/16 "ø

FIELD SPLICE DETAILS
1" = 1'-0"



BOTTOM FLANGE



TOP FLANGE

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 2 OF 6
DETAILS OF 230'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

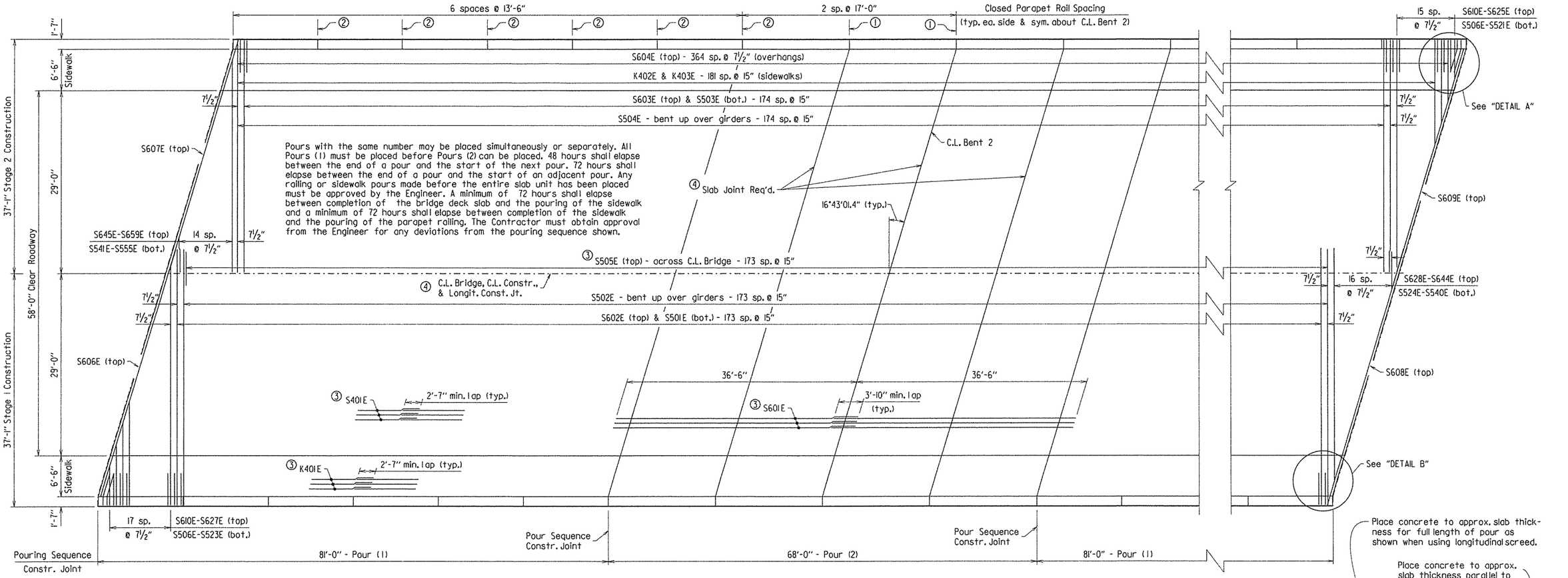
DRAWN BY: CSG DATE: 09/20/2012 FILENAME: b080340_sl.dgn
CHECKED BY: RBR DATE: 2/6/13 SCALE: As Shown
DESIGNED BY: RBR DATE: 9/12

BRIDGE NO. 07270 DRAWING NO. 53361

PRINT DATE: 2/6/2013

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.		080340	100	187
				①	07270 -	230' UNIT	- 53362	

Unless otherwise noted.
Min. Lap for #4 Epoxy Coated bar = 2'-7"
Min. Lap for #5 Epoxy Coated bar = 3'-3"
Min. Lap for #6 Epoxy Coated bar = 3'-10"



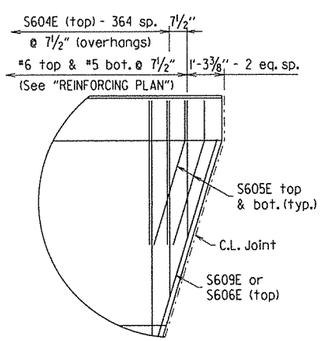
REINFORCING PLAN
NO SCALE

① C.L. Full-Depth Parapet Joint (¼" to 1" Max.) Stop 4" from top of slab.

② C.L. Partial-Depth Parapet Joint (¼" to 1" Max.) Stop 1'-2" from top of slab.

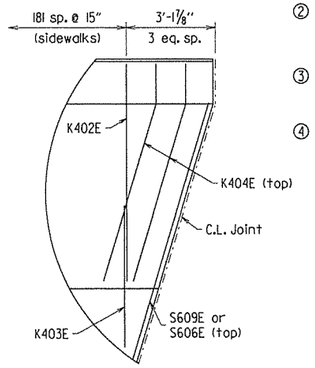
③ Placed as shown in "TYPICAL ROADWAY SECTION", Dwg. No. 53360

④ See "SLAB JOINT DETAIL" and "LONGITUDINAL CONSTRUCTION JOINT DETAIL", Dwg. No. 53363

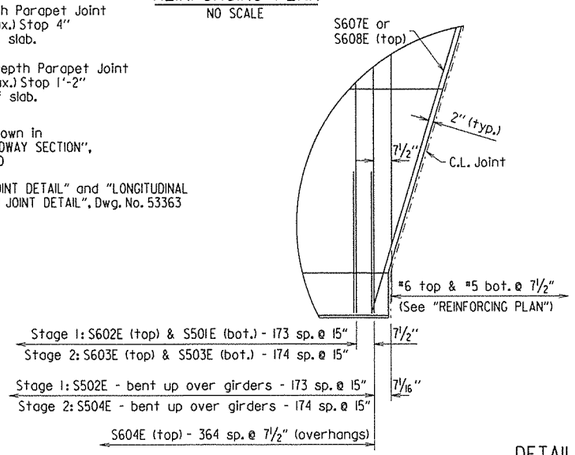


SLAB REINFORCING

DETAIL A
NO SCALE

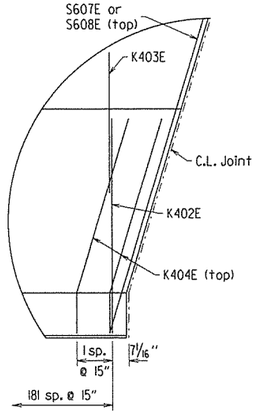


SIDEWALK REINFORCING



SLAB REINFORCING

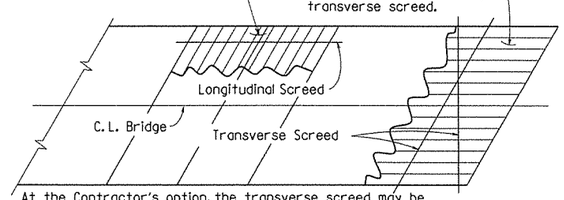
DETAIL B
NO SCALE



SIDEWALK REINFORCING

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2-1-13
CARL J. FUSELIER

BRIDGE ENGINEER



CONCRETE PLACEMENT PROCEDURE
NO SCALE

SHEET 3 OF 6
DETAILS OF 230'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

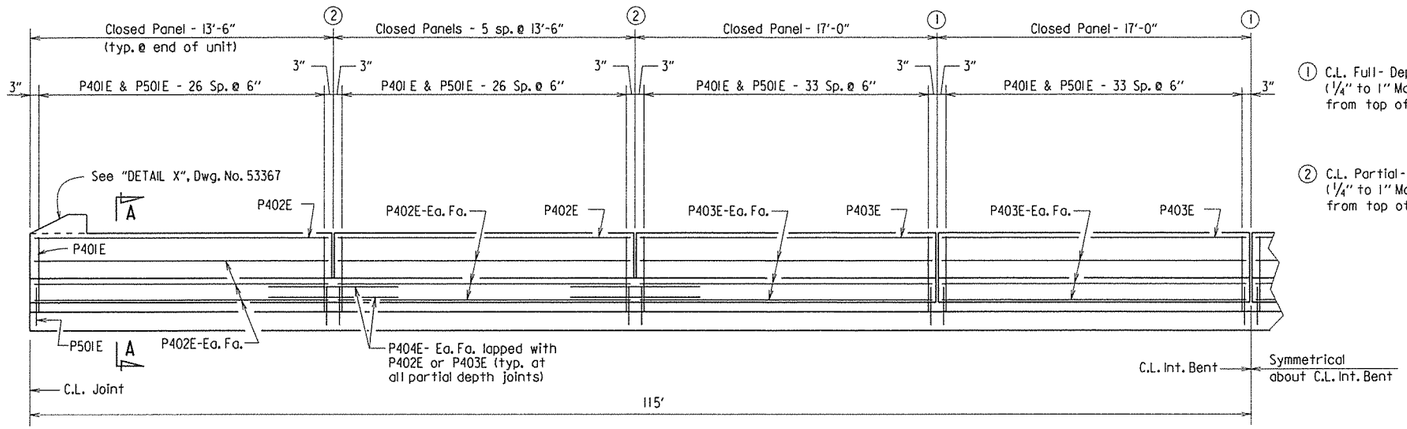
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: 09/20/2012 FILENAME: b080340_sl.dgn
CHECKED BY: RBR DATE: 2/1/2013 SCALE: As Shown
DESIGNED BY: RBR DATE: 9/12

BRIDGE NO. 07270 DRAWING NO. 53362

PRINT DATE: 2/1/2013

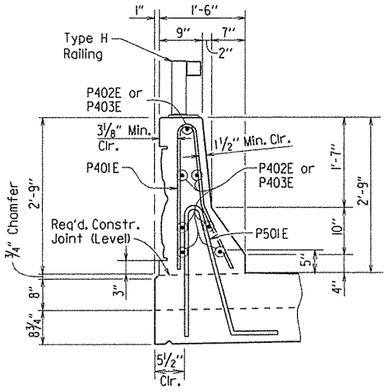
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	101	1817
				①	07270 -	230' UNIT	- 53363	



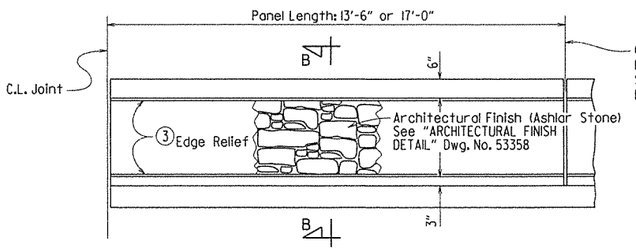
① C.L. Full-Depth Parapet Joint (1/4" to 1" Max.) Stop 4" from top of slab.

② C.L. Partial-Depth Parapet Joint (1/4" to 1" Max.) Stop 1'-2" from top of slab.

DETAILS OF PARAPET RAIL
NO SCALE



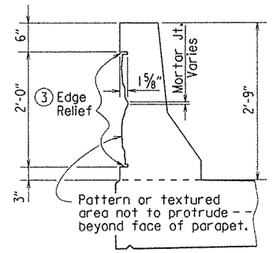
SECTION A-A
3/4" = 1'-0"



DETAILS OF PARAPET ENHANCEMENT
1/2" = 1'-0"

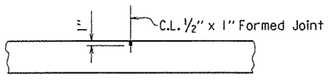
Slip forming of Parapet Panels shall not be permitted.

③ Provide edge relief around perimeter of texture. Edge relief dimensions shall match manufacturer edge distance.



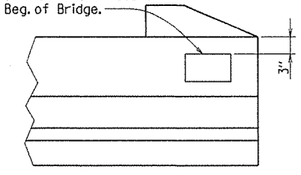
SECTION B-B
3/4" = 1'-0"

Place Type D Bridge Name Plate on front face of span rail approx. 2'-0" from front face of backwall on right side Beg. of Bridge.

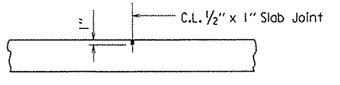


Use Type 3, 4, or 6 Joint Sealer. See subsections 501.02 (h) and 501.05 (j). Backer Rod filler will not be required. Joint sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. This joint shall be formed.

LONGITUDINAL CONSTRUCTION JOINT DETAIL
NO SCALE



NAME PLATE DETAIL
NO SCALE



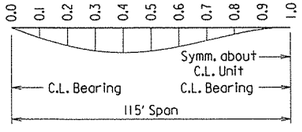
Use Type 3, 4, or 6 Joint Sealer. See subsections 501.02 (h) and 501.05 (j). Backer Rod filler will not be required. Joint Sealer shall be measured and paid for as Class S(AE) Concrete-Bridge. Slab joints shall extend to the outside edge of the deck slab. Slab joints shall be installed before the sidewalk is poured. The slab joints in the sidewalk shall extend to the outside of the sidewalk and shall be installed before parapet railing is to be poured. If slab joints are to be sawed, they shall be sawed as soon as the concrete has sufficiently set to allow sawing of the joint without damage to the slab. Slab joints shall be placed at all pouring sequence construction joints and required slab joint locations. The joint sealer shall extend across the deck slab and across the top of the sidewalk. No joint sealer shall be placed on the deck slab under the sidewalk or parapet rail. Slab joints shall align with parapet open joints.

SLAB JOINT DETAIL
NO SCALE

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)

Span	Point of Deflection	Structural Steel		Structural Steel + Slab		Structural Steel + Slab + Sidewalk + Parapet	
		Interior	Exterior	Interior	Exterior	Interior	Exterior
115' Span	0.0	0.000	0.000	0.000	0.000	0.000	0.000
	0.1	0.165	0.155	0.825	0.744	0.892	1.023
	0.2	0.302	0.284	1.507	1.359	1.630	1.871
	0.3	0.391	0.367	1.948	1.756	2.109	2.423
	0.4	0.422	0.396	2.099	1.893	2.274	2.619
	0.5	0.394	0.370	1.961	1.768	2.127	2.457
	0.6	0.319	0.299	1.580	1.425	1.717	1.992
	0.7	0.213	0.200	1.054	0.950	1.149	1.341
	0.8	0.107	0.100	0.524	0.473	0.573	0.675
	0.9	0.028	0.027	0.139	0.126	0.153	0.182
C.L. Unit →	1.0	0.000	0.000	0.000	0.000	0.000	0.000

Table is symmetrical about C.L. Unit

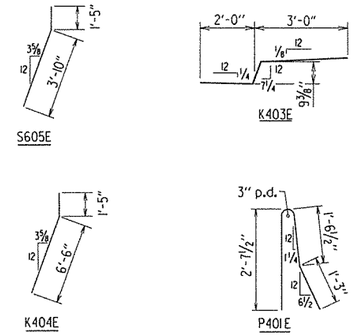


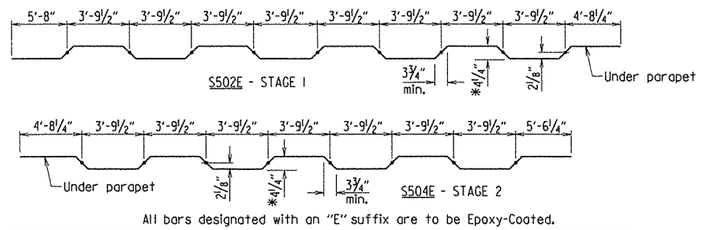
DEAD LOAD DEFLECTIONS DIAGRAM (TYP.)
NO SCALE

Camber for Dead Load Deflection plus Vertical curve ± 1/4" tolerance. Deflections shown are from a chord from C.L. Bearing to C.L. Bearing. Vertical curve corrections not included. Negative sign (-) indicates point above chord.

BAR LIST

MARK	NO. REQ'D. STAGE 1	NO. REQ'D. STAGE 2	LENGTH	P.D.	BENDING DIAGRAMS
S401E	510	510	40'-5"	Str.	Dimensions are out to out of bars.
S501E	174	—	40'-4"	Str.	
S502E	174	—	41'-8"	3"	
S503E	—	175	36'-9"	Str.	
S504E	—	175	37'-7"	3"	
S505E	174	—	5'-4"	Str.	
S506E-S521E	1 Each	1 Each	4'-10" to 36'-1"	Str.	
S522E	1	—	38'-2"	Str.	
S523E	1	—	40'-2"	Str.	
S524E-S540E	1 Each	—	37'-11" to 4'-7"	Str.	
S541E-S555E	—	1 Each	5'-2" to 34'-4"	Str.	
S601E	120	120	38'-5"	Str.	
S602E	174	—	40'-11"	Str.	
S603E	—	175	36'-9"	Str.	
S604E	365	365	5'-1"	Str.	
S605E	4	4	5'-3"	4 1/2"	
S606E	1	—	41'-2"	Str.	
S607E	—	1	38'-5"	Str.	
S608E	1	—	42'-7"	Str.	
S609E	—	1	36'-11"	Str.	
S610E-S625E	1 Each	1 Each	4'-10" to 36'-1"	Str.	
S626E	1	—	38'-2"	Str.	
S627E	1	—	40'-2"	Str.	
S628E-S644E	1 Each	—	38'-6" to 5'-3"	Str.	
S645E-S659E	—	1 Each	5'-2" to 34'-4"	Str.	
K401E	48	48	40'-5"	Str.	
K402E	182	182	7'-8"	Str.	
K403E	182	182	5'-5"	2"	
K404E	4	4	7'-11"	2"	
P401E	460	460	5'-6"	3"	
P402E	84	84	13'-2"	Str.	
P403E	28	28	16'-8"	Str.	
P404E	48	48	5'-6"	Str.	
P405E	6	6	4'-6"	3"	
P406E	2	2	3'-10"	2"	
P501E	460	460	6'-4"	3 3/4"	





All bars designated with an "E" suffix are to be Epoxy-Coated.

* 1/2" Overtolerance, No Undertolerance.

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. FUSELIER
BRIDGE ENGINEER

SHEET 4 OF 6
DETAILS OF 230'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

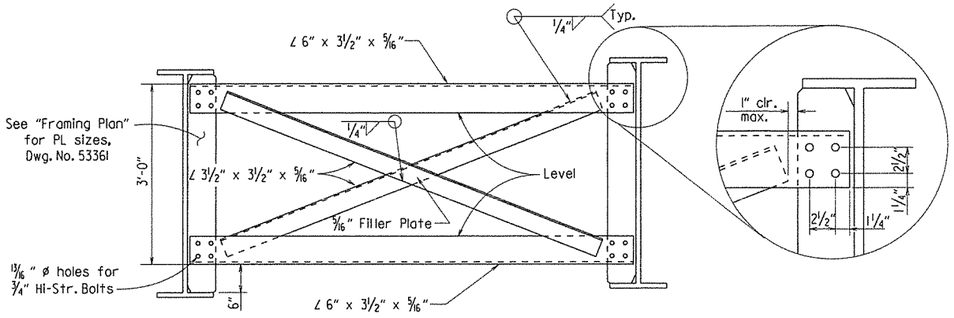
LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: 09/20/2012 FILENAME: b080340_sl.dgn
CHECKED BY: RBR DATE: 2/1/13 SCALE: As Shown
DESIGNED BY: RBR DATE: 9/12

BRIDGE NO. 07270 DRAWING NO. 53363

PRINT DATE: 2/1/2013

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.		080340	102	187
				①	07270 -	230' UNIT	- 53364	



TYPICAL CROSSFRAME DETAIL
NO SCALE

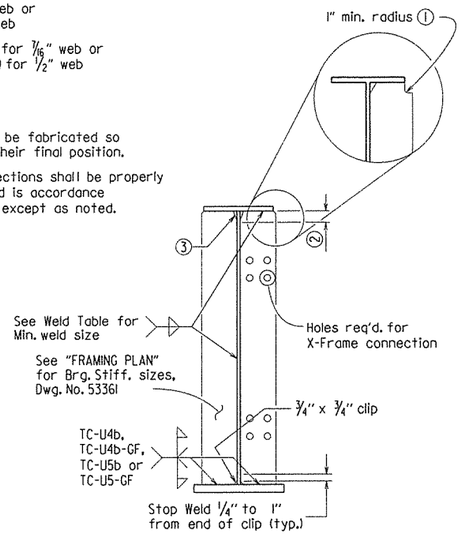
① If permanent steel bridge deck forms are used, the fabricator shall clip the plate as necessary to accomodate the deck form support.

② 1⅞" (typ.) for 7/16" web or 2¼" (typ.) for ½" web

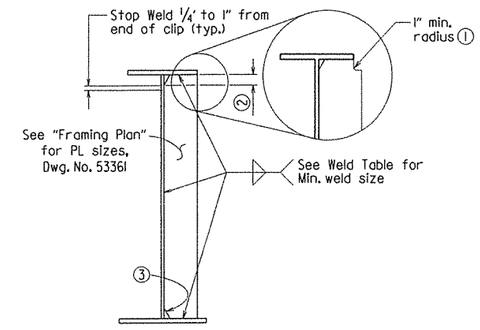
③ ¾" x 1⅞" clip (typ.) for 7/16" web or ¾" x 2¼" clip (typ.) for ½" web

Bearing stiffeners to be fabricated so as to be vertical in their final position.

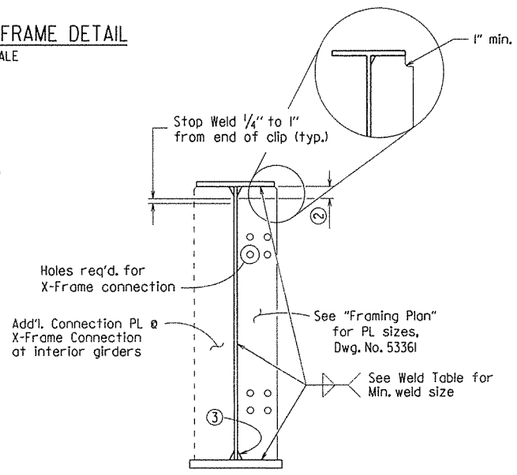
Bolts in X-Frame connections shall be properly installed and tightened is accordance with subsection 807.71 except as noted.



BEARING STIFFENER DETAIL
NO SCALE



INTERMEDIATE TRANSVERSE STIFFENER DETAIL
NO SCALE



CONNECTION PLATE DETAIL
NO SCALE

SILICONE JOINT DATA

Bent Number	"A" Width Perpendicular to Joint at 24 Hour Average Temperature* Of:			"B" Perpendicular to Joint at 60°F	Bumper Plate Size	"D"
	40°F	60°F	80°F			
1 & 3	2 3/16"	2"	1 13/16"	± 3 1/8"	1" x 1¼"	5"

* The temperature used to set the joint opening shall be the approximate average air temperature during the 24 hour period immediately before the bolts are tightened. The Engineer shall establish the temperature. Interpolation of the table may be necessary.

The temperature limitations recommended by the sealant manufacturer shall be observed.

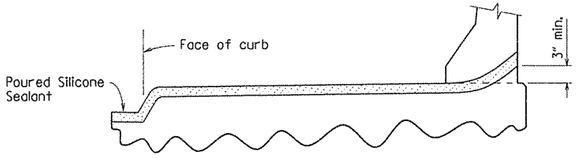
The sealant shall be installed only when the average 24 hour air temperature is between 40° and 80°F.

BACKER ROD NOTE:

Use an appropriately sized backer rod at the depth shown in the manufacturer's literature based on the joint width at the time of sealing.

Except as noted, do not install more backer rod that can be sealed in the same day.

The contractor shall verify separation of the backer rod from the joint material after the joint material has set.



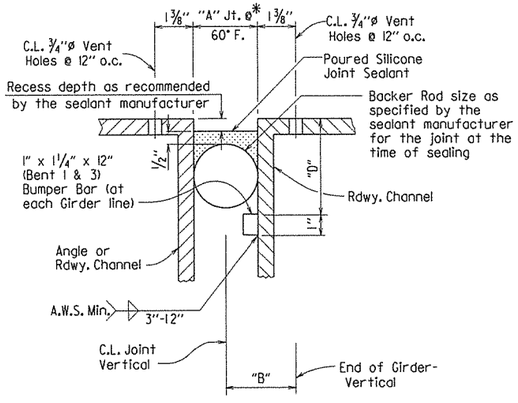
JOINT SEAL PLACEMENT AT SIDEWALK & PARAPET
NO SCALE

EXPANSION DEVICE INSTALLATION AT END BENTS:

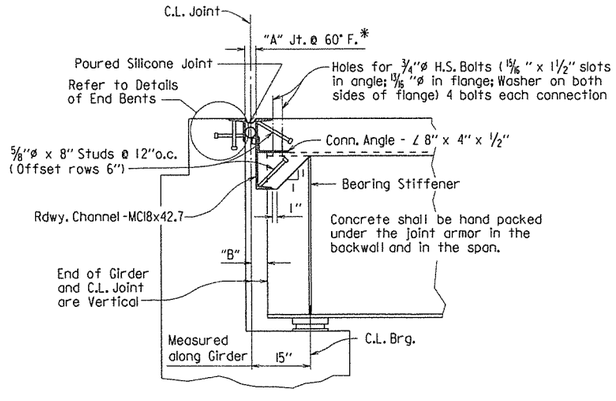
The Contractor may elect to install the expansion device using one of the following two alternatives.

1) The concrete span pour adjacent to joint shall be placed before the end bent backwall is placed. After the end bent backwall forms are in place and the beams erected, the blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the backwall concrete, the blocking shall be removed, the opening adjusted for temperature, and the backwall constructed.

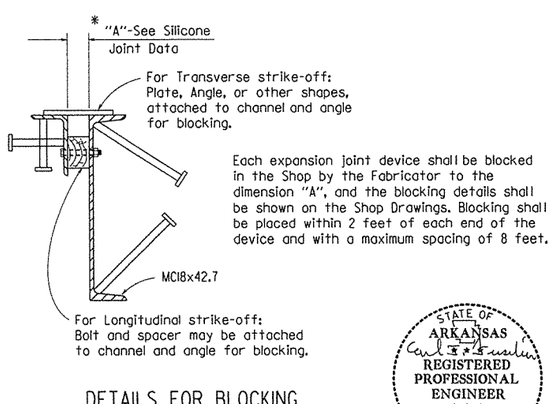
2) The backwall shall be poured to the optional construction joint after beams are erected. The blocked expansion device shall be installed and adjusted for grade. All connection bolts shall be fully tightened prior to placing the deck concrete adjacent to the bent. Immediately prior to pouring the remainder of the backwall concrete, the blocking shall be removed and the opening adjusted for temperature.



DETAIL OF POURED SILICONE JOINT SEAL
NO SCALE



SECTION THRU JOINT AT BENTS 1 & 3
NO SCALE



DETAILS FOR BLOCKING EXPANSION JOINT DEVICE
NO SCALE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 5 OF 6
DETAILS OF 230'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: 10/16/12 FILENAME: b080340_sl.dgn

CHECKED BY: RBR DATE: 2/1/13 SCALE: As Shown

DESIGNED BY: RBE DATE: 9/12

BRIDGE NO. 07270 DRAWING NO. 53364

PRINT DATE: 2/1/2013

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.		080340	103	187
				(1)	07270 - SPAN DETAILS - 53365			

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition) with applicable supplemental specifications and special provisions.

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications 6th Edition (2012).

LIVE LOADING: HL-93

MATERIALS AND STRENGTHS:
Concrete: All concrete shall be Class S(AE) with a minimum 28 day strength f'c = 4,000 psi.

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

Structural Steel: Structural steel shall conform to AASHTO M270, Gr. 50 (Fy = 50,000 psi.) or AASHTO M270, Gr. 36 (Fy = 36,000 psi.).

STRUCTURAL STEEL:
All Structural Steel shall be AASHTO M270, Gr. 50 unless otherwise noted. All structural steel shall be paid for as "Structural Steel in Plate Girder Spans (M270, Gr. 50)". Structural Steel completely embedded in concrete may be AASHTO M270, Gr. 36. AASHTO M270, Gr. 50 steel shall be painted. All exposed surfaces shall be cleaned in accordance with subsection 807.84 unless noted otherwise.

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

Longitudinal Girders and all field splice plates are considered main load carrying members and shall meet the Longitudinal Charpy V-Notch Test Specified in Subsection 807.05. This work and material will not be paid for directly but will be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M270, Gr. 50)"

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

Drawings show general features of design only. Shop drawings shall be made in accordance with Subsection 807.04, submitted and approval secured before fabrication is begun. Girder webs may be made by shop splicing with minimum lengths of 25'-0" for sections. Flange plates longer than 50'-0" may be made by shop splicing with minimum lengths of 25'-0" for sections. Material specifications and location of shop-welded splices, if any, shall be shown on the shop drawings. No additional payment for welds for these splices will be made.

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

All Girders shall be blocked in their true position in the shop as specified in subsection 807.54 (b)(1). The camber, length of sections, distance between bearings, and opening of joints shall be measured with the girders in their true position and this information shall become part of the permanent record of this job. Match marks shall be placed on the component parts in this assembly and shown on the erection diagram. All girder dimensions are based on a temperature of 60°F. A tolerance of ± 1/4" allowed for camber.

Field connections shall be bolted with high-strength bolts. Bolts shall be 3/4" diameter, except as noted, and open holes shall be 13/16", unless noted otherwise. Holes for 3/4" diameter bolts may be 15/16" diameter if a washer is supplied for use under both the nut and head of the bolt. Bolt spacing shall be 2 1/2" for 3/4" diameter bolts unless otherwise noted. For Field Splices bolts shall be 7/8" diameter bolts unless otherwise noted. Open holes shall be 15/16" unless noted otherwise. Bolt spacing shall be 3" for 7/8" diameter bolts unless otherwise noted. Bolts shall be placed with heads on the outside face of the exterior girder web and on the bottom of the girder flanges.

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

Groove welds in main plate girder members shall be Quality Control (Q.C.) tested by nondestructive testing, as required by the Standard Specifications. Fillet welds at flange to web plate connections shall be Q.C. tested by the magnetic particle method. All Quality Control (Q.C.) testing is at the contractor's expense.

Cross Frames shall be installed as girders are erected. All bolts in cross frames and field splices shall be installed and tightened in accordance with subsection 807.71 prior to pouring the concrete deck.

Elastomeric Bearings shall be seated in accordance with subsection 808.08. This work and material will not be paid for directly but will be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M270, Gr. 50)".

REINFORCING STEEL:
All reinforcing steel shall be Grade 60 (yield strength = 60,000 psi) conforming to AASHTO M31 or M322, Type A, with mill test reports. The reinforcing steel shall be accurately located in the forms and firmly held in place by steel wire supports, sufficient in number and size to prevent displacement during the course of construction. The wire supports will not be paid for directly, but will be considered subsidiary to the item of "Epoxy Coated Reinforcing Steel (Grade 60)".

CONCRETE:
All concrete shall be Class S(AE) with a minimum 28 day compressive strength f'c = 4,000 psi. Concrete shall be poured in the dry and all exposed corners to be chamfered 3/4" unless otherwise noted.

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

The concrete deck shall be given a Tine Finish in accordance with subsection 802.19 for Class 5, Tined Bridge Roadway Surface Finish. The sidewalk shall receive a Broomed Finish as specified for final finishing in subsection 802.19 for Class 6, Broomed Finish. Movement of the finishing machine across new concrete shall be on planks placed on the surface and shall be prohibited for 72 hours after finishing the pour. Sufficient concrete must be placed ahead of the strike-off to fully load the girder.

For each stage, a minimum of 72 hours shall elapse between completion of the bridge deck slab and the pouring of the sidewalk and a minimum of 72 hours shall elapse between the pouring of the sidewalk and the pouring of the parapet railing. Any railing pours made before the entire slab has been placed and cured must be approved by the Engineer.

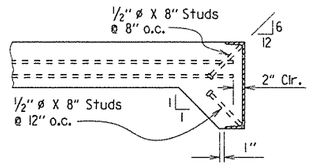
SURFACE TREATMENT: Class 1 Protective Surface Treatment shall be applied to the Roadway Surface and Sidewalk Surface. Class 3 Textured Coating Finish shall be applied to areas as specified in Special Provision Job No. 080340 "Textured Coating Finish".

PAINTING: All structural steel except galvanized members, machined surfaces, and surfaces in contact with concrete shall be painted as specified in Section 807. Color of paint shall be Brown Fed. Std. 595B, Color Chip 20059. See subsection 807.75.

Load Distribution
Dead Load:

A. To Girder	Girder No.	
	1 & 10	654 plf + Wt. of Structural Steel
	2 Thru 9	735 plf + Wt. of Structural Steel
B. To Composite Girder	Girder No.	
	1 & 10	591 plf *
	2 Thru 9	148 plf *

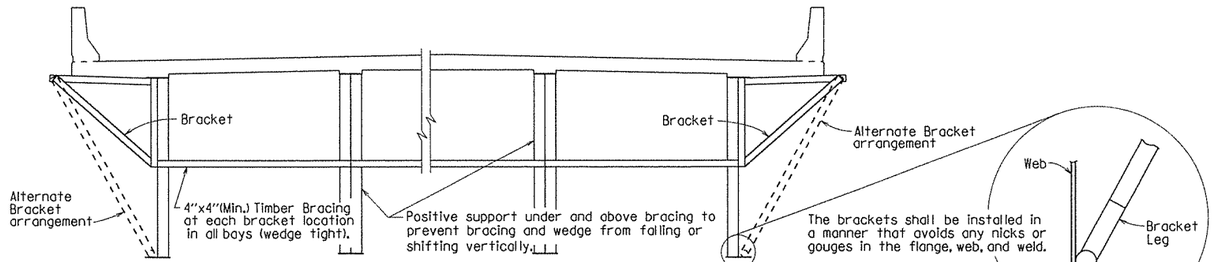
*Includes 139 plf future wearing surface.



NOTE: As an alternate to 5/8" ø studs, 1/2"ø x 8" studs spaced as shown may be used. Use weight of 5/8"ø stud as basis of measurement of structural steel in anchors.

DETAILS OF ALTERNATE ANCHORS AND PLACEMENT OF LONGITUDINAL REINFORCEMENT

NO SCALE



If a transverse finishing machine is used, the rail shall be supported directly over the exterior girders, or as an alternate, the rail may be supported by the overhang brackets if the above strutting system is used. The strutting system may be omitted if 1/2" x 6" web stiffeners are welded to the insides of the exterior girders at the location of each bracket or if the alternate bracket arrangement shown above is used. The Alternate Bracket arrangement shall extend down to the junction of the web and bottom flange. The stiffener shall conform to the details for crossframe connection plates shown on Dwg. No. 53364. No direct payment will be made for brackets, timber bracing, supports, or welded stiffeners. Payment shall be subsidiary to "Structural Steel in Plate Girder Spans (M270, Gr. 50)".

SCREED RAIL SUPPORT

NO SCALE

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. FUSELIER

BRIDGE ENGINEER

SHEET 6 OF 6
DETAILS OF 230'-0" CONTINUOUS COMPOSITE PLATE GIRDER UNIT

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

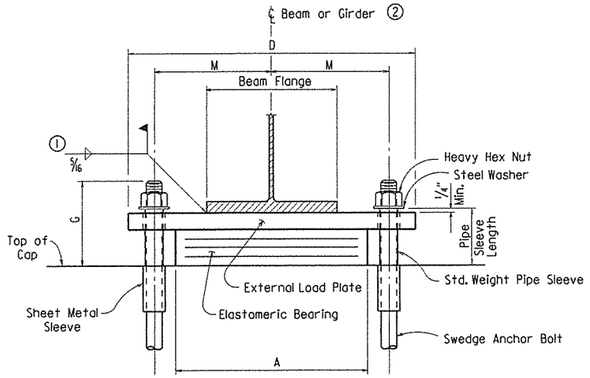
DRAWN BY: CSG DATE: 09/28/12 FILENAME: b080340_sl.dgn
CHECKED BY: RBR DATE: 2/1/2013 SCALE: As Shown
DESIGNED BY: RBR DATE: 9/12

BRIDGE NO. 07270 DRAWING NO. 53365

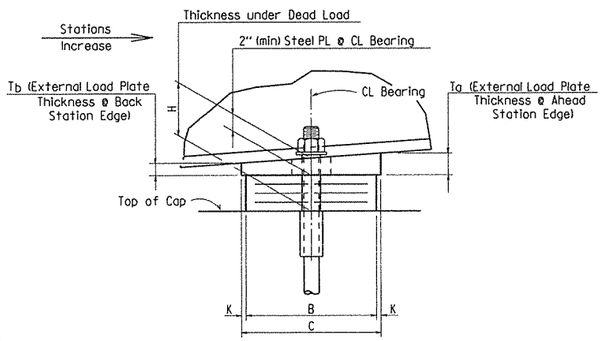
PRINT DATE: 2/1/2013

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.		080340	104	187

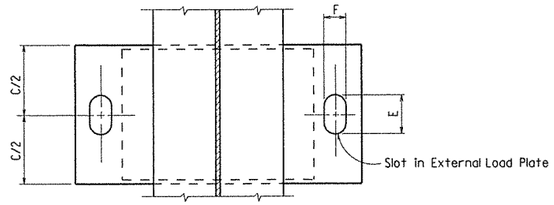
(1) 07270 - ELASTOMERIC BEARINGS - 53366



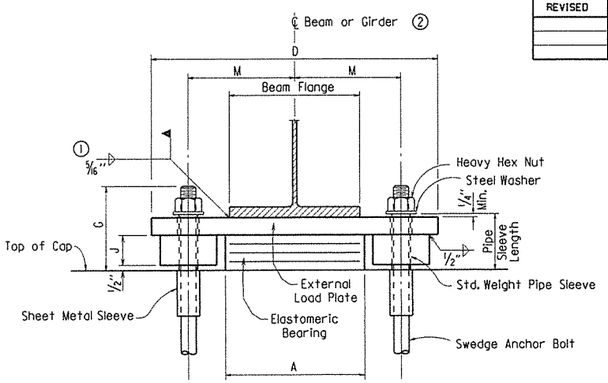
FRONT VIEW - AT BENT NOS. 1 & 3



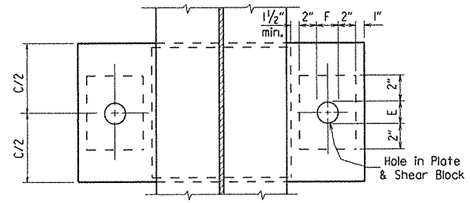
SIDE VIEW - AT BENT NOS. 1 & 3



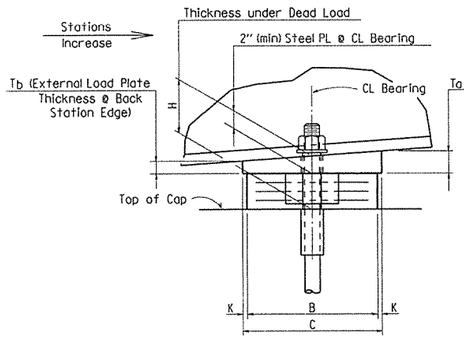
PLAN VIEW - AT BENT NOS. 1 & 3



FRONT VIEW - AT BENT NO. 2



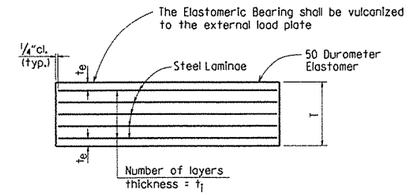
PLAN VIEW - AT BENT NO. 2



SIDE VIEW - AT BENT NO. 2

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

(2) Centerline Beam or Girder shall align with centerline bearing.

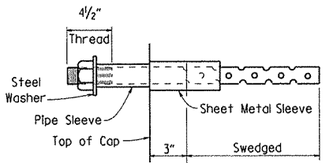


t_e = thickness of elastomer cover on top and bottom of pad

t_i = thickness of elastomer between steel laminae

N = number of elastomer layers of thickness t_i

ELASTOMERIC BEARING



ANCHOR BOLT DETAIL

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

If Anchor Bolts are to be drilled and grouted in place, the Galvanized Sheet Metal Sleeves shall be cast in place as shown. Sleeves shall be dry packed with styrofoam, urethane foam or approved equal prior to pouring of concrete. After pouring of the cap and prior to erection of Structural Steel, the dry pack shall be removed and holes for the anchor bolts shall be accurately drilled into the masonry. Bolts placed in drilled holes shall be accurately set and fixed using a QPL approved epoxy or non-shrink grout that completely fills the holes. Galvanized Sheet Metal Sleeves will not be paid for directly, but will be considered subsidiary to the item "Structural Steel in Plate Girder Spans (M 270, Gr. 50)."

GENERAL NOTES

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

External load plates and shear blocks shall conform to AASHTO M 270, Grade 50. Pipe sleeves shall be ASTM A53, Grade B, and shall be galvanized to conform to AASHTO M 232, Class C or AASHTO M 298, Class 50.

External load plates and external load plates with shear blocks shall be completely fabricated (including bevel and bolt holes) and shall be cleaned before vulcanizing to the elastomeric bearing. Surfaces in contact with the elastomeric bearing shall be cleaned in accordance with subsection 808.03. Other surfaces shall be blast cleaned in accordance with subsection 807.84(b) and painted according to subection 807.75. Painting will not be paid for directly but willbe considered subsidiary to "Elastomeric Bearings".

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

Pipe Sleeves, Anchor Bolts, Washers and Nuts shall be paid for at the unit price bid for "Structural Steel in Plate Girder Spans (M270, Gr. 50)". External load plates and shear blocks will not be measured or paid for separately but will be considered included in the unit bid price for "Elastomeric Bearings".

TABLE OF FABRICATOR VARIABLES

BRIDGE NO.	LOCATION: BENT NO(S).	LOCATION: UNIT	LOCATION: BEAM NO.	BEARING TYPE	NO. of BEARINGS EACH BENT	*MAXIMUM DESIGN LOAD (KIPS)	G	H	ELASTOMERIC PAD: A	B	N	t_i	t_e	NO. & THICKNESS OF STEEL LAMINAE	T	EXTERNAL LOAD PLATE: C	D	E	F	J	K	M	T_a	T_b	ANCHOR BOLT: ANCHOR BOLT (ø x L)	GRADE	PIPE SLEEVE SIZE (ø x L)	SHEET METAL SLEEVE SIZE (ø x L)	STEEL WASHER SIZE (O.D.)
07270	1	230'	1-4, 6-10	Exp	9	137.00	7 1/2"	4 3/8"	17"	8"	3	1/2"	1/4"	4 @ 12 Ga.	2 7/16"	9"	28"	4 1/2"	2 5/8"	NA	1/2"	11"	2.08"	1.92"	1 3/4"ø x 28"	55	2"ø x 4 5/8"	4"ø x 6"	3 3/8"
	1	230'	5	Exp	1	137.00	8"	4 7/8"	17"	8"	3	1/2"	1/4"	4 @ 12 Ga.	2 7/16"	9"	28"	4 1/2"	2 5/8"	NA	1/2"	11"	2.58"	2.42"	1 3/4"ø x 28"	55	2"ø x 5 1/8"	4"ø x 6"	3 3/8"
	2	230'	1-4, 6-10	Fix	9	366.00	7 3/4"	4 3/8"	17"	15"	3	1/2"	1/4"	4 @ 12 Ga.	2 7/16"	16"	36 3/4"	3 1/8"	3 1/8"	1 3/4"	1/2"	13 3/4"	2.03"	1.97"	2"ø x 30"	55	2 1/2"ø x 4 3/4"	4"ø x 6"	3 3/4"
	2	230'	5	Fix	1	366.00	7 3/4"	4 1/16"	17"	15"	3	1/2"	1/4"	4 @ 12 Ga.	2 7/16"	16"	36 3/4"	3 1/8"	3 1/8"	1 3/4"	1/2"	13 3/4"	2.09"	2.03"	2"ø x 30"	55	2 1/2"ø x 4 3/4"	4"ø x 6"	3 3/4"
	3	230'	1-5, 7-10	Exp	9	137.00	7 1/2"	4 3/8"	17"	8"	3	1/2"	1/4"	4 @ 12 Ga.	2 7/16"	9"	28"	4 1/2"	2 5/8"	NA	1/2"	11"	1.95"	2.05"	1 3/4"ø x 28"	55	2"ø x 4 5/8"	4"ø x 6"	3 3/8"
	3	230'	6	Exp	1	137.00	7 3/4"	4 11/16"	17"	8"	3	1/2"	1/4"	4 @ 12 Ga.	2 7/16"	9"	28"	4 1/2"	2 5/8"	NA	1/2"	11"	2.26"	2.36"	1 3/4"ø x 28"	55	2"ø x 5"	4"ø x 6"	3 3/8"

*Maximum Design Load = Service I Limit State

Tabular Data by : CSG Date: 10/11/12

Checked by : RBR Date: 4/2/13

Designed by : RBR Date: 9/12

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF ELASTOMERIC BEARINGS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: CSG DATE: 10/11/12 FILENAME: b080340_el.dgn

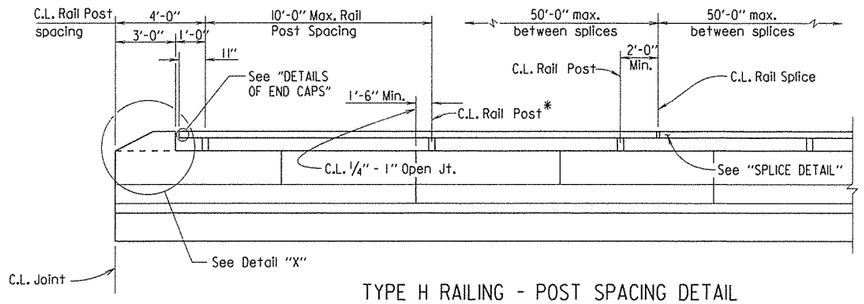
CHECKED BY: RBR DATE: 4/2/13 SCALE: No Scale

DESIGNED BY: Std. DATE:

BRIDGE NO. 07270 DRAWING NO. 53366

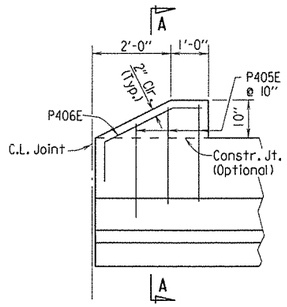
PRINT DATE: 2/4/2013

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.		080340	105	187
				①		07270 - BRIDGE RAILING - 53367		

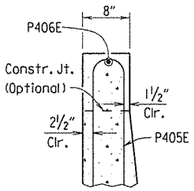


TYPE H RAILING - POST SPACING DETAIL

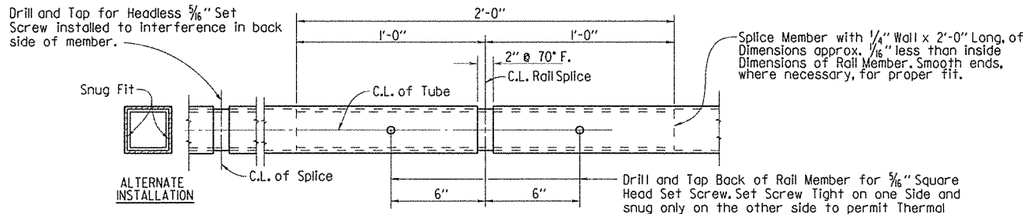
*Rail Posts shall be placed to avoid interference with placement of the Bridge Mounted Sign Structure. See Dwg. No. 53367A for details.



DETAIL X

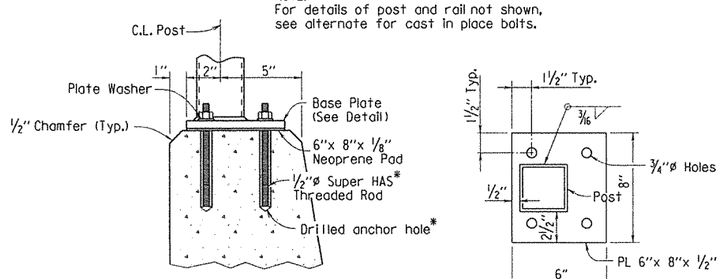


SECTION A-A



SPLICE DETAIL

NOTE:
For details of post and rail not shown, see alternate for cast in place bolts.

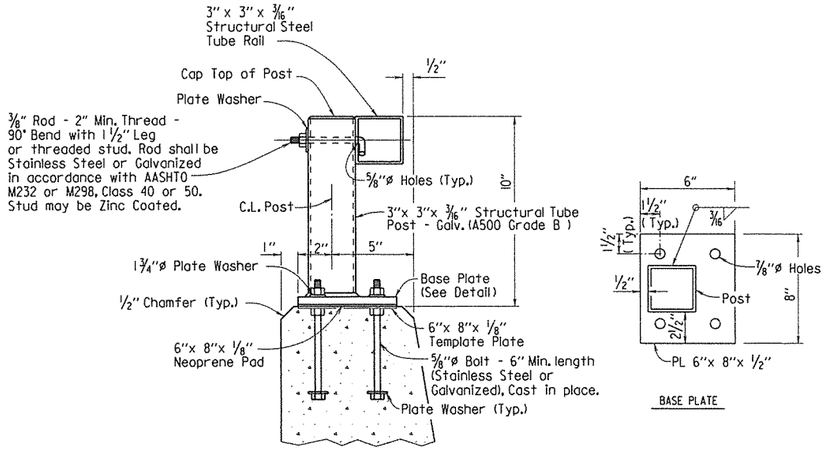


*HILTI HIT RE 500 Epoxy Adhesive Anchor System with 4½" embedment or an approved equal.

The HILTI Epoxy Adhesive Anchor System shall be installed in accordance with Manufacturer's recommendations.

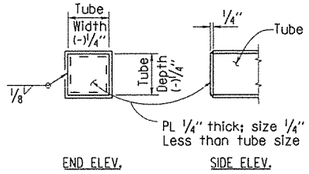
BASE PLATE

DETAILS OF ALTERNATE POST ANCHOR SYSTEM
(EPOXY ADHESIVE ANCHORS)



BASE PLATE

DETAILS OF POST ANCHOR SYSTEM
(CAST IN PLACE BOLTS)



DETAILS OF END CAPS

NOTES FOR BRIDGE RAILING:

Rail layout shall conform to vertical and horizontal alignment of bridge. All posts shall be vertical.

Base plates shall not be placed upon areas that are improperly finished, deformed or irregular.

Shop drawings showing details of railing shall be submitted and approval secured before fabrication is begun.

Rail splices shall be at 50' maximum spacing. Centerline splices shall be located at a minimum of 2 feet from centerline of post. The rail posts shall be placed to avoid intereference with placement of the Bridge Mounted Sign Structure. Rail sections shall be fabricated to attach to at least three posts.

MATERIALS:

Tubing, Posts, and Accessories: AASHTO M270, Gr. 36 or ASTM A500-Grade B.

Railing End Caps: AASHTO M270, Grade 36.

Cast in place anchor bolts shall be of stainless steel or high strength steel. Stainless steel anchor bolts shall conform to ASTM A193 or A320-Grade B8 with a minimum yield strength of 80,000 psi. High strength steel anchor bolts shall conform to AASHTO M164 or A354-Grade BC galvanized in accordance with AASHTO M232 or M298, Class 40 or 50.

Splice Set Screws shall conform to the requirements of ASTM A193 or A320-Gr. B8 (Stainless steel) or AASHTO M270, Gr. 36 (Galvanized).
Nuts: Nuts shall conform to AASHTO M292, Gr. 8A (Stainless steel) or galvanized in accordance with AASHTO M232 or M298, Class 40 or 50.

Threads: Threads on bolts, screws, and nuts shall conform to American Standard Coarse Series, Class 2 FIT, ASA Specification B1.1.

Washers shall be stainless steel and conform to the requirements of ASTM A276 or A167-Type 302 with dimensions meeting ASTM F436, or high strength steel conforming to AASHTO M293 and galvanized in accordance with AASHTO M232 or M298, Class 40 or 50.

Plate Washers shall be stainless steel and conform to the requirements of ASTM A167-Type 302 or AASHTO M270, Gr. 36, galvanized in accordance with AASHTO M232 or M298, Class 40 or 50. Plate Washers shall have dimensions meeting the requirements of ANSI/ASME B18.22.1, Type A plain washer (Wide Series).

Mixing of stainless steel and galvanized fasteners will not be permitted.

Steel rail members shall be galvanized in accordance with AASHTO M111 after fabrication and shall receive a powder coating process after galvanizing. Galvanizing shall not interfere with the powder coating process. Galvanized surfaces shall be prepared in accordance with subsection 807.87 and the powder coating manufacturer's recommendations before application of the powder coating process. The powder coating process shall be a two coat system applied using electrostatic spray. The base coat shall be a thermosetting epoxy powder with a minimum thickness of 2 - 4 mils. The top coat shall be tough polyester powder with a minimum thickness of 2 - 4 mils. Color shall be Brown equal to or close to Federal Std. 595B, color chip 20059 and as approved by the Engineer. Coated galvanized framework shall have a salt spray resistance of 3000 hours using ASTM B117 without loss of adhesion. The powder coating process shall be in accordance with Manufacturer recommendations.

Metal Bridge Railing, including posts, fasteners, base plates, template plates, anchor bolts, neoprene pad, galvanizing and powder coatings; fabrication and erection; and all incidentals necessary to complete the work shall be paid for in accordance with Section 807 at the contract unit price per linear foot bid for "Metal Bridge Railing (Type H)".

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF METAL BRIDGE RAILING

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

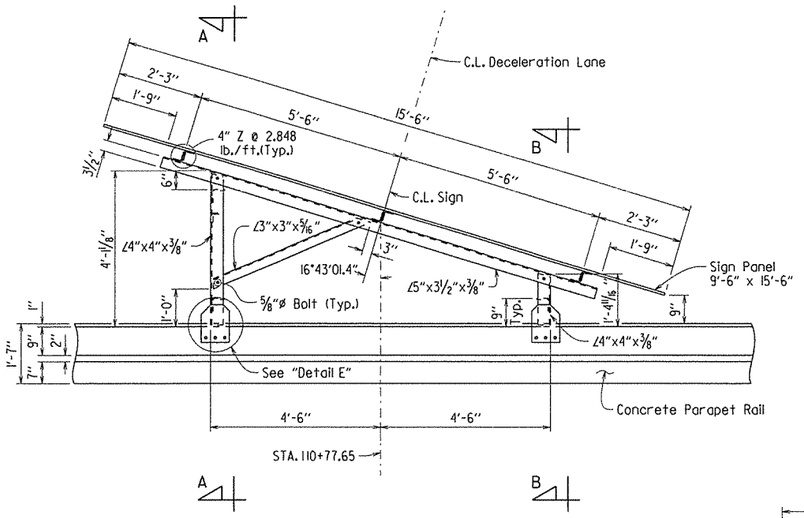
LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 10/18/12 FILENAME: b080340_rl.dgn
CHECKED BY: DHP DATE: 2-1-13 SCALE: No Scale
DESIGNED BY: STD. DATE: —

BRIDGE NO. 07270 DRAWING NO. 53367

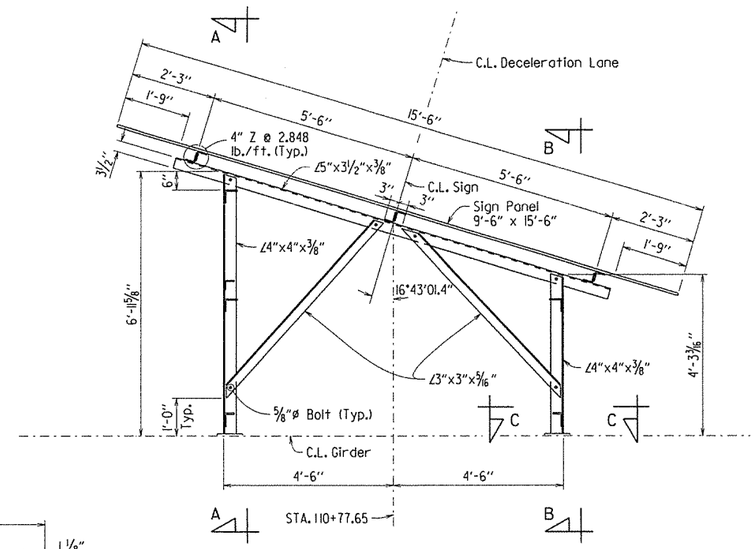
PRINT DATE: 2/1/2013

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.		080340	106	1987
				(1)		BM 040-36-03 - SIGN STR. - 53367A		



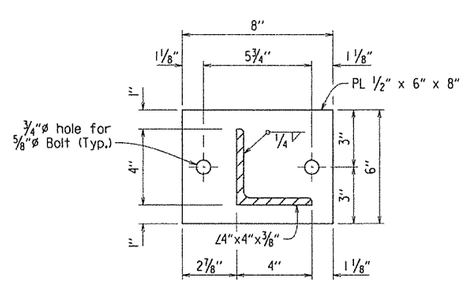
PLAN OF UPPER BRACING

½" = 1'-0"



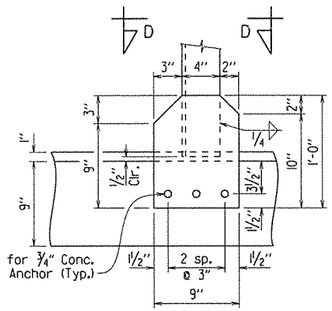
PLAN OF LOWER BRACING

½" = 1'-0"



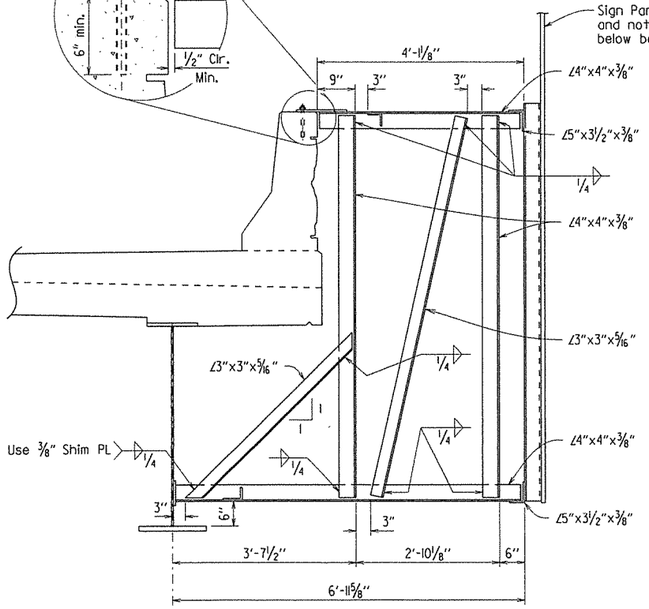
VIEW C-C

3" = 1'-0"



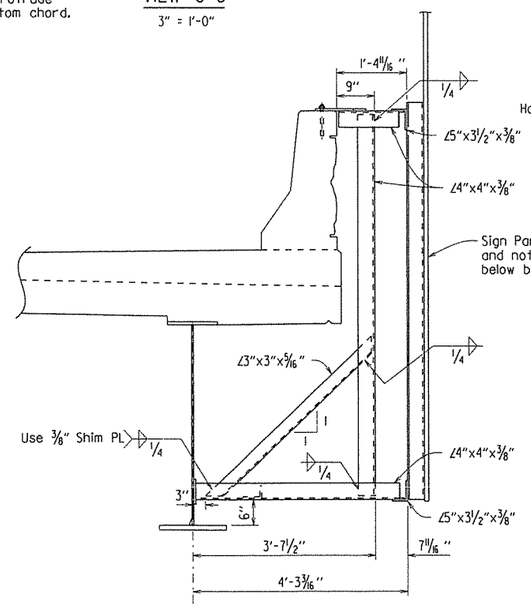
DETAIL E

1½" = 1'-0"



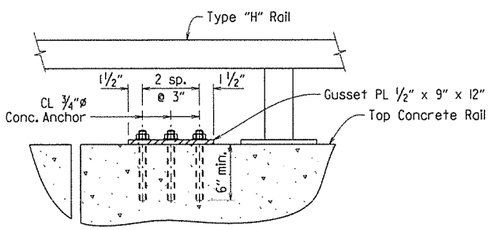
VIEW A-A

NTS



VIEW B-B

NTS



VIEW D-D

1½" = 1'-0"

GENERAL NOTES:
Construction Specifications: Arkansas State Highway Commission Standard Specifications for Highway Construction, Edition of 2003, with applicable special provisions and Supplemental Specifications.

Design Specifications: Standard Specifications for Structural supports for Highway Signs, Luminaries and Traffic Signals, AASHTO Fifth Edition 2009.

Basic Wind Speed = 90 m.p.h.

Fatigue Category I

Structural steel sign support members shall comply with the following specifications:

Angles:	AASHTO M270, Grade 36 (Fy = 36,000 psi).
Plate:	AASHTO M270, Grade 50 (Fy = 50,000 psi).
Z-Shapes:	AASHTO M270, Grade 36 (Fy = 36,000 psi).
Bolts:	AASHTO M164, Type 1.
Locknuts - Approved Type:	Meeting or exceeding AASHTO M292
Washers:	AASHTO M293
Nuts:	AASHTO M291 or M292, Grade 2H or Grade DH (Grade 10S)

All steel shall be Galvanized according to section 807.19. Steel completely encased in concrete may not be Galvanized.

Drawings show general features of design only. Shop drawings shall be made in accordance with section 807.04, submitted, and approval secured before fabrication is begun.

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

Connections shall be bolted with high-strength bolts. Unless noted otherwise, bolts shall be ⅝" diameter and open holes shall be ¾". Bolts shall be placed with heads on the outside face of all members.

All welding that is to be done during fabrication of structural steel, including temporary welds, shall be detailed on the shop drawings and submitted for approval. If additional welds are required, whether temporary or permanent, a formal request with detailed drawings shall be submitted to the Engineer for approval. All welding shall conform to subsection 807.26.

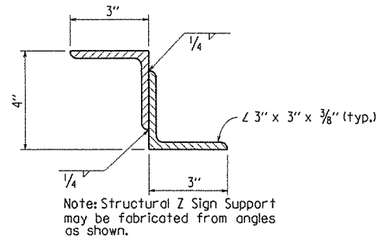
All frame bolts shall comply with AASHTO M164 Type 1, galvanized according to Subsection 807.06. Nuts and washers for AASHTO M164 Type 1 bolts shall be furnished and galvanized in accordance with subsection 807.06.

Lock nuts to be equipped with nylon locking inserts or other approved type locking system. Lock nuts to be installed according to manufacturer's recommendations.

Galvanized Coating damaged during transport, handling, or erection shall be field repaired in accordance with section 807.88.

Surfaces of plates in contact with concrete or girder web shall be coated with a thick layer of asphaltic paint and allowed to dry before erection. Preformed fabric pads ⅛" thick conforming to Section 808 of the Standard Specifications may be used in lieu of asphaltic paint coating.

The Contractor shall make check measurements in the field and make any adjustments necessary to avoid any crossframes, splice plates, joints in concrete rail, and rail posts on the bridge. This may include shifting the sign structures with approval from the Engineer. Sign Panels shall be reused from existing sign structure.



Note: Structural Z Sign Support may be fabricated from angles as shown.

DETAILS OF ALTERNATE Z SIGN SUPPORT

NTS

STATE OF ARKANSAS
Carl J. Fuselier
REGISTERED PROFESSIONAL ENGINEER
No. 7510
2/7/13
CARL J. FUSELIER

BRIDGE ENGINEER

DETAILS OF BRIDGE MOUNTED SIGN STRUCTURE

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: RBR DATE: 12/4/12 FILENAME: b080340_bm.dgn

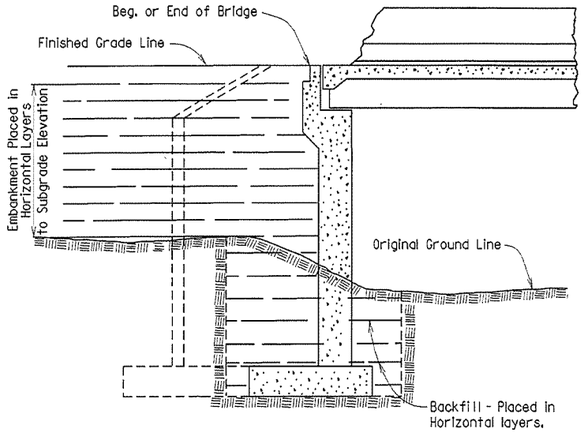
CHECKED BY: DHP DATE: 2-6-13 SCALE: As shown

DESIGNED BY: STD DATE: —

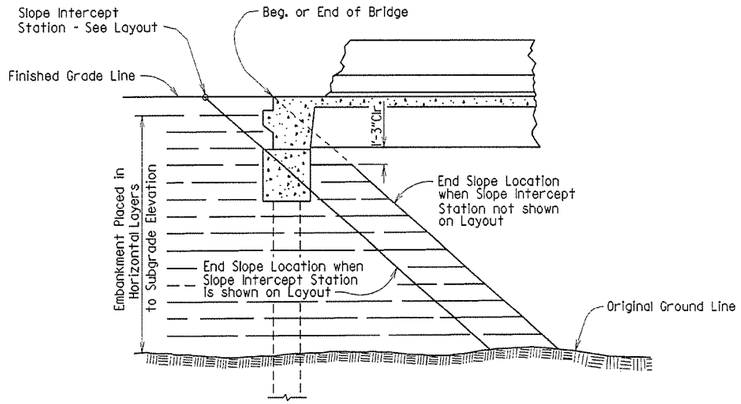
STR. NO. BM 040-36-03 DRAWING NO. 53367A

PRINT DATE: 2/6/2013

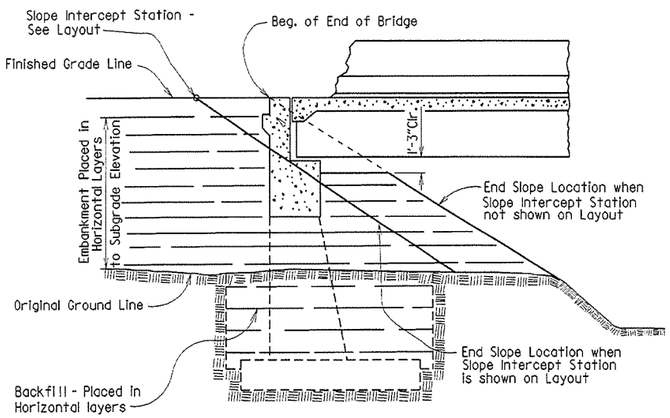
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		107	
				JOB NO.				
				①	EMBANKMENT & BACKFILL		I888A	



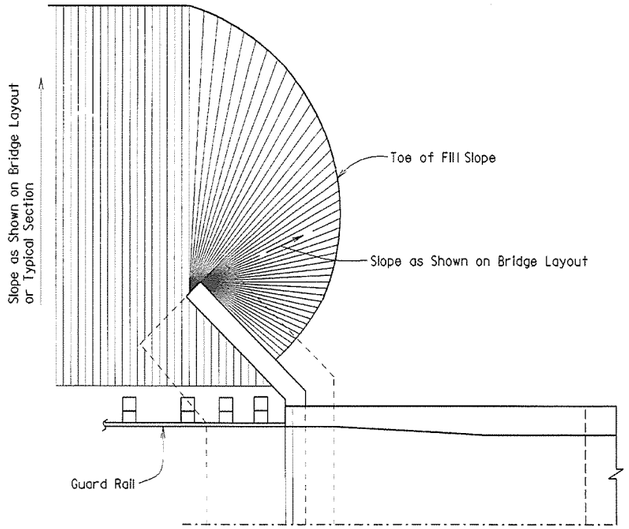
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS



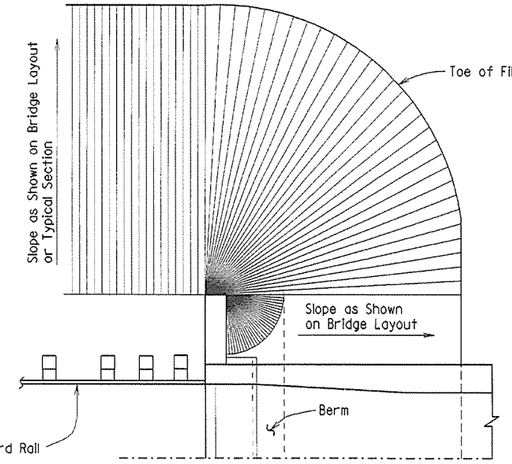
EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS



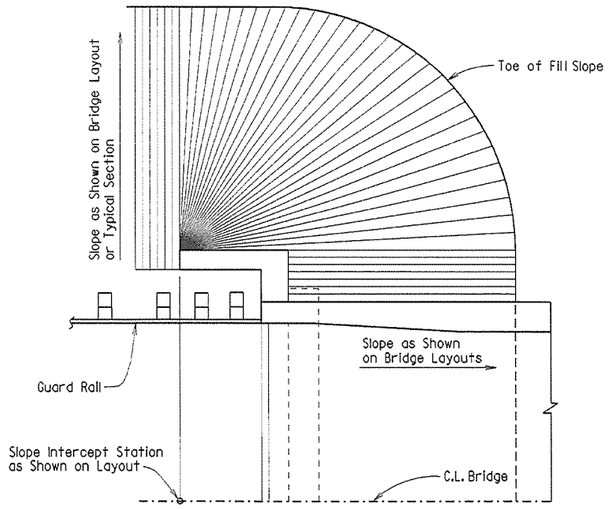
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS



VERTICAL WALL ABUTMENTS



SPILL-THROUGH END BENTS WITH STUB WING



SPILL-THROUGH END BENTS WITH TURNBACK WING

SPILL-THROUGH END BENTS WITH TRANSITION WING

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

GENERAL NOTES

The Bridge End Embankment shall be defined as a section of embankment, not less than 20 feet long adjacent to the bridge end, together with the side slopes and slopes under the bridge end including around the end of wingwalls. Embankment adjacent to structures shall be constructed in 4 inch horizontal layers (loose measure) and compacted by the use of mechanical equipment to the satisfaction of the Engineer. Refer to subsections 210.09, 210.10 and 801.08 of the Specifications for construction requirements.

⚠ Revised and redrawn MJT 04-10-2003
Chk'd. By: CJF 04-10-2003

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4537
CHARLES P. BRAND

BRIDGE ENGINEER

EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

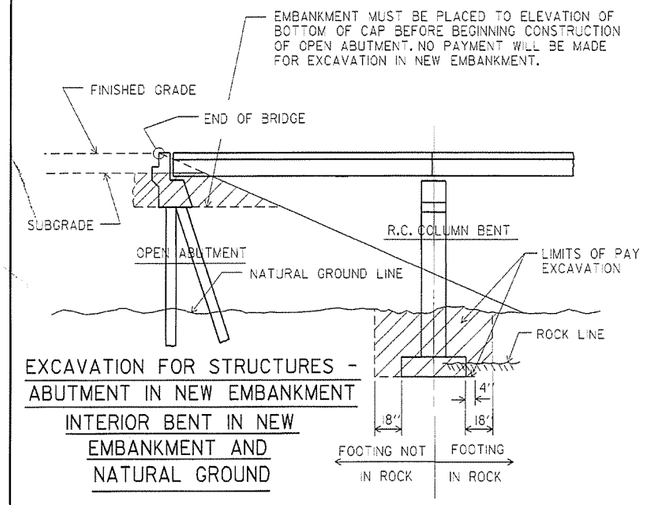
DRAWN BY:	MJT	DATE:	04-10-2003	FILENAME:	BI888A.STD
CHECKED BY:	CJF	DATE:	04-10-2003	SCALE:	NO SCALE
DESIGNED BY:	STD.	DATE:	—		

BRIDGE NO. DRAWING NO. I888A

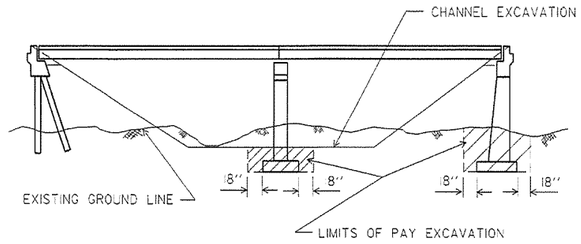
BI888A.STD

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		106	
				JOB NO.				

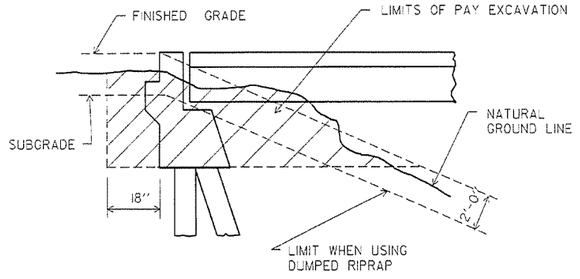
1 RIP. & EXCAV. 1891F



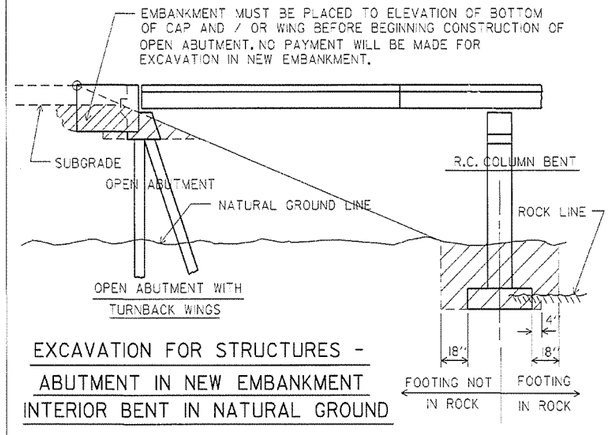
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NEW EMBANKMENT AND NATURAL GROUND



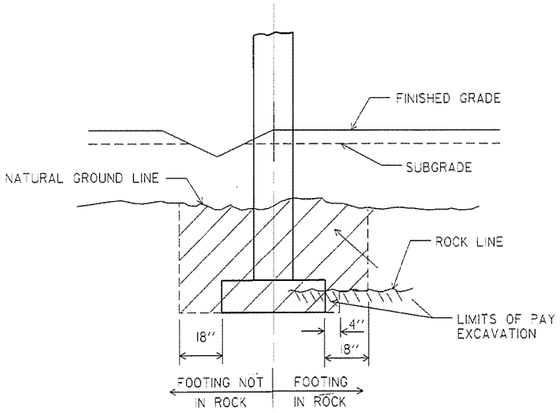
EXCAVATION FOR STRUCTURES - BRIDGE LOCATION WITH DESIGNATED CHANNEL CHANGE



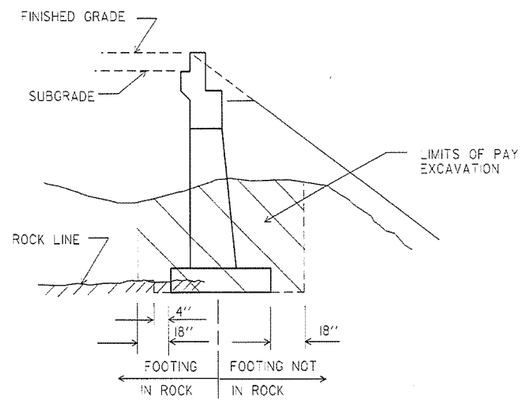
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND



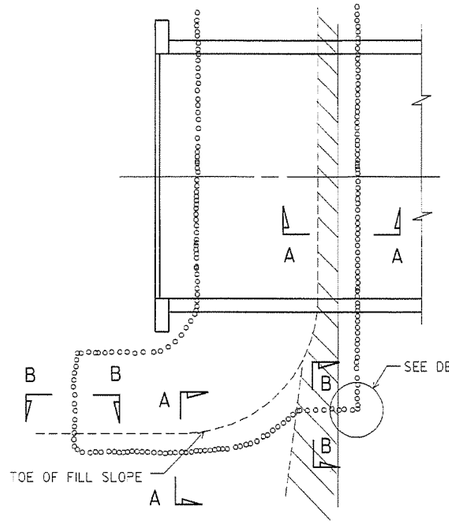
EXCAVATION FOR STRUCTURES - ABUTMENT IN NEW EMBANKMENT INTERIOR BENT IN NATURAL GROUND



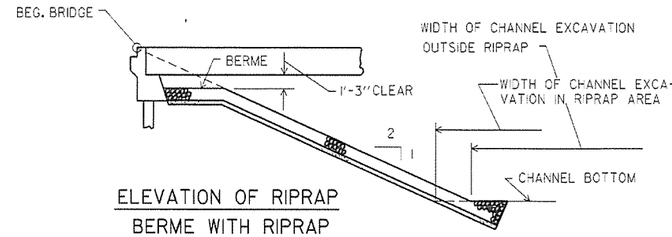
EXCAVATION FOR STRUCTURES - BENT IN ROADWAY FILL SECTION AND NATURAL GROUND



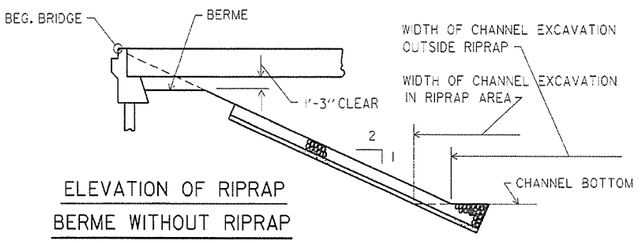
EXCAVATION FOR STRUCTURES - ABUTMENT IN NATURAL GROUND AND NEW EMBANKMENT



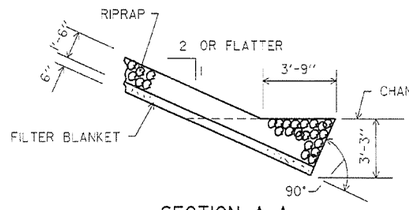
PLAN OF DUMPED RIPRAP



ELEVATION OF RIPRAP BERME WITH RIPRAP



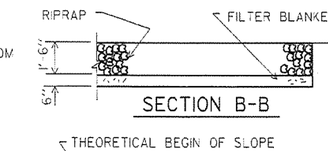
ELEVATION OF RIPRAP BERME WITHOUT RIPRAP



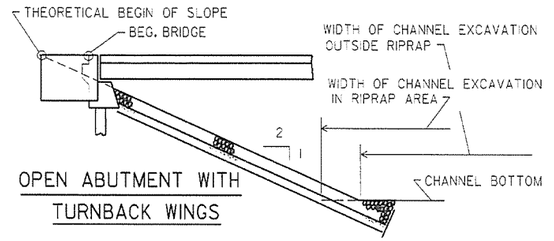
SECTION A-A

(TOE EXCAVATION IN SOIL)

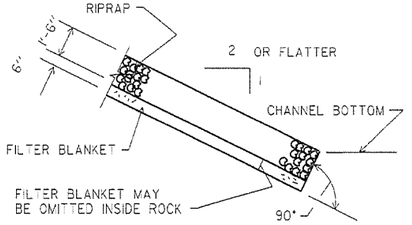
EXCAVATION FOR TOES IS NOT A PAY ITEM



SECTION B-B



OPEN ABUTMENT WITH TURNBACK WINGS



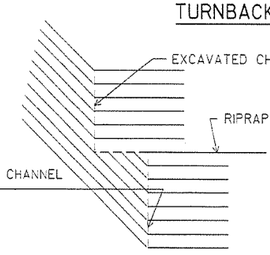
SECTION A-A

(TOE EXCAVATION IN ROCK)

NOTE : USE THIS TYPE OF TOE WHEN ROCK IS ENCOUNTERED WHICH IS IN A STABLE CONDITION.

NOTE : IN LIEU OF AN AGGREGATE FILTER BLANKET, A SYNTHETIC FIBER GEOTEXTILE FABRIC COMPLYING WITH THE REQUIREMENTS OF SUBSECTION 816.02(e) MAY BE USED.

NOTE : DETAILS FOR COMPUTING EXCAVATION FOR STRUCTURES ARE INCLUDED FOR INFORMATION AS TO HOW PLAN QUANTITIES WERE CALCULATED AND FOR USE WHEN ADJUSTING QUANTITIES WHEN CHANGING FOOTING ELEVATION.



DETAIL C

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4537
CHARLES P. BRAND

BRIDGE ENGINEER

⚠ Revised and redrawn MJT 04-10-2003
Chk'd. By: CJF 04-10-2003

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

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 04-10-2003 FILENAME: BI891F.STD
CHECKED BY: CJF DATE: 04-10-2003 SCALE: NO SCALE
DESIGNED BY: STD. DATE: —

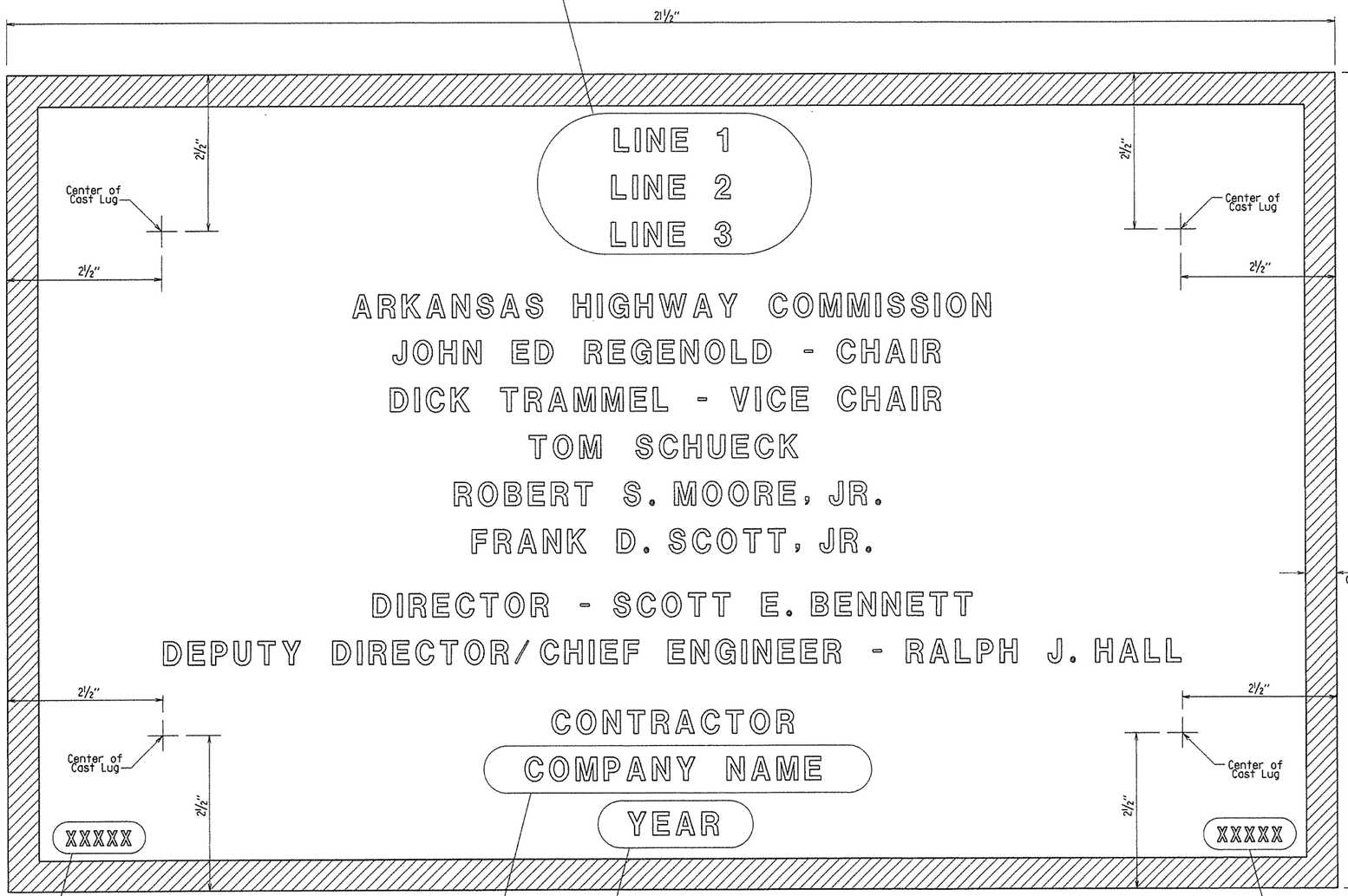
BRIDGE NO. DRAWING NO. 1891F

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
9-8-11		10-30-13		6	ARK.		109	
1-3-13		1-16-14		JOB NO.				
1-10-13								

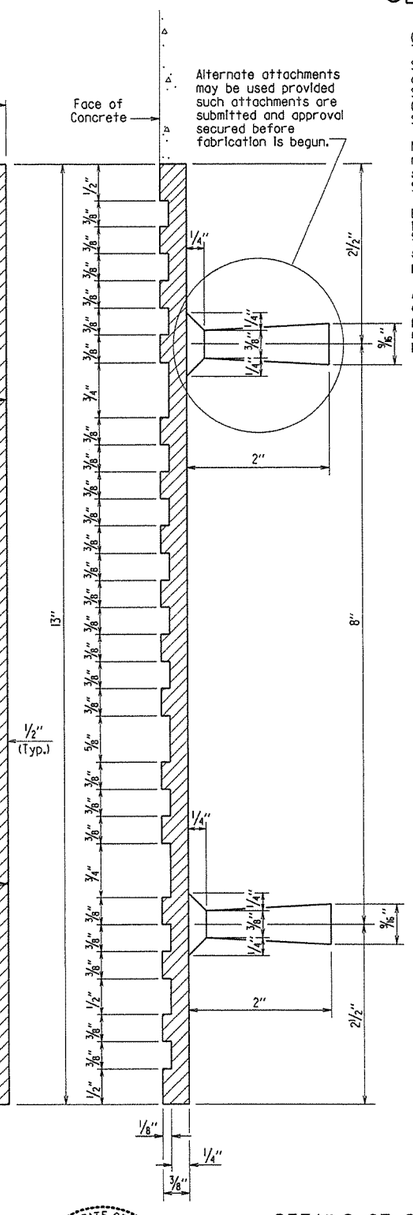
(1) NAME PLATE 2387

The name of the bridge as shown on the plans shall be placed on Lines 1 - 3 using 1/8" raised letters and numerals 3/8" high.

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



TYPICAL BRIDGE NAME PLATE



GENERAL NOTES

Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction, (2003 Edition) with applicable Supplemental Specifications and Special Provisions.

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

Body of plate shall be 1/4" thick and shall include four tapering cone lugs 3/8" to 9/16"x 2" long. The border and all lettering shall be raised 1/8" above the face of plate and shall be polished.

All lettering shall be plain gothic, square cut and not tapered. The number of plates required and the location and name on the plate for each bridge shall be as designated on the plans.

(5) Revised Deputy Director/ Chief Engineer Name 1-16-14 KDH Checked By: CJF

(4) Revised Commission Names 10-30-13 KDH Checked By: CJF

(3) Revised Commission Names 1-10-13 KDH Checked By: CJF

(2) Revised Commission Names 1-3-13 KDH Checked By: CJF

(1) Revised and Redrawn 9-8-11 KDH Checked By: CRE

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7510
CARL J. PUSELLER

BRIDGE ENGINEER

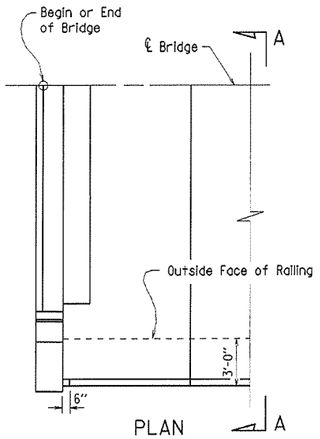
DETAILS OF STANDARD TYPE D BRIDGE NAME PLATE
ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

DRAWN BY: KDH DATE: 9-8-11
CHECKED BY: CRE DATE: 9-8-11
DESIGNED BY: STD. DATE: —
FILENAME: b2387_std.dgn
SCALE: 1'-0" = 1'-0" OR AS NOTED
BRIDGE NO.
DRAWING NO. 2387

PRINT DATE: 1/9/2014

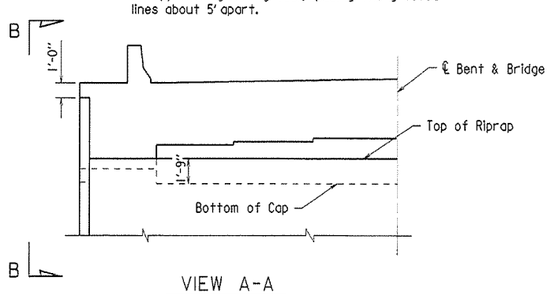
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
04-10-2003				6	ARK.		110	
				JOB NO.				

(1) RIPRAP & PILE - 14995A

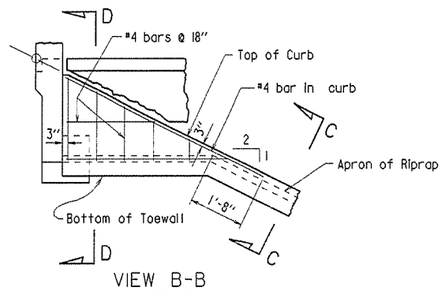


PLAN

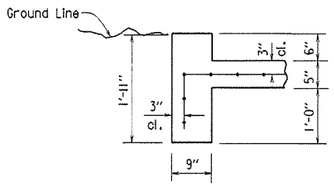
Note:
Sloped surfaces of concrete riprap to be marked off into blocks (construction joints optional) with an approved grooving tool, spacing the grooved lines about 5' apart.



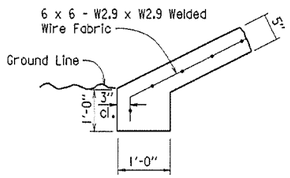
VIEW A-A



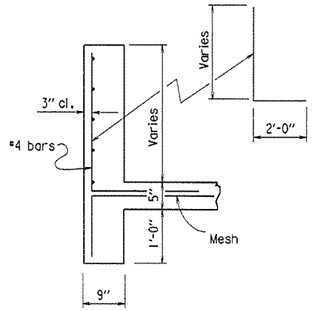
VIEW B-B



SECTION C-C

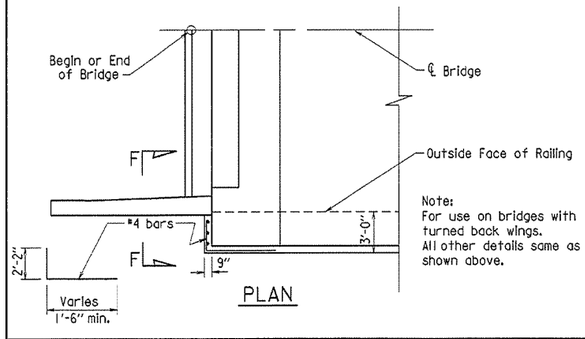


TOE WALL



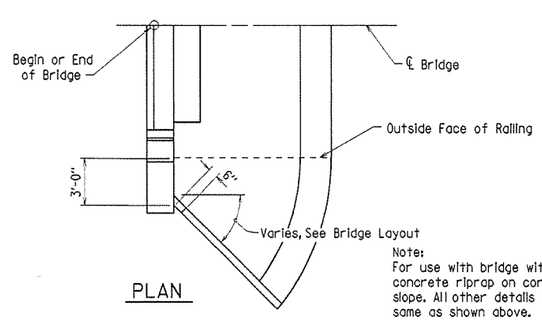
SECTION D-D

DETAILS OF CONCRETE RIPRAP



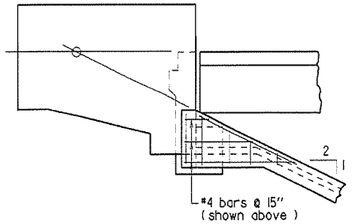
PLAN

Note:
For use on bridges with turned back wings. All other details same as shown above.

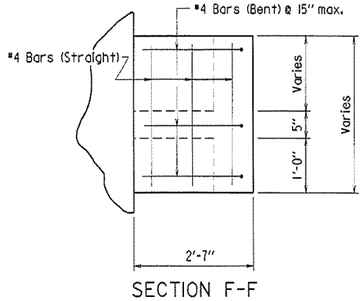


PLAN

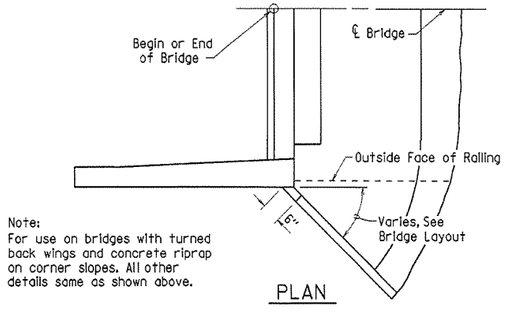
Note:
For use with bridge with concrete riprap on corner slope. All other details same as shown above.



ELEVATION

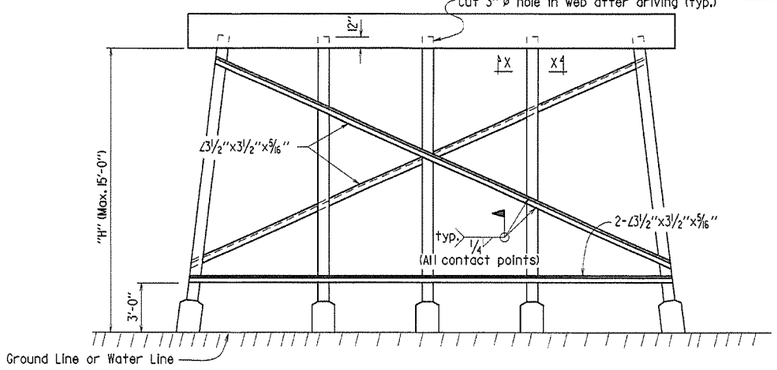


SECTION F-F



Note:
For use on bridges with turned back wings and concrete riprap on corner slopes. All other details same as shown above.

PLAN



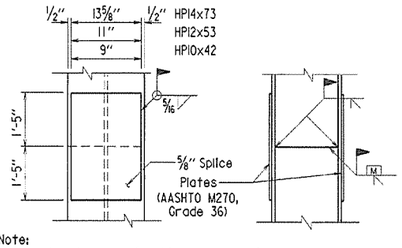
Note:
All bracing shall be cut and welded in the field. Each brace shall be furnished in one piece. Payment shall be made under Item 807.

Omit bottom bracing where "H" is less than 10 ft. Omit all bracing where "H" is less than 5 ft.

Note:
Where required by the bridge layout sheet, pile encasements shall be constructed.

Omit bracing (and V-groove in cap) where pile encasement is extended to bottom of bent cap.

TYPICAL BRACING FOR INT. STEEL PILE BENTS

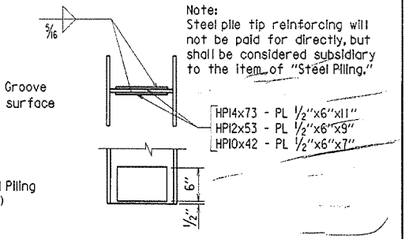


Note:
The contractor may for his own convenience and at this own expense provide as many as three splices per pile for steel bearing piling. Minimum spacing between splices shall be 5 ft.

PILE SPLICE DETAIL

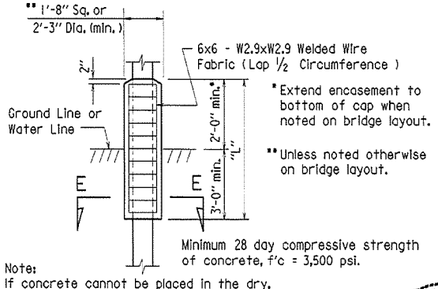
Scale : 1" = 1'-0"

VIEW X-X



REINFORCING DETAIL FOR STEEL PILE TIP

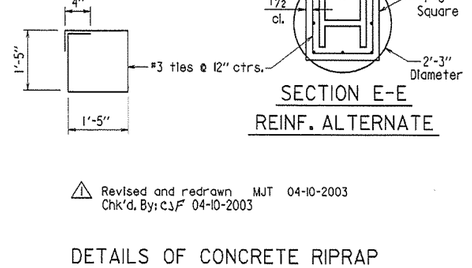
Scale : 1" = 1'-0"



Note:
If concrete cannot be placed in the dry, seal concrete may be deposited under water. Concrete & welded wire fabric or reinforcing in encasements shall be paid for at the contract unit price per linear foot bid for "Pile Encasement."

PILE ENCASEMENT DETAIL

Reinforcing Alternate
#3 Vertical - 8 per encasement
#3 ties @ 12" ctrs.
Yield Strength, fy = 60,000 psi.



SECTION E-E
REINF. ALTERNATE

⚠1 Revised and redrawn MJT 04-10-2003
Chk'd, By: CJF 04-10-2003

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND

BRIDGE ENGINEER

DETAILS OF CONCRETE RIPRAP
AND MISC. DETAILS OF STEEL PILING

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

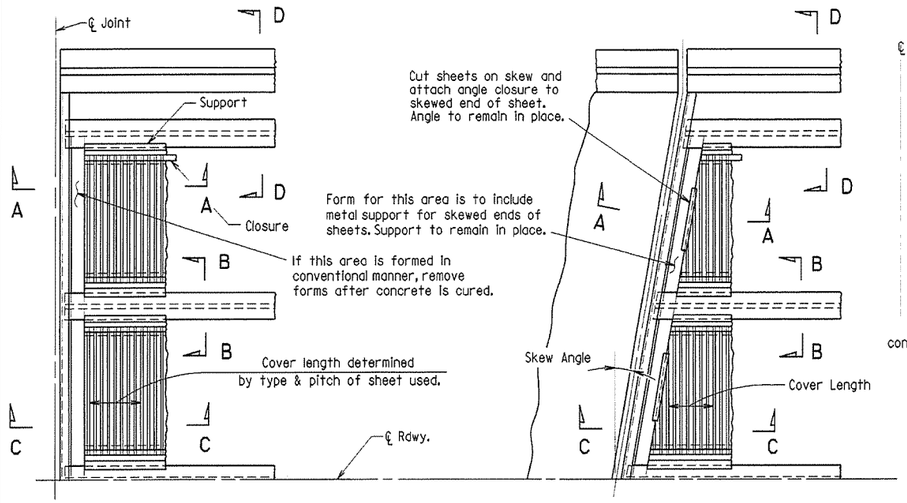
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 04-10-2003 FILENAME: B14995A.STD
CHECKED BY: CJF DATE: 04-10-2003 SCALE: No Scale or As Noted
DESIGNED BY: STD. DATE: —

BRIDGE NO. DRAWING NO. 14995A

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
11-27-96						6	ARK.		111	
04-10-2003						JOB NO.				

(1) BR. DECK FORMS 14991

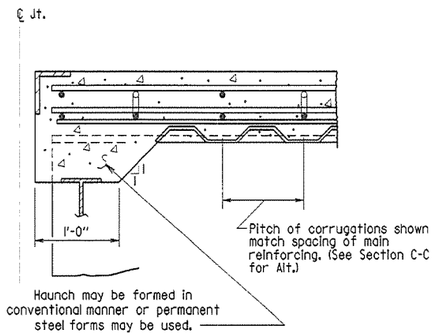


PART PLAN - SQUARE SPAN

3/8" = 1'-0"

PART PLAN - SKEWED SPAN

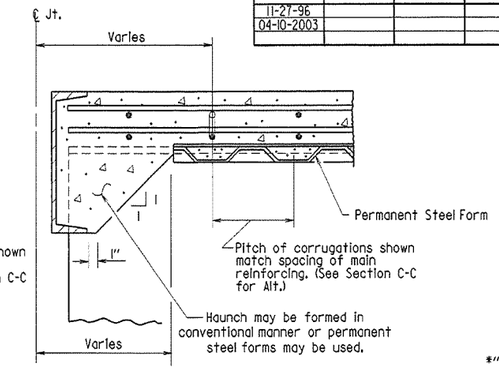
3/8" = 1'-0"



SECTION A-A

N.T.S.

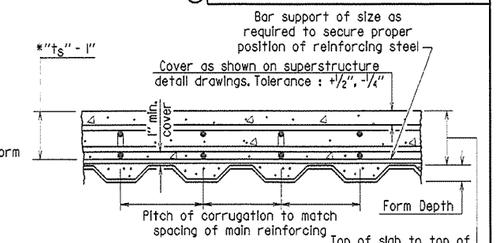
(Angle at end of span)



SECTION A-A

N.T.S.

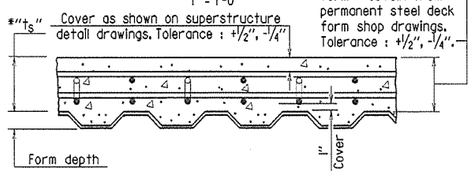
(Channel at end of span)



SECTION C-C

1" = 1'-0"

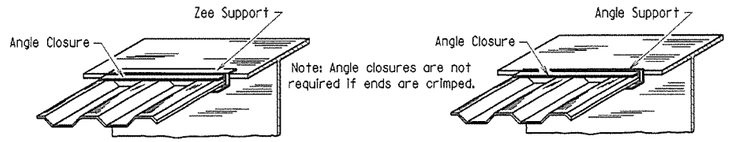
Top of slab to top of permanent steel deck form - obtain from permanent steel deck form shop drawings. Tolerance : +1/2", -1/4".



SECTION C-C - ALTERNATE

1" = 1'-0"

(Applicable when corrugations do not match spacing of main reinforcement)



Note: Angle closures are not required if ends are crimped.

SKETCH OF PERMISSIBLE SUPPORTS

N.T.S.

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

GENERAL NOTES

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

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

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

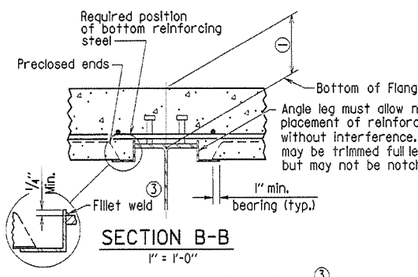
Form sheets shall be fastened to supporting members and to each other with galvanized metal screws sufficient in size and number to provide a secure attachment. Alternate methods of attachment must be approved by the Bridge Engineer.

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

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

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

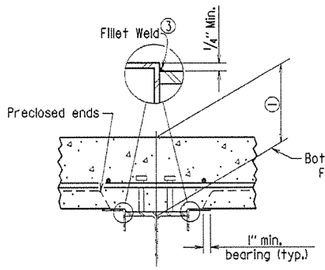
(2) Specifications: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2003 Edition), with applicable supplemental specifications and special provisions.



SECTION B-B

1" = 1'-0"

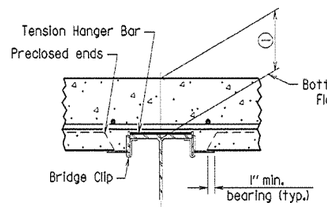
(Showing permissible support for tension flange where shear connectors are used, and for all compression flanges)



SECTION B-B

1" = 1'-0"

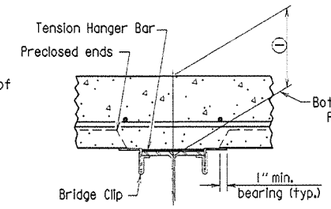
(Showing permissible support for tension flange where shear connectors are used and for all compression flanges)



SECTION B-B

1" = 1'-0"

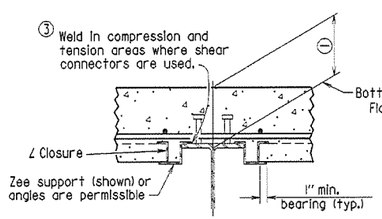
(Showing permissible support for tension flange where shear connectors are not used)



SECTION B-B

1" = 1'-0"

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

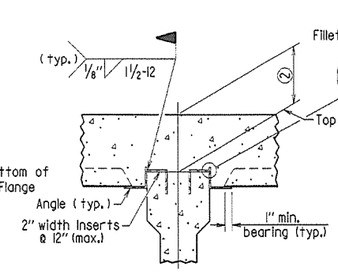


SECTION B-B

1" = 1'-0"

(Showing ∠ Closure)

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

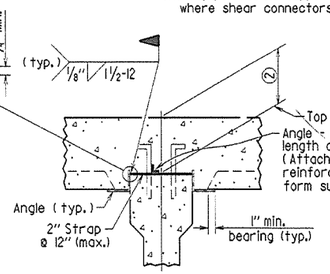


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by insert cast in girder)

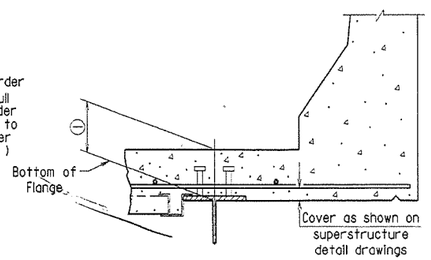


SECTION B-B

(FOR CONCRETE GIRDERS)

1" = 1'-0"

(Showing support by Strap)



SECTION D-D

1" = 1'-0"

Note: Only Bottom Reinforcing is shown.

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

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

(1) Redrawn and revised 11/27/96; MJT

(2) Revised for 2003 AHTD Construction Specifications and CPB Seal. MJT 04-10-2003
Chk'd. By: CJF 04-10-2003

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 4337
CHARLES P. BRAND

BRIDGE ENGINEER

DETAILS OF PERMISSIBLE TYPE PERMANENT STEEL BRIDGE DECK FORMS FOR STEEL & CONCRETE GIRDER SPANS

ROUTE SEC.

ARKANSAS STATE HIGHWAY COMMISSION

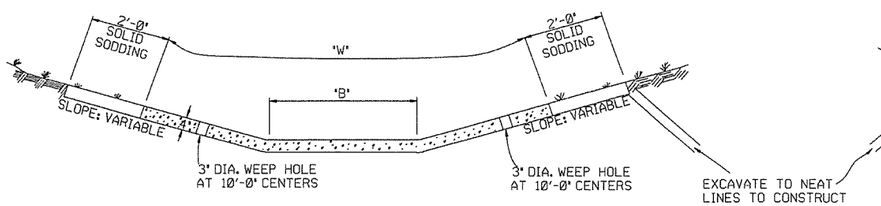
LITTLE ROCK, ARK.

DRAWN BY: MJT DATE: 10-17-96
CHECKED BY: CPB DATE: 10-17-96
DESIGNED BY: STD. DATE: —
SCALE: as noted

BRIDGE NO. DRAWING NO. 14991

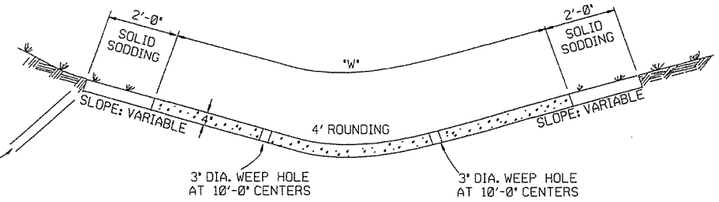
B14991.STD

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



TYPE A

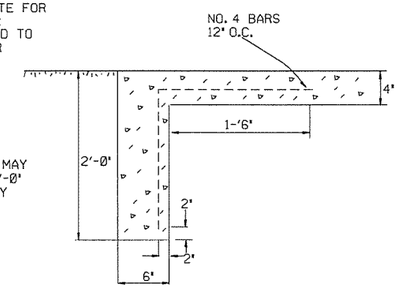
REFER TO TABULATION OF QUANTITIES FOR 'W' DIMENSIONS



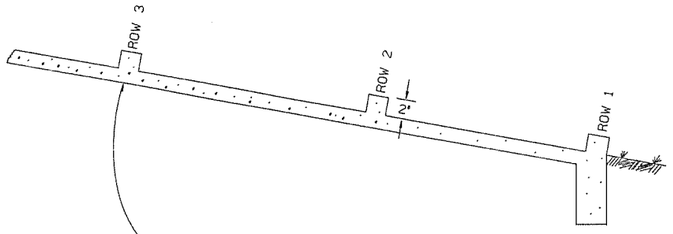
TYPE B

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

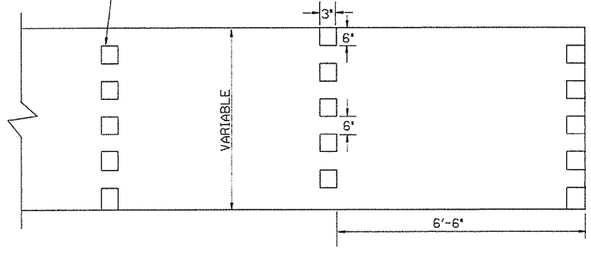
TOE WALL DEPTH MAY BE ALTERED TO 1'-0" WHEN DIRECTED BY THE ENGINEER IN ROCK EXCAVATION



TOE WALL DETAIL FOR CONCRETE DITCH PAVING



NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED



ENERGY DISSIPATORS
(NO SCALE)

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 UNCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.

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.

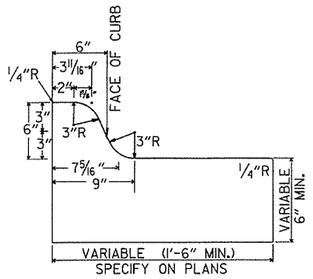
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

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

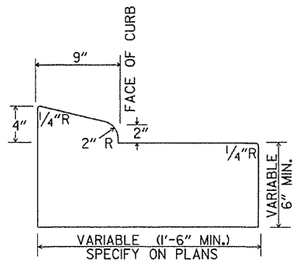
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

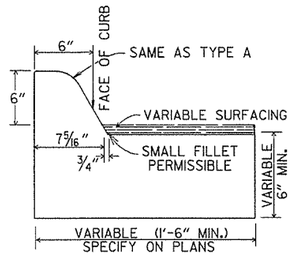
STANDARD DRAWING CDP-1



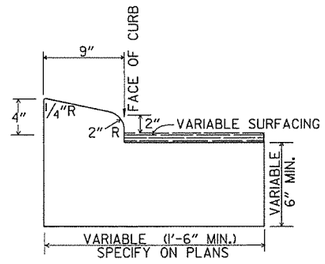
TYPE A



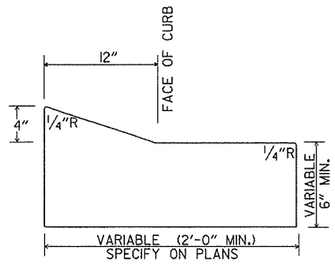
TYPE B-1



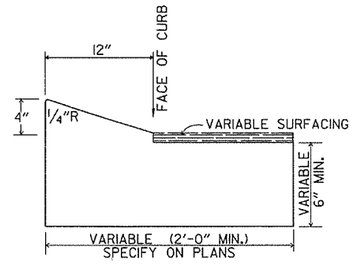
TYPE C



TYPE B-2

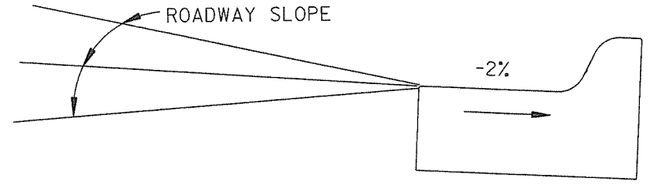


TYPE E-1



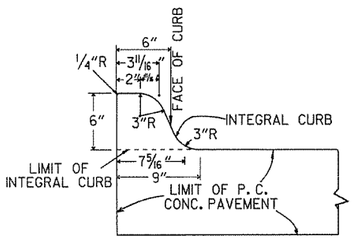
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

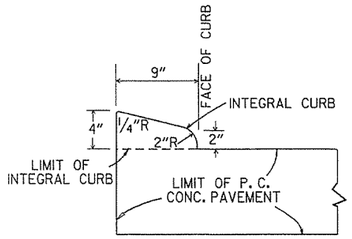


DETAIL OF GUTTER SLOPE

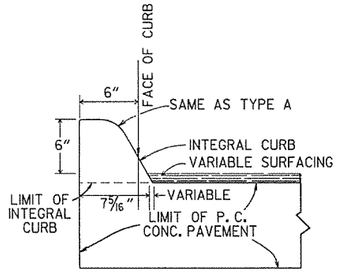
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

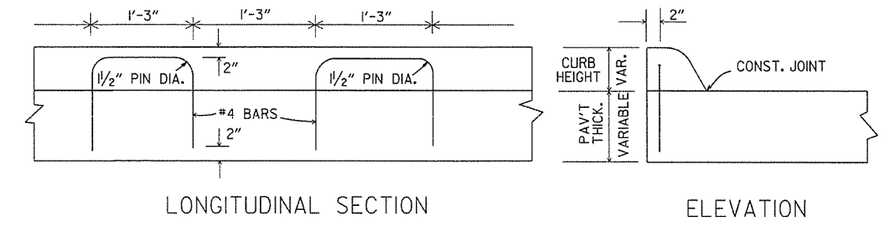


TYPE B



TYPE C

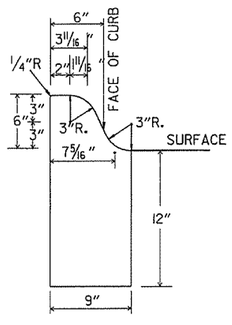
INTEGRAL CURB



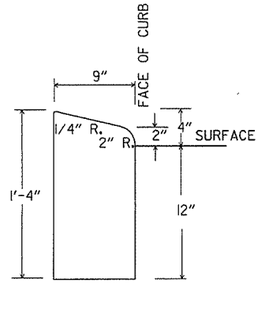
LONGITUDINAL SECTION

ELEVATION

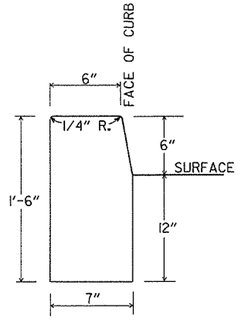
ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



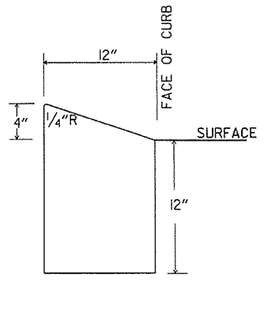
TYPE A



TYPE B

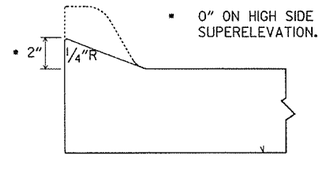


TYPE D



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.

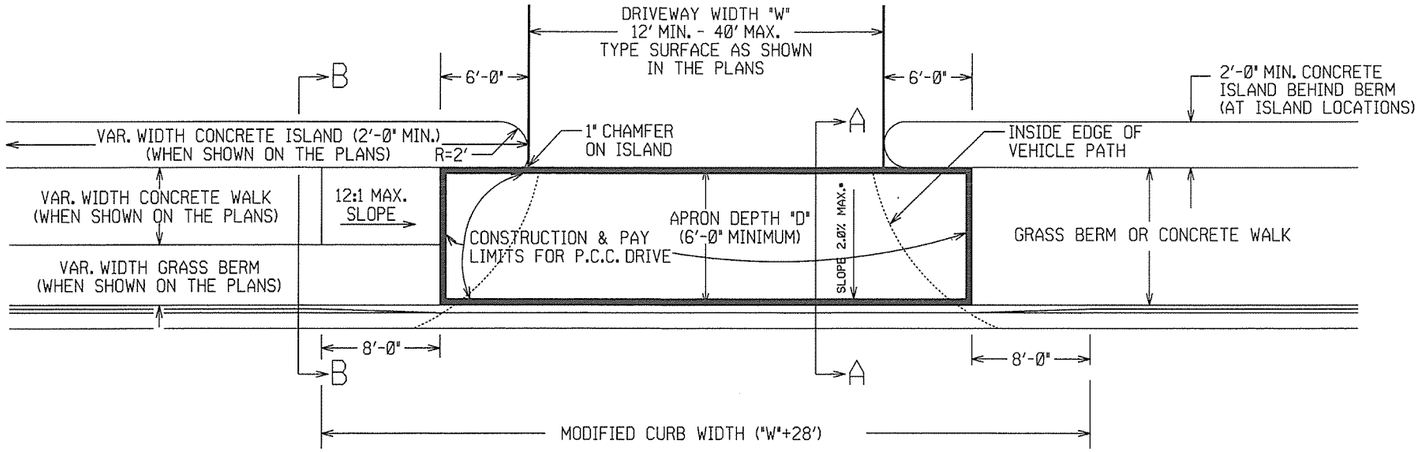
DETAILS OF MODIFIED CURB

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

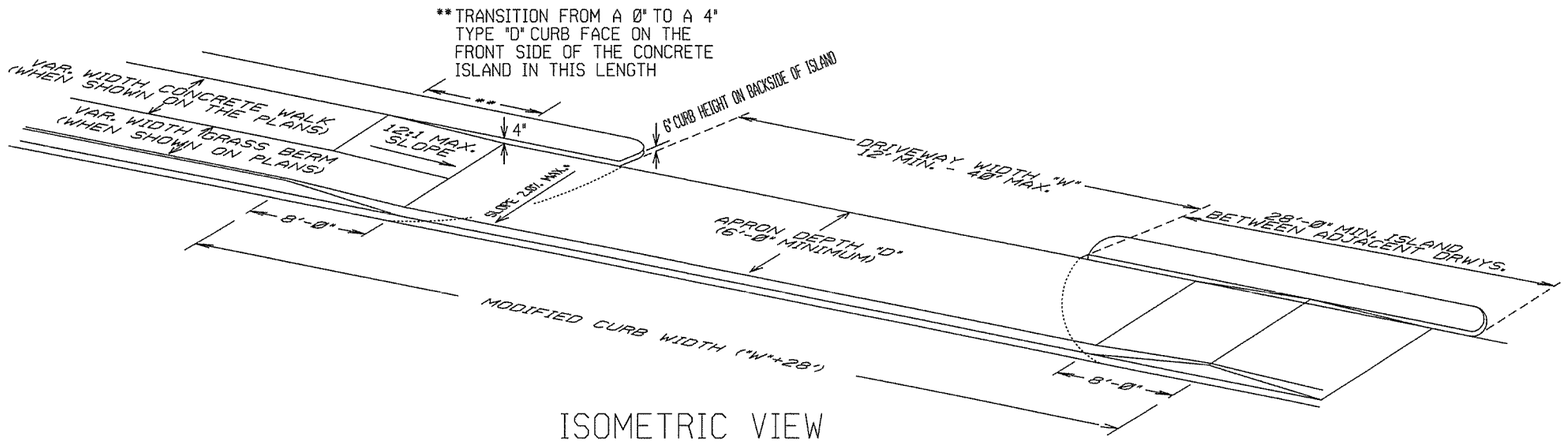
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

STANDARD DRAWING CG-1

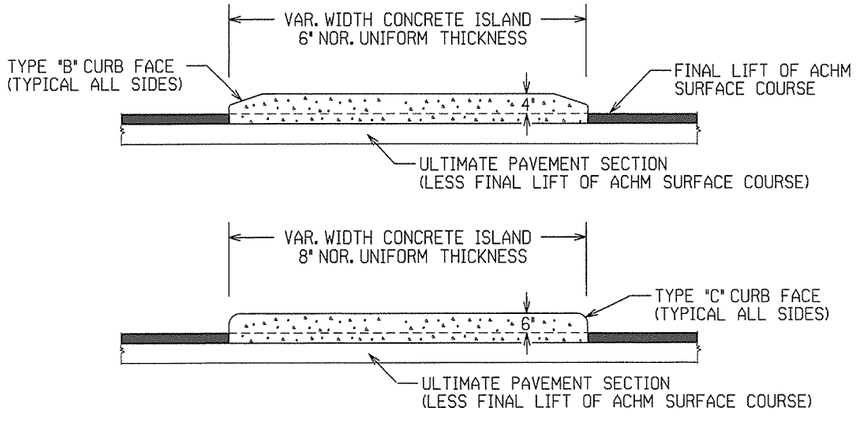


PLAN VIEW

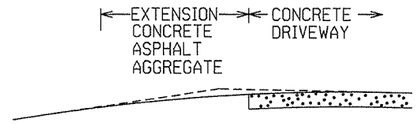


ISOMETRIC VIEW

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

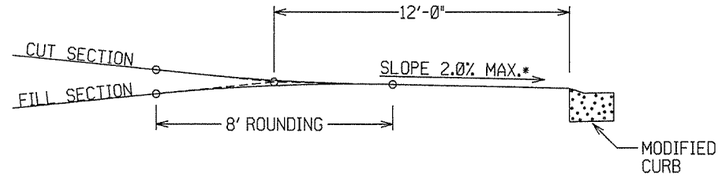
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE.(1") OR
4" ACHM BASE COURSE (1-1/2")

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

4: AGGREGATE - 6" AGGREGATE BASE COURSE

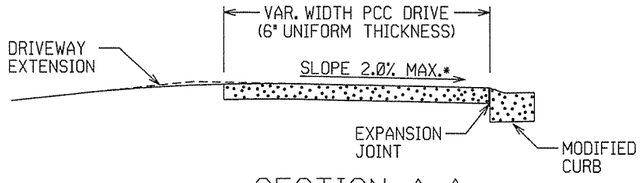
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

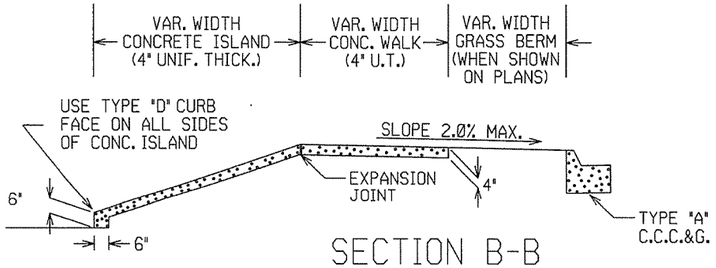


DRIVEWAY VERTICAL ALIGNMENT DETAILS

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



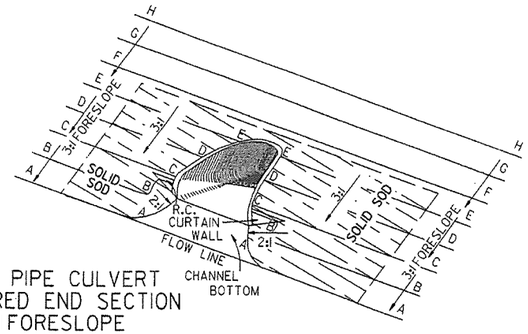
SECTION A-A



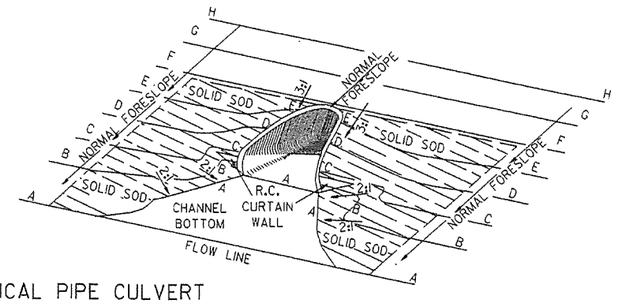
SECTION B-B
CURBED ISLAND BEHIND WALK

DATE REV	DATE FILMED	DESCRIPTION
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

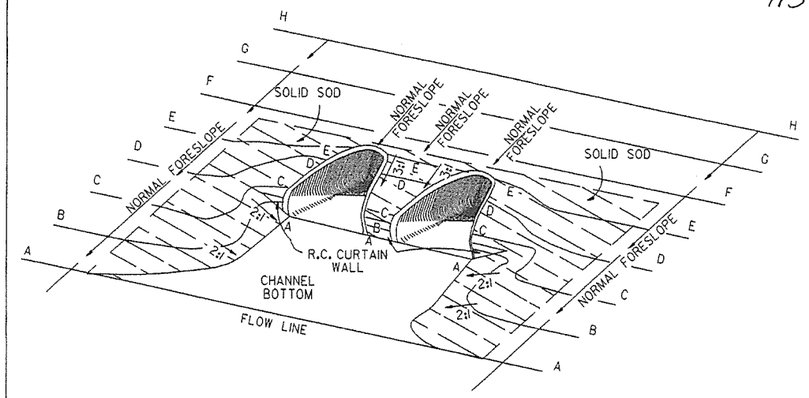
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DRIVEWAYS & ISLANDS
STANDARD DRAWING DR-1



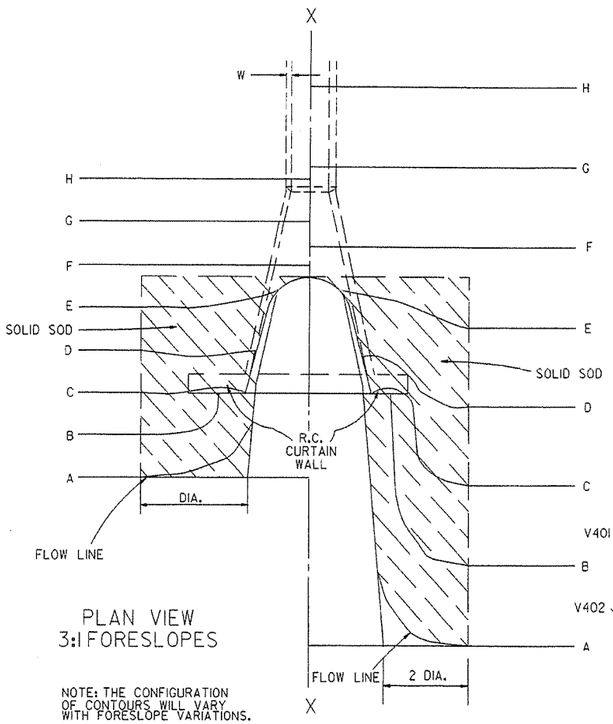
TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



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

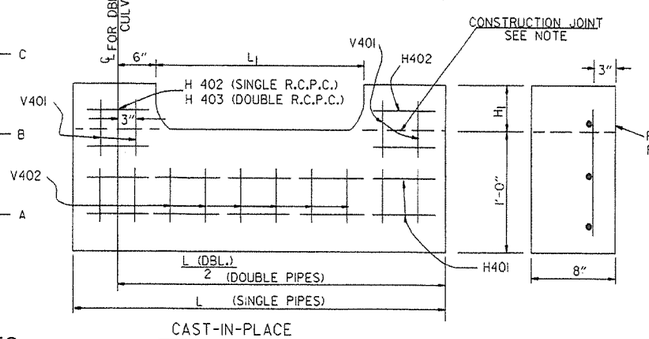
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES

R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

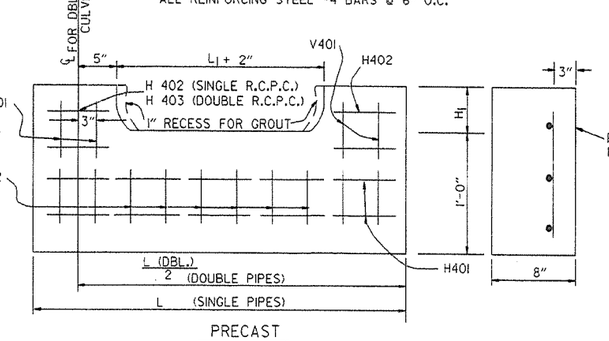
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C.		DOUBLE R.C.P.C.	
					CONC.	REINF. STEEL	CONC.	REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	1'-11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	0.67	59.0
36"	1'-7"	6'-8"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

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



CAST-IN-PLACE

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



PRECAST

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

R.C. CURTAIN WALL DETAILS

REINFORCING STEEL SCHEDULE

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

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

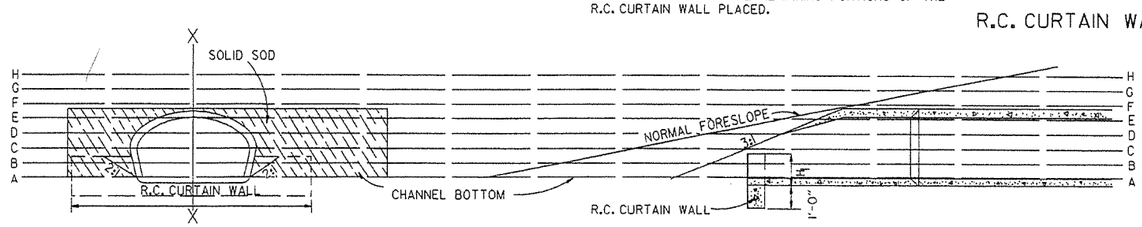
SOLID SODDING

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

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

GENERAL NOTES

1. A CAST-IN-PLACE OR PRECAST CURTAIN WALL MAY BE USED. PAYMENT FOR THE CURTAIN WALL SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID EACH FOR FLARED END SECTIONS OF THE SEVERAL SIZES, WHICH PRICE SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIALS INCLUDING REINFORCING STEEL AND CONCRETE: FOR FORMS, MIXING AND PLACING; FOR EXCAVATION AND BACKFILL, AND FOR ALL LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3 x 3 W/10 x W10 MAY BE USED IN LIEU OF REINFORCING BARS.



END VIEW

SECTIONAL VIEW "X-X"

DATE	REVISION	FILMED
10-18-96	ADDED NOTE TO SOLID SODDING	10-18-96
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

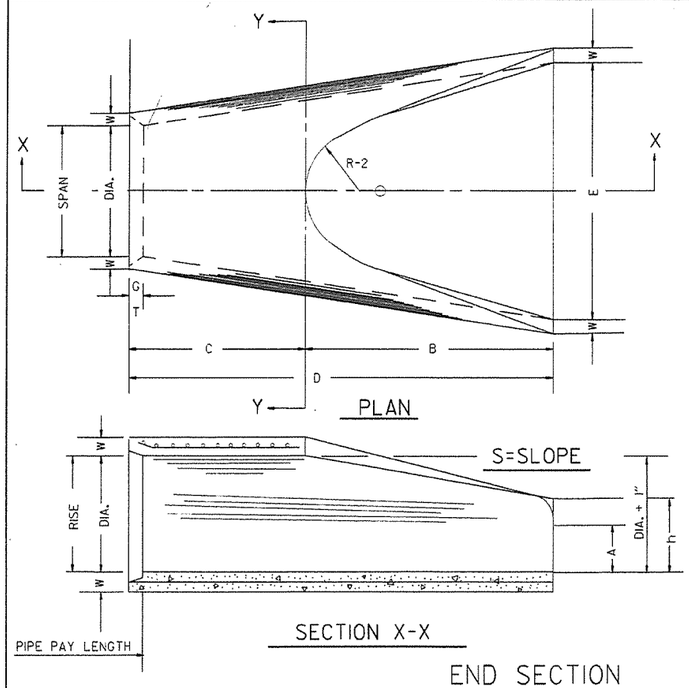
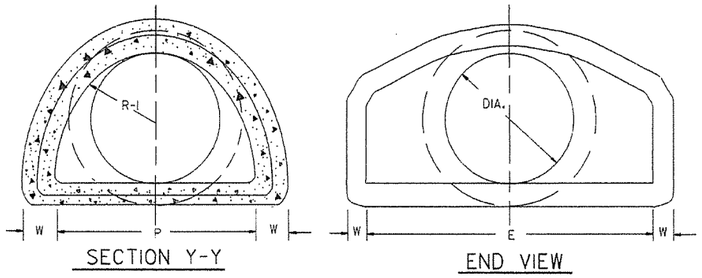


TABLE OF DIMENSIONS

DIA.	WALL	A	B	C	D	E	S	DIA. − 1"	P	R-1	R-2	G-T	WT.	h
18"	2½"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15½"	12"	2"	1000	1'-0½"
24"	3"	9½"	3'-7½"	2'-6"	6'-1½"	4'-0"	3:1	25"	33⅜"	16¹³⁄₁₆"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7¾"	6'-1¾"	5'-0"	3:1	31"	37"	18½"	15"	3¼"	1940	1'-4⅝"
36"	4"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	6'-0"	3:1	37"	47¹³⁄₁₆"	24⅝"	20"	3½"	4100	1'-8"
42"	4½"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53⅞"	27½"	22"	3½"	5380	2'-2½"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56½"	28½"	22"	3½"	6550	2'-6"
54"	5½"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65½"	33⅛"	24"	4"	8750	2'-10½"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72½"	36¹¹⁄₁₆"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77¹³⁄₁₆"	38⅝"	24"	5"	13250	4'-6"



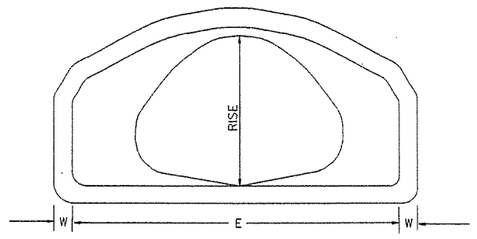
NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS

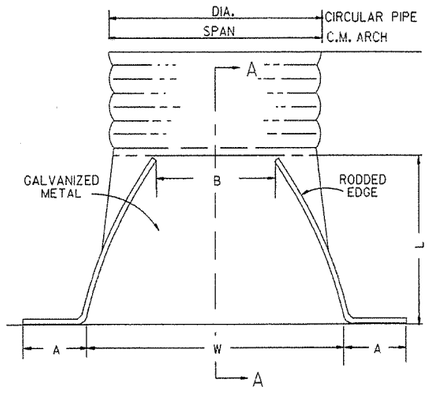
ARCH PIPE

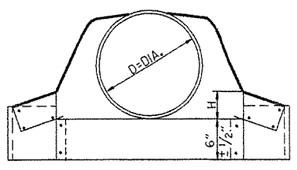
EQUIV. DIA.	• SPAN AASHTO M 206	• SPAN AHD NOMINAL	• RISE AASHTO M 206	• RISE AHD NOMINAL	W	A	B	C	D	E	P	R2	G-T	S
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½:1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36¹³⁄₁₆"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47¹³⁄₁₆"	20"	3"	2½:1
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-11½"	6'-1½"	6'-6"	54⅞"	22"	3½"	2½:1
42	51⅛	51	31⅝	31	4½"	11½"	4'-7"	1-10¼"	6'-5¼"	7'-2"	59½"	23"	3¾"	2½:1
48	58½	59	36	36	5"	1'-3"	5'-3"	2'-10¾"	8'-1¾"	7'-10"	70⅝"	24"	4¼"	2½:1
54	65	65	40	40	5½"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72⅛"	24"	4¾"	2¼:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77¹³⁄₁₆"	24"	5"	2¼:1

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

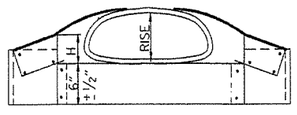


END VIEW
CONCRETE ARCH PIPE





CIRCULAR PIPE



C.M. ARCH PIPE

CIRCULAR PIPE

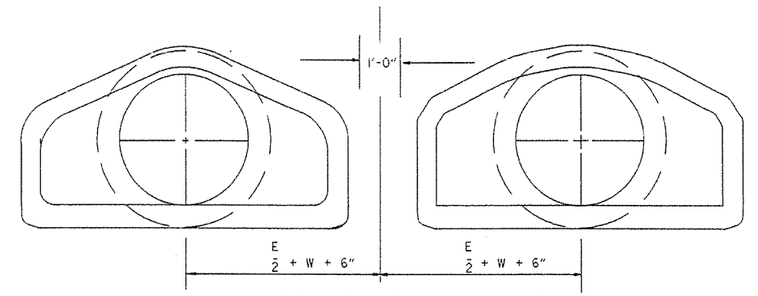
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12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

C.M. ARCH PIPE

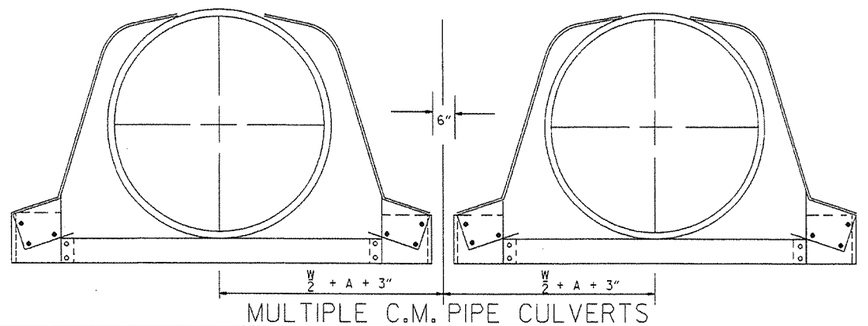
EQUIV. DIA.	SPAN	RISE	A 1" ±	B MAX.	H 1" ±	L 1½" ±	W 2" ±	S	GAUGE
	INCHES								
15"	17	13	7	9	6	19	30	2½:1	16
18"	21	15	7	10	6	23	36	2½:1	16
21"	24	18	8	12	6	28	42	2½:1	16
24"	28	20	9	14	6	32	48	2½:1	16
30"	35	24	10	16	6	39	60	2½:1	14
36"	42	29	12	18	8	46	75	2½:1	14
42"	49	33	13	21	9	53	85	2½:1	12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

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

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



MULTIPLE R.C. PIPE CULVERTS



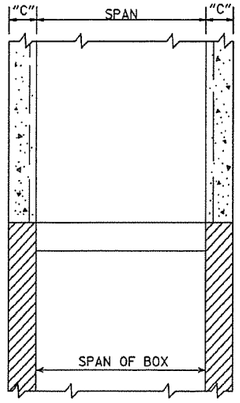
MULTIPLE C.M. PIPE CULVERTS

DATE	REVISION	FILMED
10-18-96	REVISED ASTM REF. TO AASHTO	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

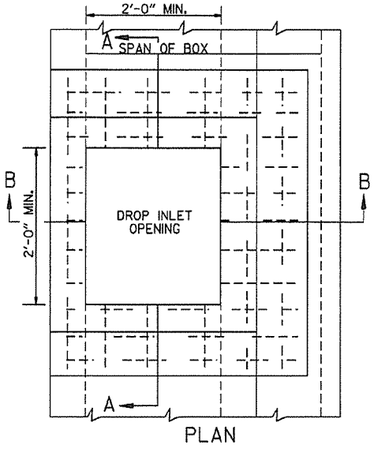
ARKANSAS STATE HIGHWAY COMMISION

FLARED END SECTION

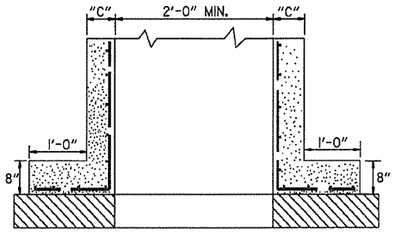
STANDARD DRAWING FES-2



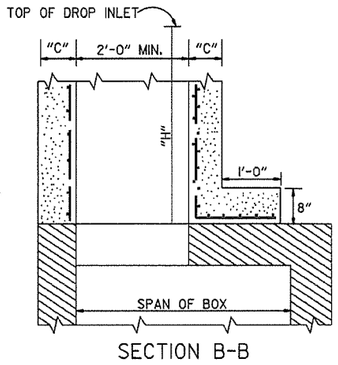
SECTION B-B



PLAN

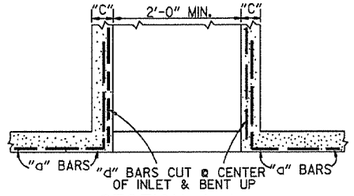


SECTION A-A

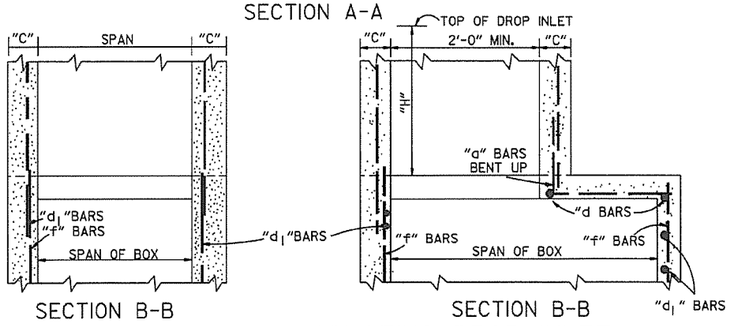


SECTION B-B

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



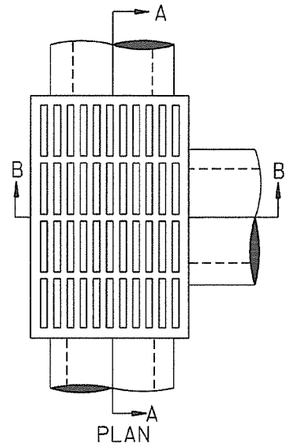
SECTION A-A



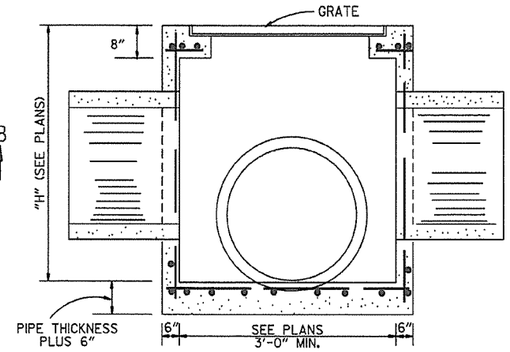
SECTION B-B SECTION B-B

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.

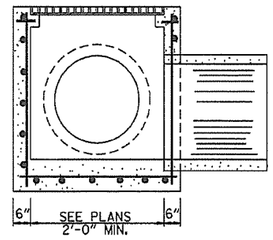


PLAN



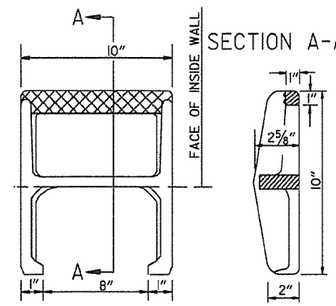
SECTION A-A

NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE DROP INLET TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.



SECTION B-B

DROP INLET (TYPE E)

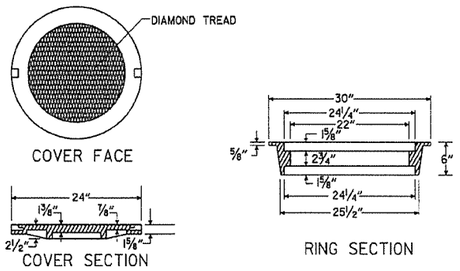


APPROX. WEIGHT = 11 LBS. (CAST IRON)

PLAN

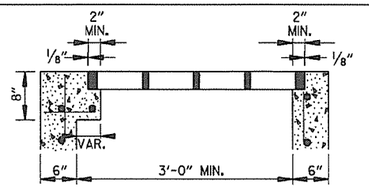
NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

DETAIL OF STEP FOR DROP INLET

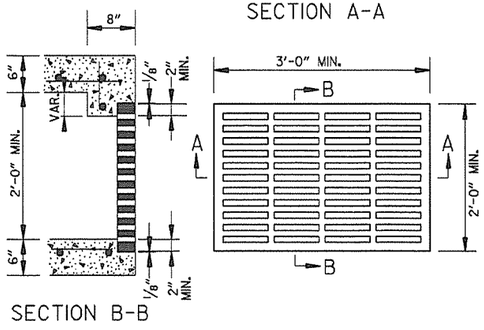


APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER



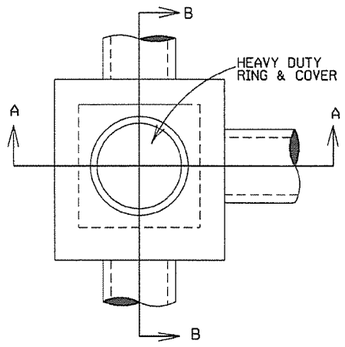
SECTION A-A



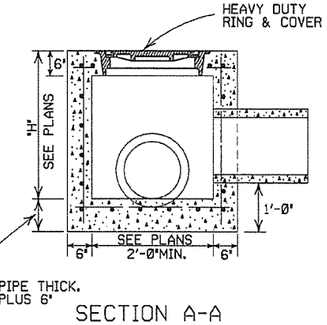
SECTION B-B

APPROXIMATE MINIMUM WATERWAY OPENING = 260 SQ. IN.

GRATE FOR TYPE E DROP INLET

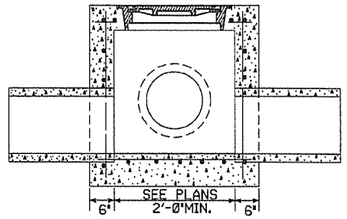


PLAN



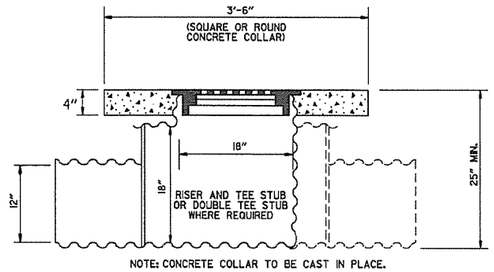
SECTION A-A

NOTE: REINF. BARS TO BE #4 BARS ON 6" CTRS. WITH 1½" MIN. COVER. THIS TYPE JUNCTION BOX TO BE USED WHERE NOT SUBJECTED TO TRAFFIC.

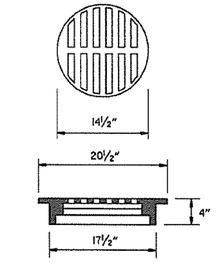


SECTION B-B

JUNCTION BOX (TYPE E)



NOTE: CONCRETE COLLAR TO BE CAST IN PLACE. 12" PIPE CULVERTS TO BE MEASURED AND PAID FOR AS " 12" SIDE DRAIN ".



USE NEENAH R-5901-C OR EQUIVALENT BICYCLE SAFE FRAME AND GRATE

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

4'-0" LENGTH DROP INLET

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

DROP INLET EXTENSION

4'-0" CLASS A CONC.	4'-0" REINF. STEEL	8'-0" CLASS A CONC.	8'-0" REINF. STEEL
CU. YDS.	POUNDS	CU. YDS.	POUNDS
0.58	38	0.87	72

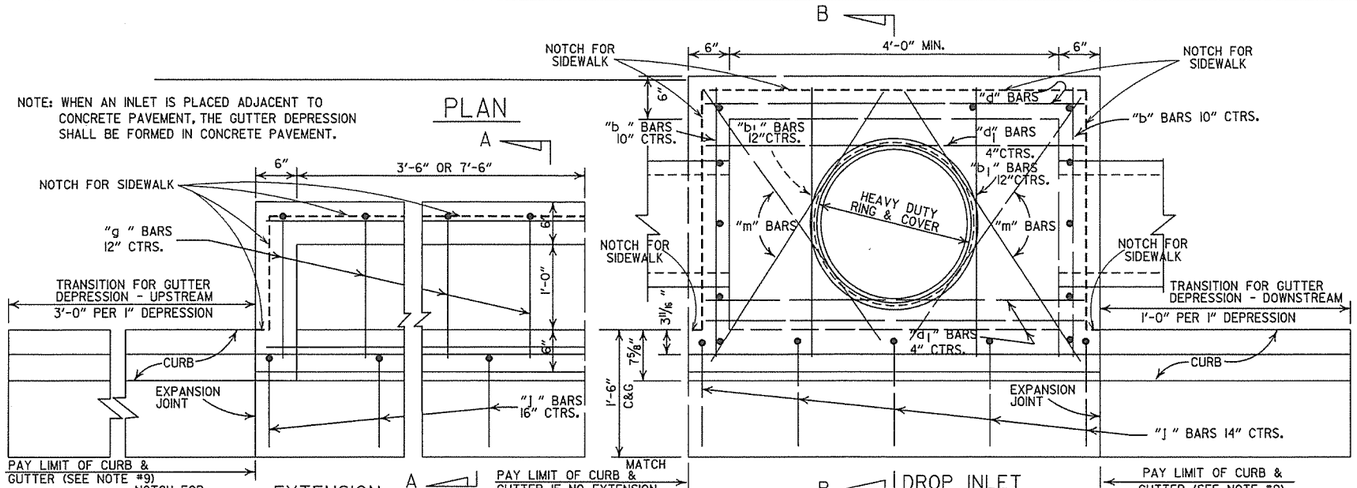
DEDUCT FROM QUANTITY COMPUTED FOR EACH EXTENSION ADDED.

0.04	3

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

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

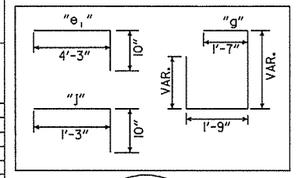
PLAN

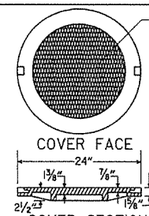


DEDUCT FROM QUANTITY COMPUTED FOR EACH PIPE ENTERING INLET

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

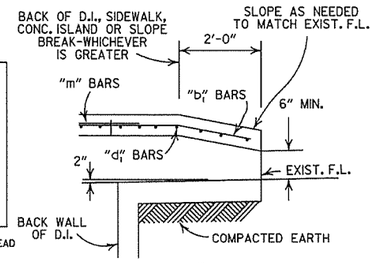
BAR DIAMETER





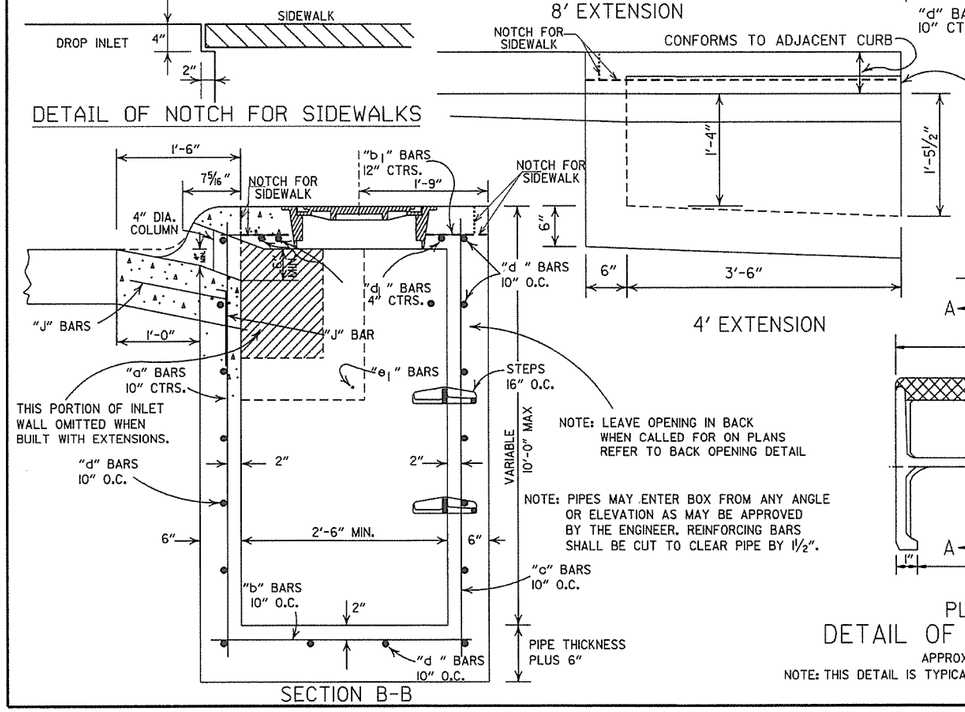
APPROXIMATE TOTAL WEIGHT = 333 LBS.

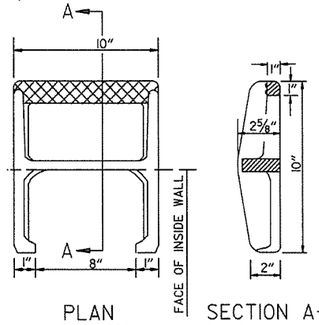
HEAVY DUTY RING & COVER



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).

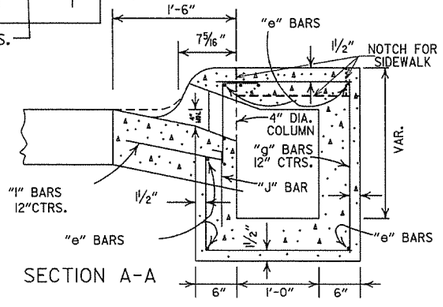




DETAIL OF STEP FOR DROP INLET

APPROX. WEIGHT = 11 LBS. (CAST IRON)

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



GENERAL NOTES:

1. ALL EXPOSED CORNERS TO HAVE ¾" 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 1½" 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.

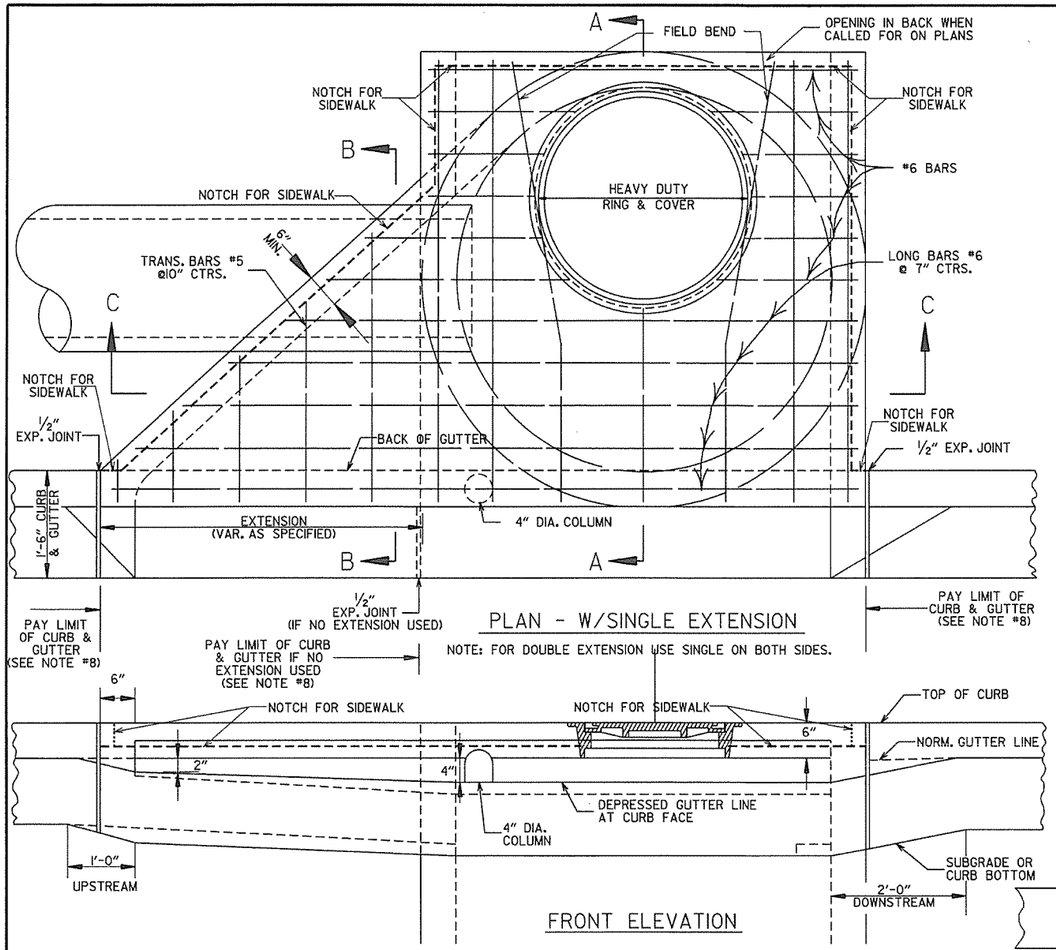
DATE REV.	REVISION	DATE FILMED
8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13, REVISED SECTION B-B	
1-12-00	CORRECTED DIMENSION ON SECTION B-B & REVISED RING & COVER	
5-13-99	ADDED DETAIL OF NOTCH FOR SIDEWALKS	
7-02-98	REPLACED RING & COVER W/HEAVY DUTY RING & COVER 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)

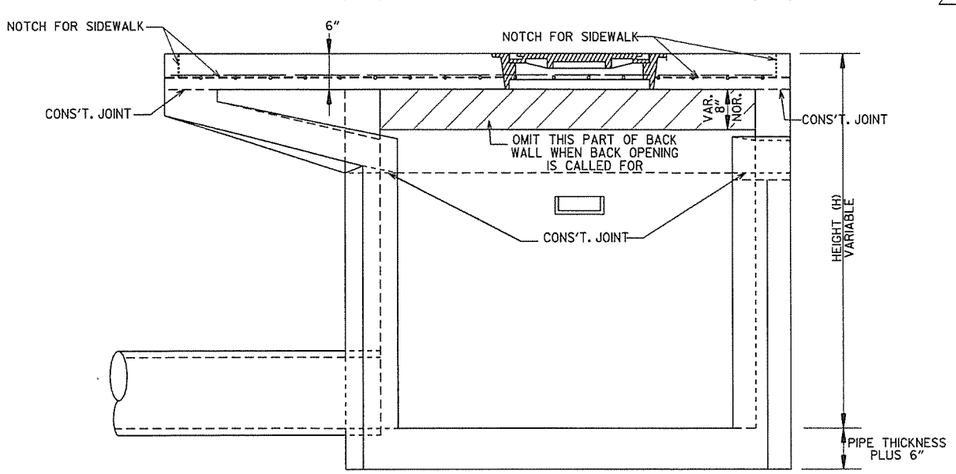
STANDARD DRAWING FPC-9E



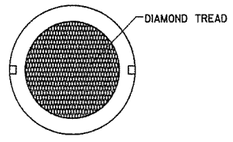
PLAN - W/SINGLE EXTENSION

NOTE: FOR DOUBLE EXTENSION USE SINGLE ON BOTH SIDES.

FRONT ELEVATION



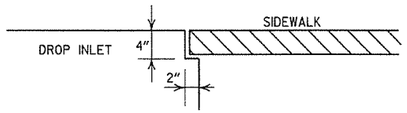
SECTION C-C



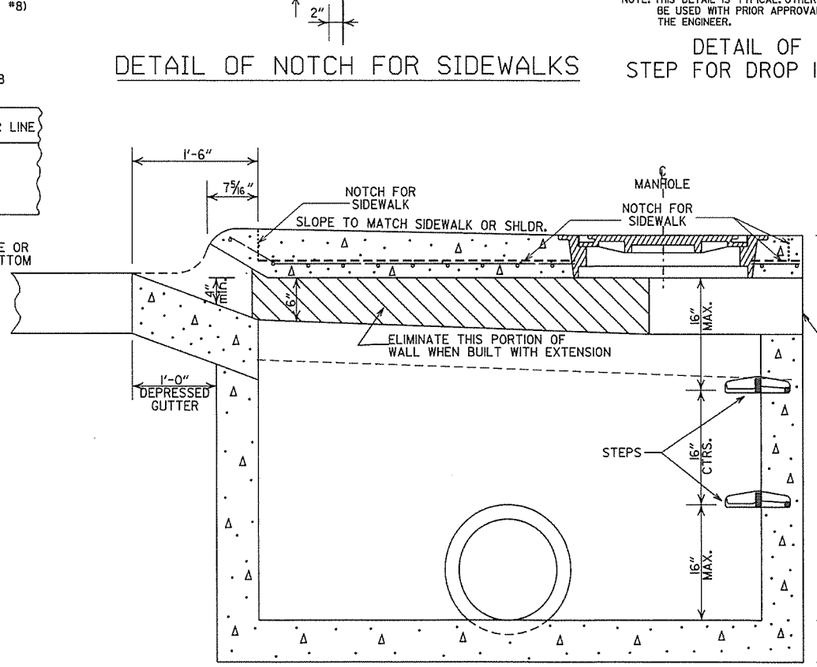
APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER

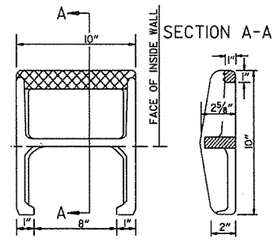
1. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
2. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
3. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON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



DETAIL OF NOTCH FOR SIDEWALKS



SECTION A-A

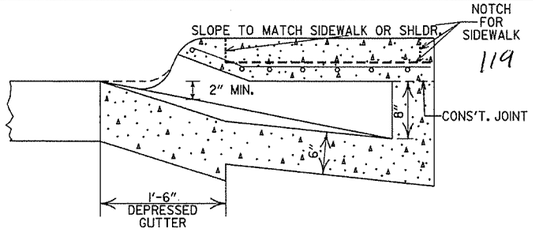


APPROX. WEIGHT = 11 LBS. (CAST IRON)

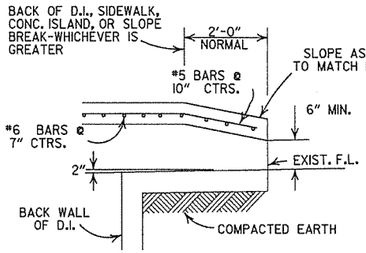
PLAN

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 ¾" 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. 1½" 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

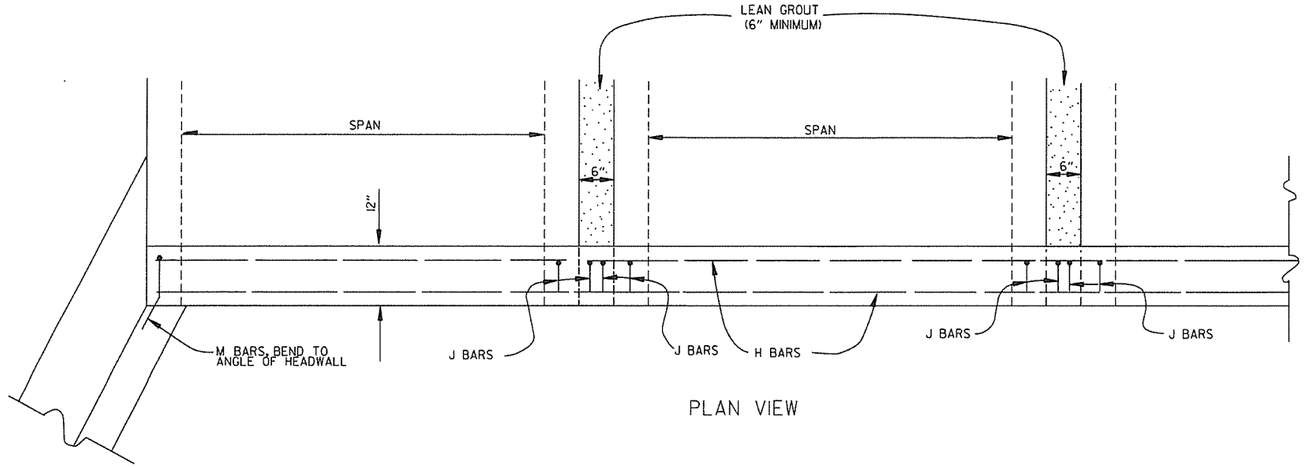
DIA. OF D.I.	DIA. OF OUTLET PIPE	MINIMUM WALL THICKNESS CAST IN PLACE	MINIMUM WALL THICKNESS PRECAST
4' I.D.	12" THRU 27"	6"	5"
5' I.D.	30" THRU 42"	8"	6"
6' I.D.	48" THRU 54"	8"	7"

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 11; ADJ. OPENING DIMENSION	
10-16-95	CORRECTED #6 BAR SPACING	
1-20-95	CORRECTED DIAMETER OF D.I. IN BOX	
7-2-95	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	8-15-91
11-30-89	ADDED NOTE NO. 12	11-30-89
5-23-89	ADDED NOTE & MINIMUM WALL THICKNESS	53-3-23-89
7-15-88	ADDED EXTEND NOTE TO SECTION A-A	635-7-15-88
1-14-87	MODIFIED WALL THICKNESS	783-1-14-87
6-12-87	ISSUED	4-6-12-87

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLET (TYPE MO)

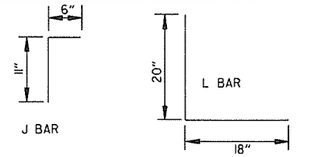
STANDARD DRAWING FPC-9M



PLAN VIEW

BAR LIST

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



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

GENERAL NOTES

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

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

ALL EXPOSED CORNERS TO HAVE ¾" CHAMFERS.

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

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

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

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

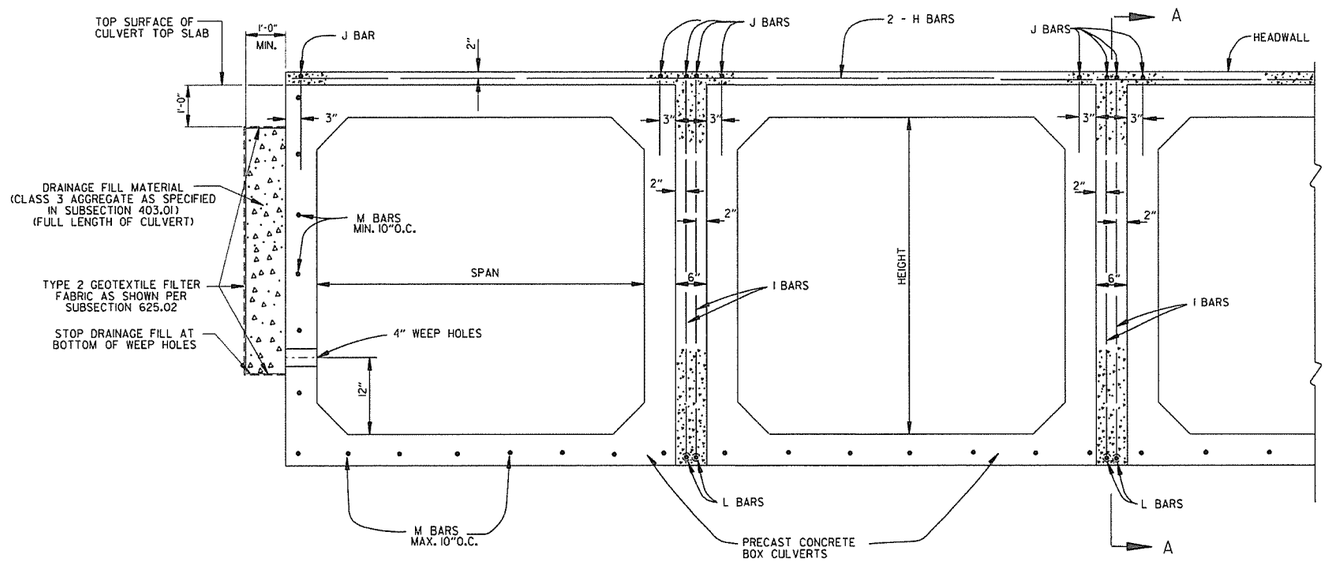
THE MEMBRANE WATERPROOFING WILL BE REQUIRED ON THE TOP EXTERNAL JOINT AND SHALL EXTEND 1 FOOT DOWN THE SIDES OF THE CULVERT.

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

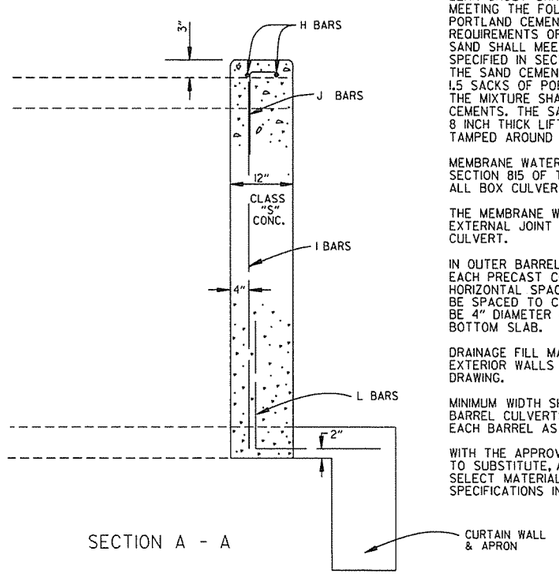
DRAINAGE FILL MATERIAL WITH GEOTEXTILE FABRIC IS REQUIRED AT THE EXTERIOR WALLS OF THE ASSEMBLED CULVERT. SEE DETAILS ON THIS DRAWING.

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

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



END VIEW



SECTION A - A

DATE	REVISION	DATE FILMED
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	43⅞	44	26⅝	27
42	51⅛	51	31⅝	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87⅛	87
120	154	154	96⅞	97
132	168¾	169	106½	107

THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PERCENT FROM THE VALUES SPECIFIED BY AASHTO M206.

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

EQUIV. DIA.	AASHTO M 207	
	SPAN	RISE
INCHES	INCHES	
18	23	14
24	30	19
27	34	22
30	38	24
33	42	27
36	45	29
39	49	32
42	53	34
48	60	38
54	68	43
60	76	48
66	83	53
72	91	58
78	98	63
84	106	68

THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PERCENT FROM THE VALUES SPECIFIED BY AASHTO M207.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. PLACE AND COMPACT THE HAUNCH AREA UP TO THE MIDDLE OF THE PIPE.
5. COMPLETE BACKFILL ACCORDING TO SUBSECTION 606.03.(f)(1).

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

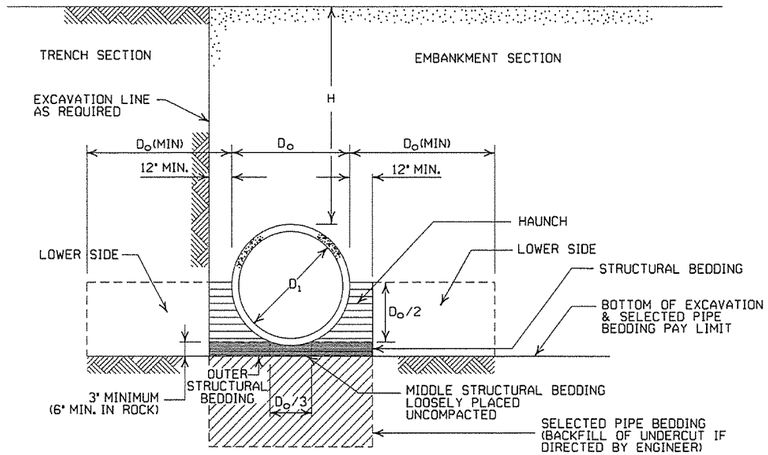
- LEGEND -

D_i = NORMAL INSIDE DIAMETER OF PIPE
D_o = OUTSIDE DIAMETER OF PIPE
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
▨ = UNDISTURBED SOIL

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR HAUNCH AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 5 OR CLASS 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL*
TYPE 3**	AASHTO CLASSIFICATION A-1 THRU A-6 SOIL OR TYPE 1 OR 2 INSTALLATION MATERIAL

*SM-3 WILL NOT BE ALLOWED.

**MATERIALS SHALL NOT INCLUDE ORGANIC MATERIALS OR STONES LARGER THAN 3 INCHES.



EMBANKMENT AND TRENCH INSTALLATIONS

1. MATERIAL IN THE HAUNCH AND OUTER STRUCTURAL BEDDING SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. FOR TRENCHES WITH WALLS OF NATURAL SOIL, THE DENSITY OF THE SOIL IN THE LOWER SIDE ZONE SHALL BE AS FIRM AS THE 95% DENSITY REQUIRED FOR THE HAUNCH. IF THE EXISTING SOIL DOES NOT MEET THIS CRITERIA, IT SHALL BE REMOVED AND RECOMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OF MATERIAL USED.
3. FOR EMBANKMENTS, THE MATERIAL IN THE LOWER SIDE ZONE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2003 EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. CONCRETE PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. ALL PIPE SHALL CONFORM TO SECTION 606. CIRCULAR R.C. PIPE CULVERTS SHALL CONFORM TO AASHTO M170, R.C. ARCH PIPE CULVERTS SHALL CONFORM TO AASHTO M206 AND HORIZONTAL ELLIPTICAL PIPE CULVERTS SHALL CONFORM TO AASHTO M207.
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. NOT MORE THAN ONE LIFTING HOLE MAY BE PROVIDED IN CONCRETE PIPE TO FACILITATE HANDLING. HOLE MAY BE CAST IN PLACE, CUT INTO THE FRESH CONCRETE AFTER FORMS ARE REMOVED, OR DRILLED. THE HOLE SHALL NOT BE MORE THAN TWO INCHES IN DIAMETER OR TWO INCHES SQUARE. CUTTING OR DISPLACEMENT OF REINFORCEMENT WILL NOT BE PERMITTED. SPALLED AREAS AROUND THE HOLE SHALL BE REPAIRED IN A WORKMANLIKE MANNER. LIFTING HOLE SHALL BE FILLED WITH MORTAR, CONCRETE, OR OTHER METHOD AS APPROVED BY THE ENGINEER.
9. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
10. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS THE HAUNCH), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

MINIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

	CLASS OF PIPE			
	CLASS III		CLASS IV	CLASS V
INSTALLATION TYPE	TYPE 1 OR 2	TYPE 3	ALL	ALL
PIPE ID (IN.)	FEET			
12-15	2	2.5	2	1
18-24	2.5	3	2	1
27-33	3	4	2	1
36-42	3.5	5	2	1
48	4.5	5.5	2	1
54-60	5	7	2	1
66-78	6	8	2	1
84-108	7.5	8	2	1

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

MAXIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE		
	CLASS III	CLASS IV	CLASS V
	FEET		
TYPE 1	21	32	50
TYPE 2	16	25	39
TYPE 3	12	20	30

NOTE: IF FILL HEIGHT EXCEEDS 50 FEET, A SPECIAL DESIGN CONCRETE PIPE WILL BE REQUIRED USING TYPE 1 INSTALLATION.

MINIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2 OR TYPE 3	2.5	1.5

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

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

MAXIMUM HEIGHT OF FILL "H" OVER R.C. ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS

INSTALLATION TYPE	CLASS OF PIPE	
	CLASS III	CLASS IV
	FEET	
TYPE 2	13	21
TYPE 3	10	16

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

DATE	REVISION	DATE FILMED
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
2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM								
15	17x13	3	0.064	2	15	0.060	2	15
18	21x15	3	0.064	2	15	0.060	2	15
21	24x18	3	0.064	2.25	15	0.060	2.25	15
24	28x20	3	0.064	2.5	15	0.075	2.5	15
30	35x24	3	0.079	3	12	0.075	3	12
36	42x29	3½	0.079	3	12	0.105	3	12
42	49x33	4	0.079	3	12	0.105	3	12
48	57x38	5	0.109	3	13	0.135	3	13
54	64x43	6	0.109	3	14	0.135	3	14
60	71x47	7	0.138	3	15	0.164	3	15
66	77x52	8	0.168	3	15			
72	83x57	9	0.168	3	15			
② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM								
				INSTALLATION TYPE 2	INSTALLATION TYPE 1		INSTALLATION TYPE 2	INSTALLATION TYPE 1
36	40x31	5	0.079	3	2		12	15
42	46x36	6	0.079	3	2		13	15
48	53x41	7	0.079	3	2		13	15
54	60x46	8	0.079	3	2		13	15
60	66x51	9	0.079	3	2		13	15
66	73x55	12	0.079	3	2		15	15
72	81x59	14	0.079	3	2		15	15
78	87x63	14	0.079	3	2		15	15
84	95x67	16	0.109	3	2		15	15
90	103x71	16	0.109	3	2		15	15
96	112x75	18	0.109	3	2		15	15
102	117x79	18	0.109	3	2		15	15
108	128x83	18	0.138	3	2		15	15

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.

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.

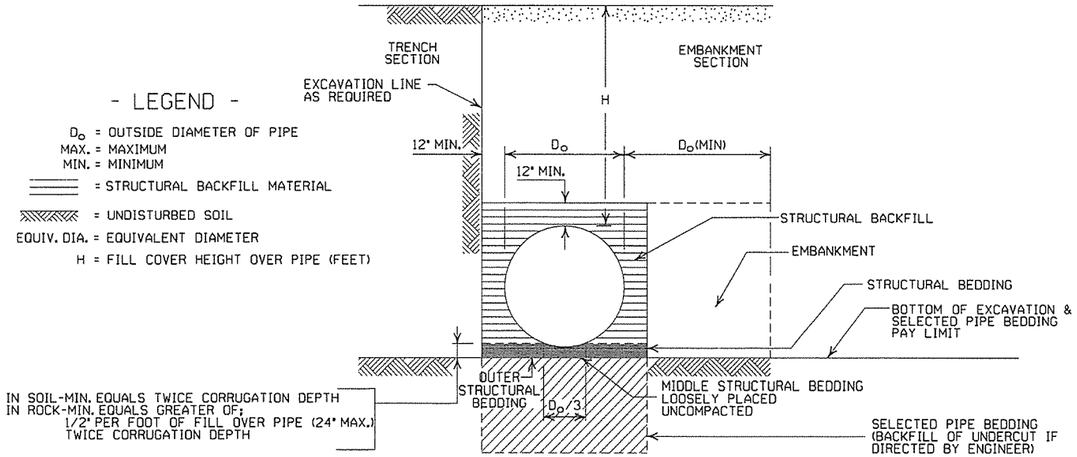
NOTE: STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF METAL PIPE.

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



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 (2003 EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. METAL PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. METAL PIPE CULVERT MATERIALS AND INSTALLATIONS SHALL CONFORM TO SECTION 606 AND JOB SPECIAL PROVISION "METAL PIPE".
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
9. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

DATE	REVISION	DATE FILMED
12-15-11	REVISED FOR LRFD DESIGN SPECS	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

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

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

SM3 WILL NOT BE ALLOWED.

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

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

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

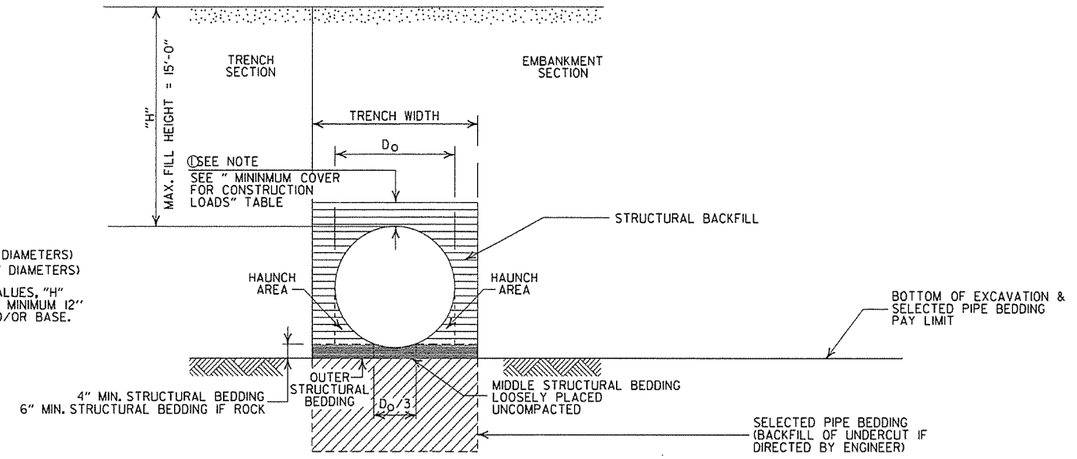
PIPE DIAMETER	CLEAR DISTANCE BETWEEN PIPES
18"	1'-6"
24"	2'-0"
30"	2'-6"
36"	3'-0"
42"	3'-6"
48"	4'-0"

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION, 2003 EDITION.
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. HIGH DENSITY POLYETHYLENE PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR HDPE PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
12-15-11	REVISED GENERAL NOTES & MINIMUM COVER NOTE	
11-17-10	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (HIGH DENSITY POLYETHYLENE)

STANDARD DRAWING PCP-1

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

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

SM3 WILL NOT BE ALLOWED.

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

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

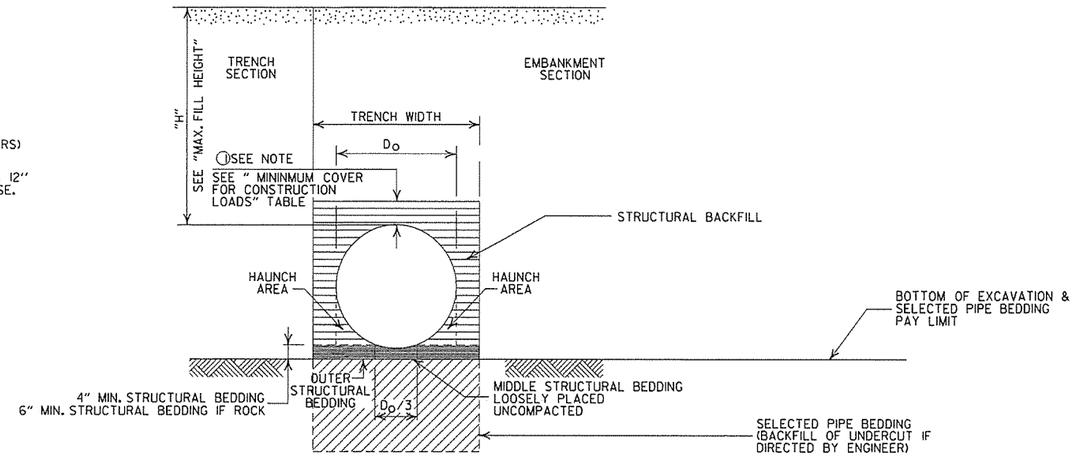
MULTIPLE INSTALLATION OF PVC PIPES

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

MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL CONFROM TO JOB SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 606 OF THE STANDARD SPECIFICIATIONS FOR HIGHWAY CONSTRUCTION, 2003 EDITION.
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PLUS A SUFFICIENT WIDTH TO ENSURE WORKING ROOM TO PROPERLY AND SAFELY PLACE AND COMPACT HAUNCHING AND OTHER BACKFILL MATERIAL.
4. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
5. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
6. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS STRUCTURAL BACKFILL), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."
7. FOR PIPE TYPES THAT ARE NOT SMOOTH ON THE OUTSIDE (CORRUGATED OR PROFILE WALLS), BACKFILL GRADATIONS SHOULD BE SELECTED THAT WILL PERMIT THE FILLING OF THE CORRUGATION OR PROFILE VALLEY.
8. PVC PIPES OF DIAMETERS OTHER THAN SHOWN WILL NOT BE ALLOWED.
9. JOINTS FOR PVC PIPE SHALL MEET THE REQUIREMENTS FOR SOIL TIGHTNESS AS SPECIFIED IN AASHTO SECTION 26.4.2.4 AND 30.4.2 "AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS." JOINTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

- LEGEND -

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

= STRUCTURAL BACKFILL MATERIAL

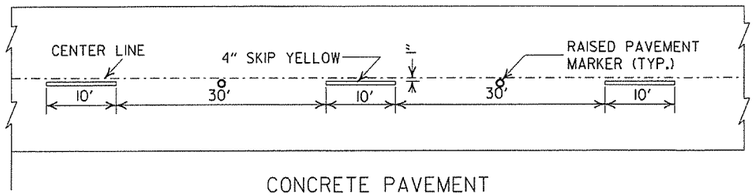
= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	

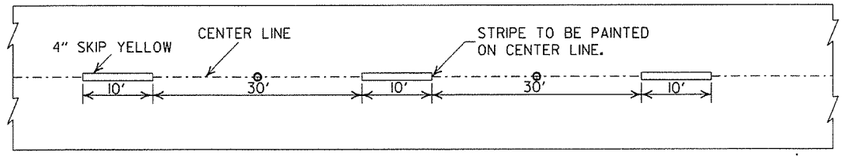
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

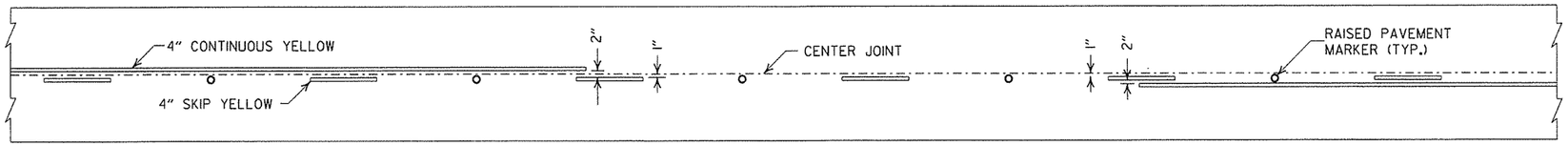


CONCRETE PAVEMENT

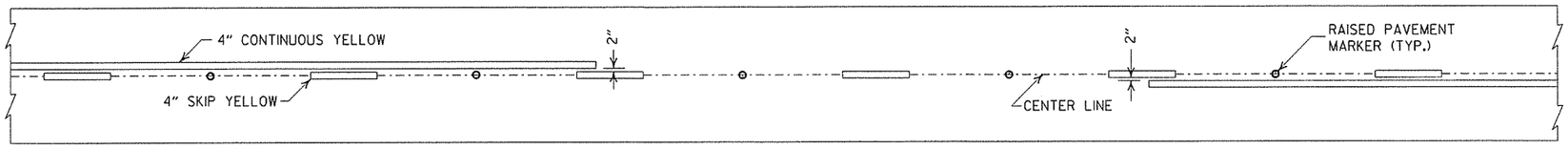


ASPHALT PAVEMENT

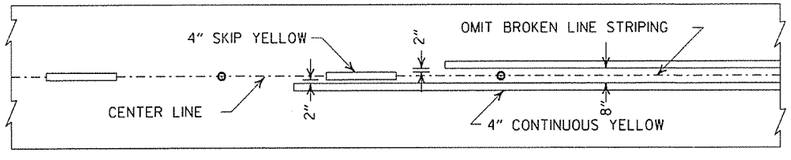
BROKEN LINE STRIPING



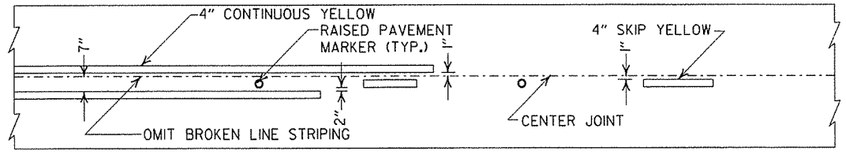
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

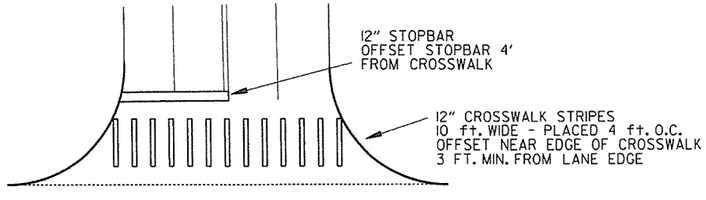


ASPHALT PAVEMENT



CONCRETE PAVEMENT

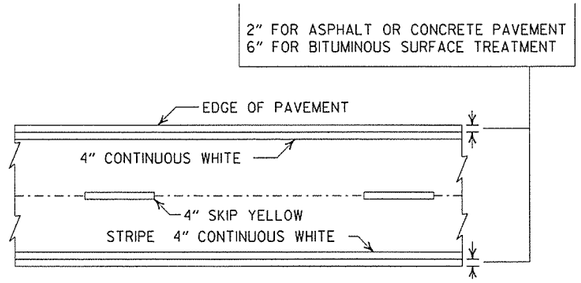
STRIPING AT ADJACENT NO PASSING LANES



CROSSWALK AND STOPBAR DETAILS

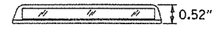
NOTES:

1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
4. RAISED PAVEMENT MARKERS SHALL BE CENTERED BETWEEN SKIP LINES ON 40 FEET SPACING UNLESS OTHERWISE SHOWN ON THE PLANS.



PAVEMENT EDGE LINE MARKING

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



DETAIL OF STANDARD RAISED PAVEMENT MARKERS

GENERAL NOTES:

THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY AND THE FINAL LOCATION OF THE STRIPING AND RAISED PAVEMENT MARKERS SHALL BE DETERMINED BY THE ENGINEER.

THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.

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
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

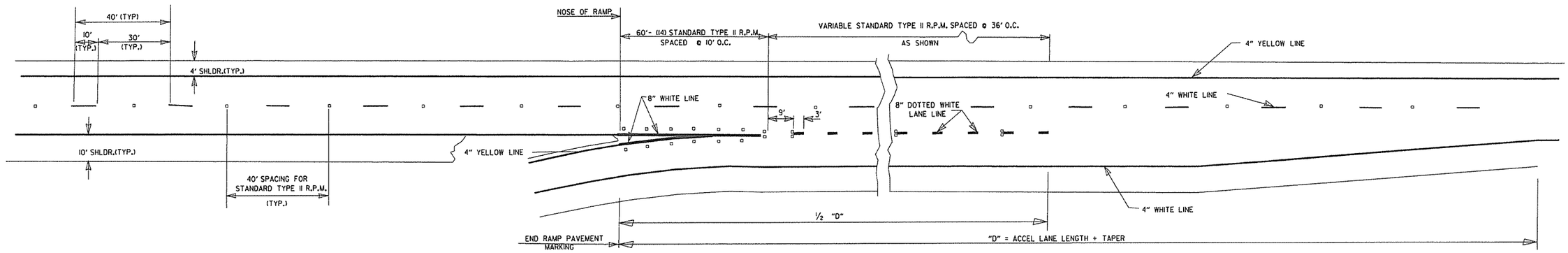
STANDARD DRAWING PM-1

PAVEMENT MARKING QUANTITIES
(BASED ON 700' ACCEL. LANE + 300' TAPER)

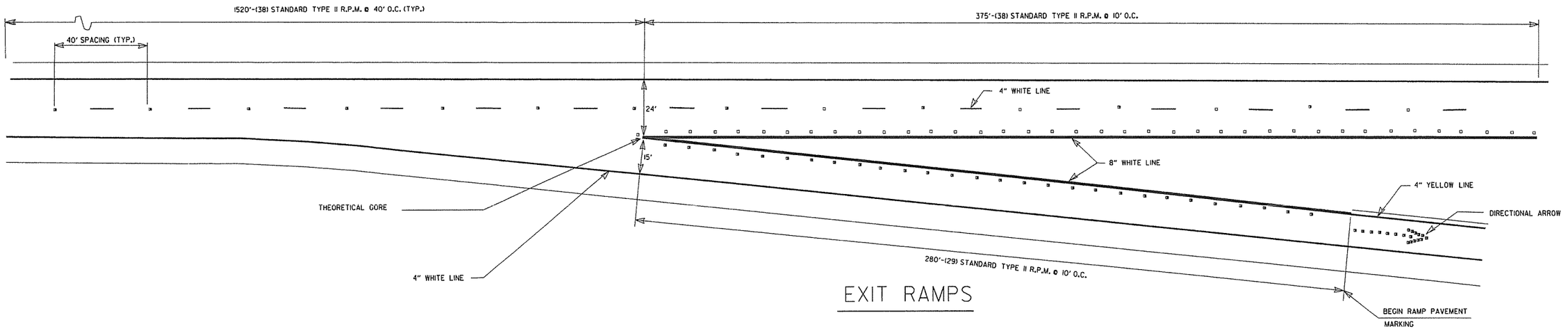
ENTRANCE RAMP

8" WHITE = 228 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 38 EACH

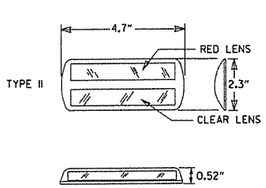
EXIT RAMP
4" WHITE = 280 LIN. FT.
8" WHITE = 655 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 38 EACH
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 48 EACH
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 38 EACH



ENTRANCE RAMPS

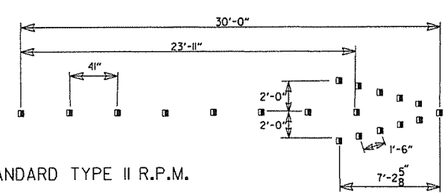


EXIT RAMPS



DETAIL OF
STANDARD
RAISED PAVEMENT MARKERS

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



(19) STANDARD TYPE II R.P.M.

DIRECTIONAL ARROWS

GENERAL NOTES:

THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY AND THE FINAL LOCATION OF THE STRIPING AND PAVEMENT MARKERS SHALL BE DETERMINED BY THE ENGINEER.

THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.

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
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
7-26-12	REVISED RPM NOTATION	
12-15-11	REVISED RPMs ACCORDING TO LATEST POLICY	
11-17-10	REMOVED PLOWABLE PAVEMENT MARKERS	
6-3-10	REVISED PER 2009 MUTCD	
11-18-04	REVISED NOTES	
8-22-02	ADDED & REVISED NOTES; REV. ENTRANCE & EXIT RAMPS	
5-18-00	REMOVED HASHMARKS	
7-02-98	CHANGED TYPES TO ROMAN NUMERALS	
4-26-96	ADDED DIMENSIONS & QUANTITIES; REVISED LANE WIDTH ON EXIT RAMP	
2-2-95	PLACED IN USE	2-2-95

ARKANSAS STATE HIGHWAY COMMISSION

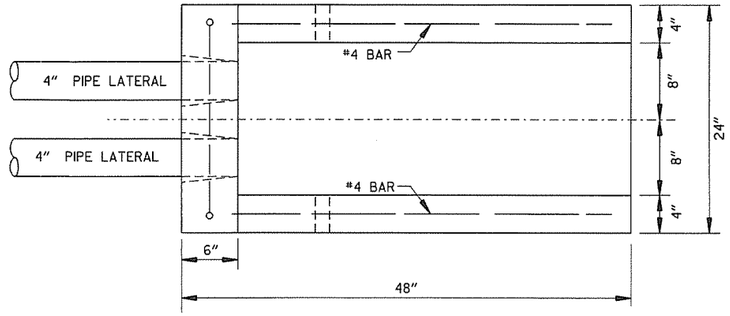
PERMANENT PAVEMENT MARKING ON ACCESS CONTROLLED ROADWAYS

STANDARD DRAWING PM-2

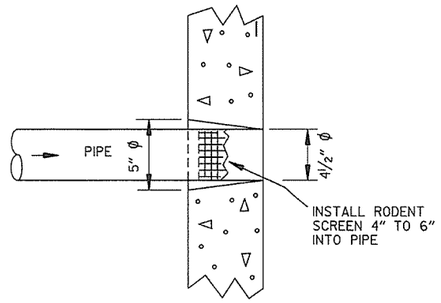
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.

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

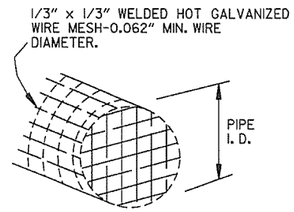
3. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOTEXTILE FABRIC. LAP FABRIC 12" OR THE WIDTH OF THE TRENCH AT THE TOP.



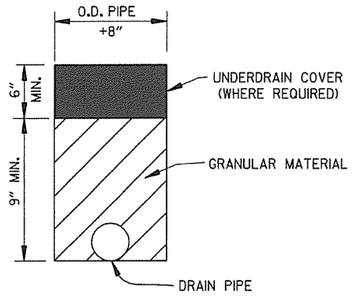
PLAN VIEW

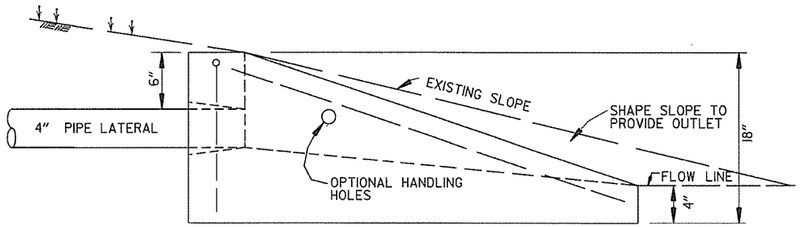


DETAIL OF HOLE FOR 4" PIPE

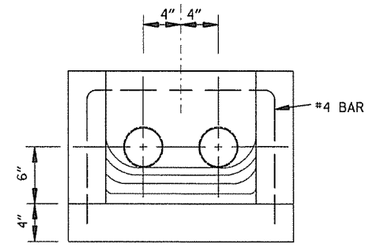


DETAIL OF RODENT SCREEN

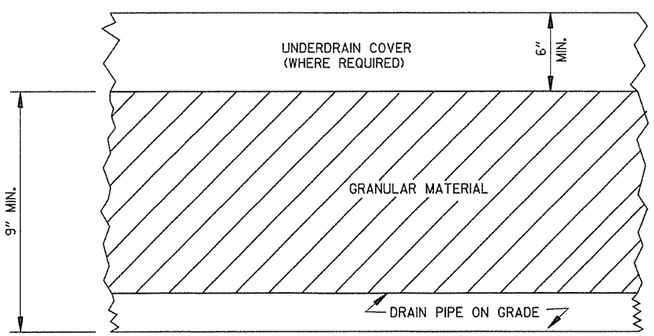




SIDE VIEW

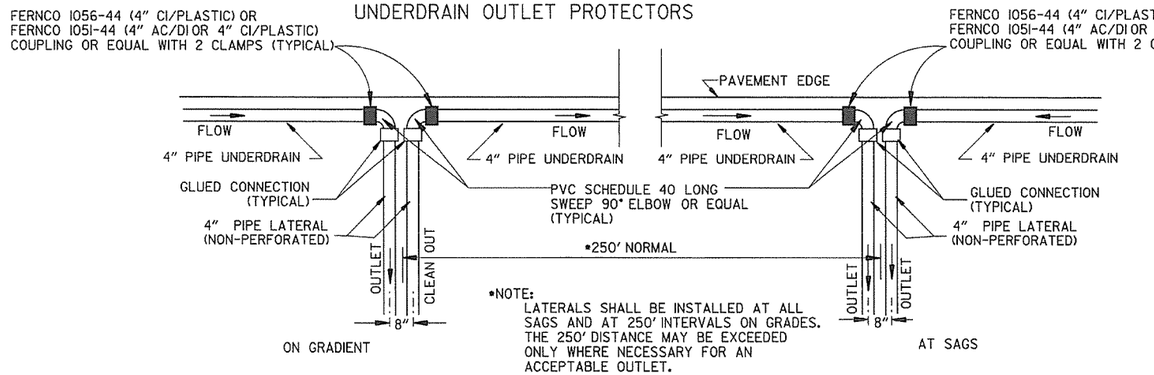


FRONT VIEW



DETAILS OF PIPE UNDERDRAIN

UNDERDRAIN OUTLET PROTECTORS



DETAIL OF PIPE UNDERDRAIN LATERALS WHEN PLACED ALONG PAVEMENT EDGE

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

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

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

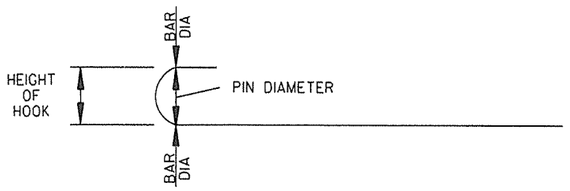
STANDARD DRAWING PU-1

7-20-95 INSTD.PUI

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

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

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



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

OVERALL HEIGHT OF HOOKED BAR DIAGRAM

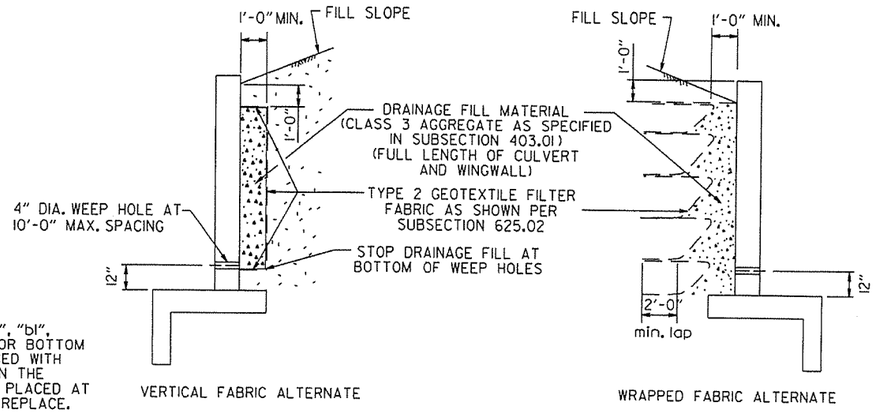
THE HOOKED BARS SHALL BE PLACED IN THE BOTTOM OF THE TOP SLAB AND THE TOP OF THE BOTTOM SLAB. THE STRAIGHT BARS SHALL BE PLACED IN THE TOP OF THE TOP SLAB AND THE BOTTOM OF THE BOTTOM SLAB. SEE TABLE BELOW FOR LENGTHS OF REPLACEMENT HOOKED AND STRAIGHT BARS.

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

REPLACEMENT BAR LENGTHS TABLE

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

L = "OW" - 3 INCHES



WINGWALL & CULVERT DRAINAGE DETAIL

REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

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

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

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

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

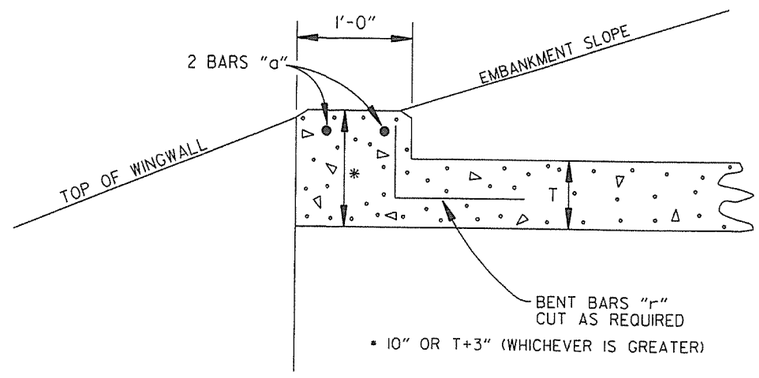
MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE SIDEWALLS OF R.C. BOX CULVERTS AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

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

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

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

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



* 10" OR T+3" (WHICHEVER IS GREATER)

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

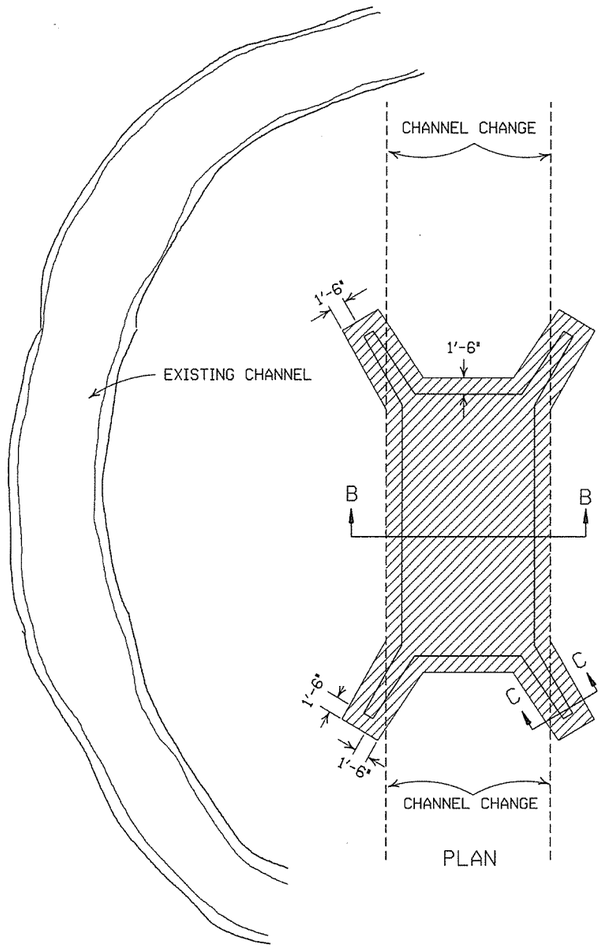
R.C. BOX CULVERT HEADWALL MODIFICATIONS

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

ARKANSAS STATE HIGHWAY COMMISSION

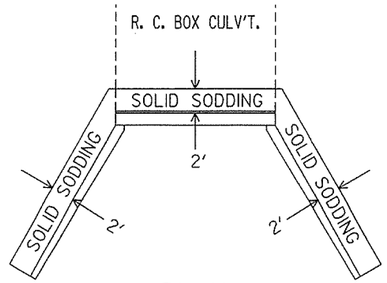
REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1



PLAN

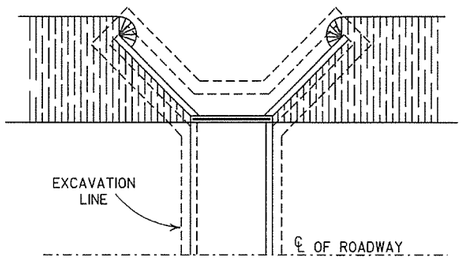
SOLID SODDING



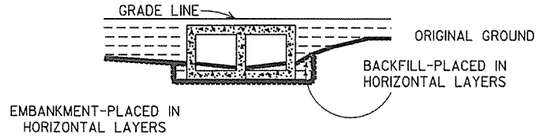
PLAN

PARTIAL SECTION SHOWING SOLID SODDING AT HEADWALLS AND WING WALLS

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

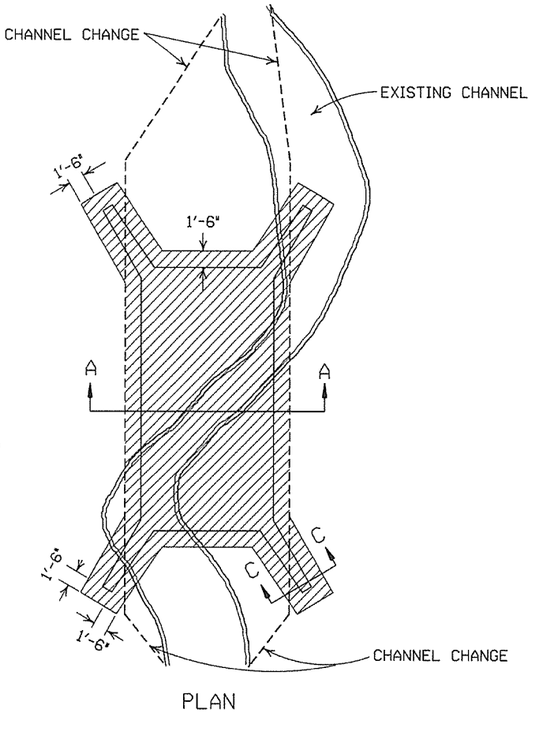


PLAN

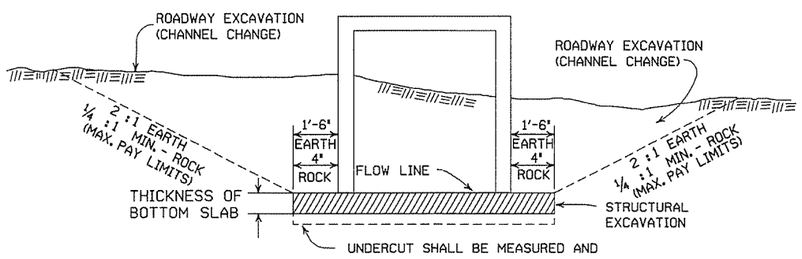


LONGITUDINAL SECTION

BACKFILL DETAILS FOR BOX CULVERT

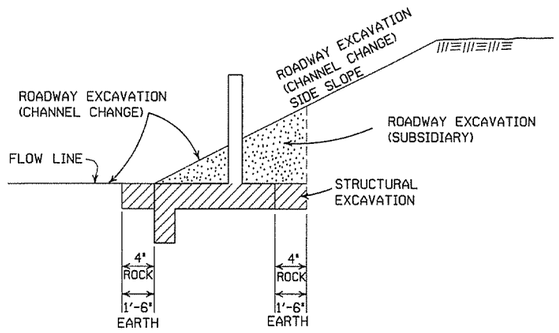


PLAN

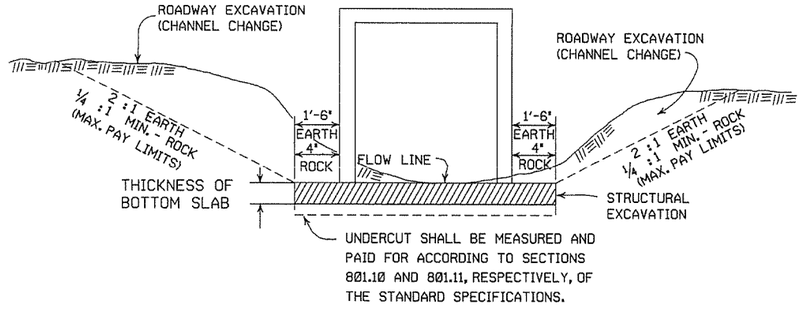


SECTION B-B

DETAILS FOR NEW CHANNELS



SECTION C-C



SECTION A-A

DETAILS THROUGH EXISTING CHANNELS

GENERAL NOTES:

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

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

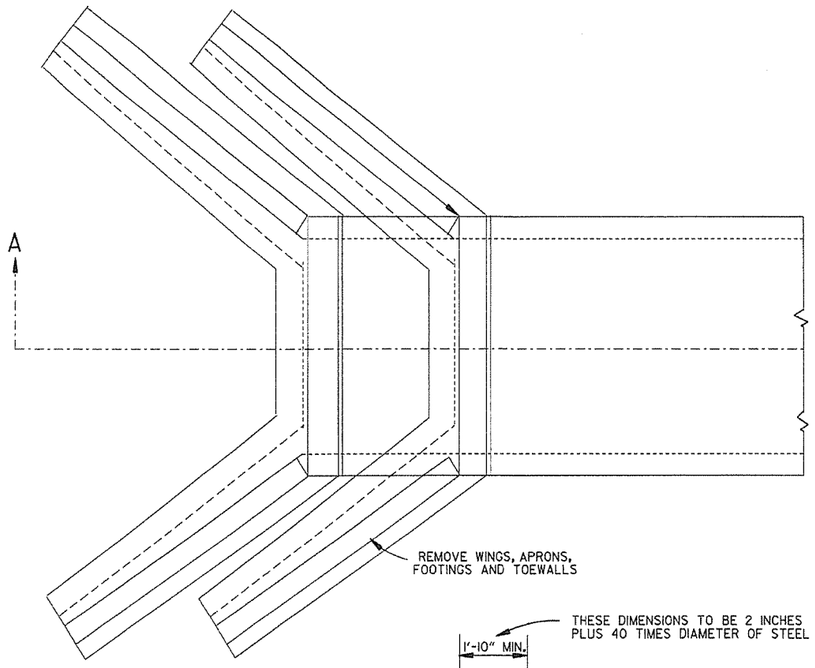
ROADWAY EXCAVATION SHOWN IN SECTION C-C ABOVE AS SUBSIDIARY WILL NOT BE MEASURED OR PAID FOR DIRECTLY, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS OF EXCAVATION.

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

ARKANSAS STATE HIGHWAY COMMISSION

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

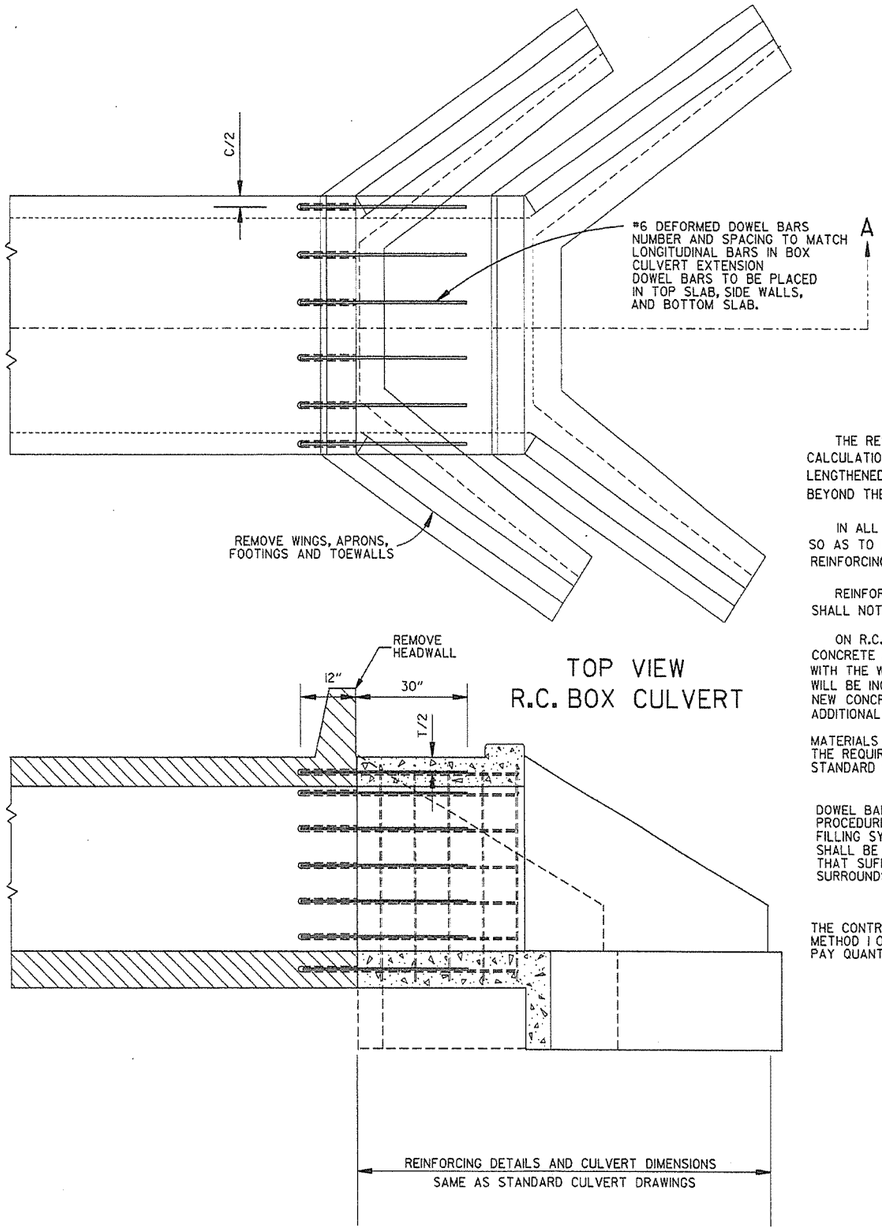
STANDARD DRAWING RCB-2



TOP VIEW
R.C. BOX CULVERT

SECTION A-A

METHOD 1



TOP VIEW
R.C. BOX CULVERT

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

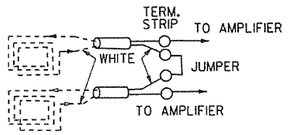
STANDARD DRAWING RCB-3

LOOP DETECTOR INSTALLATION AND TESTING

NOTES:

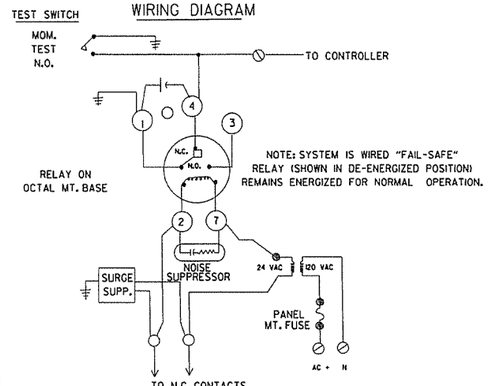
1. LOOPS WITH A PERIMETER GREATER THAN 40' SHALL HAVE TWO TURNS. LOOPS WITH A PERIMETER LESS THAN OR EQUAL TO 40' SHALL HAVE THREE TURNS, UNLESS OTHERWISE NOTED ON THE PLANS. QUADRUPOLE LOOPS SHALL BE TWO TURNS (2-4-2 CONFIGURATION) UNLESS OTHERWISE NOTED.
2. LOOP AND FEEDER WIRE SHALL BE CONTINUOUS 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.

SERIES CONNECTED LOOPS

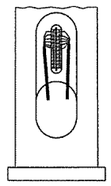


WIND LOOPS COUNTERCLOCKWISE; TAG WIRE EXITING SLOT AND TIE TO WHITE LEAD OF FEEDER WIRE; WHEN LOOPS ARE TIED TO SAME VEHICLE DETECTOR, SERIES CONNECT IN CABINET AS SHOWN.

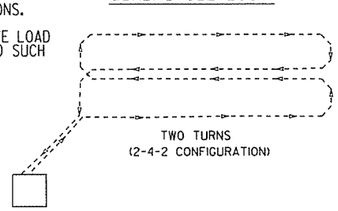
TRAFFIC SIGNAL PRE-EMPTION INTERFACE WIRING DIAGRAM



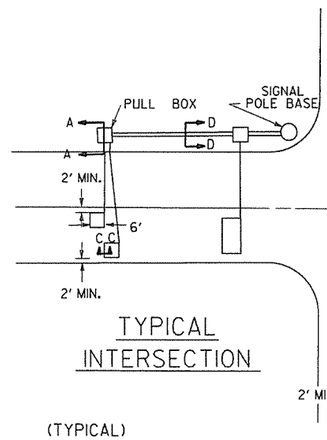
HANDHOLE TERMINAL

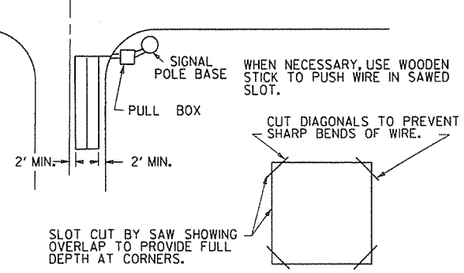


QUADRUPOLE LOOP



TYPICAL INTERSECTION





TYPICAL PROCEDURE FOR DETECTOR LOOP TESTING

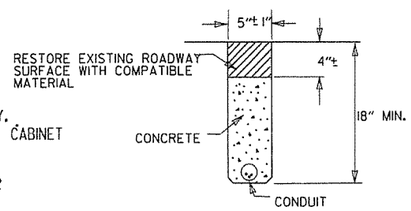
1. DISCONNECT AND TEST CONTINUITY (< 10 OHMS) IF CONTINUITY IS BAD, GO TO TEST 3
2. TEST INSULATION (@ 500 VOLT TEST > 10 MEG-OHM)

   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

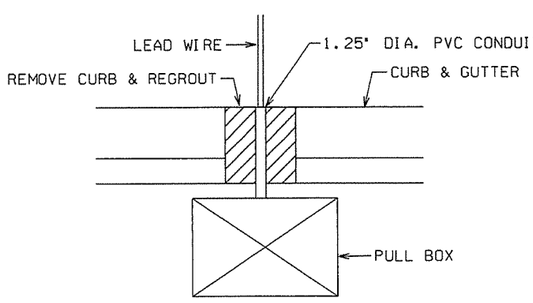
FAILURES TYPICALLY RESULT FROM BROKEN WIRE IN PAVEMENT, FAULTY INSULATION OF LOOP OR FEEDER WIRE, OR POORLY INSULATED SPLICE CONNECTION.

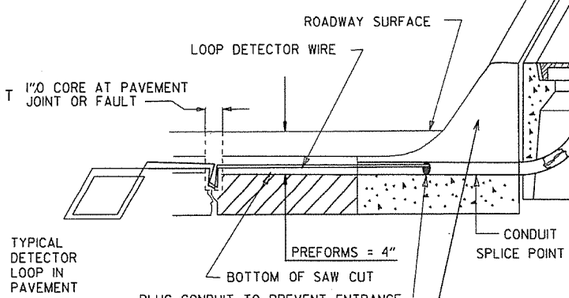
TRENCHING DETAIL

(FOR SAW CUT TRENCH IN ROADWAY)



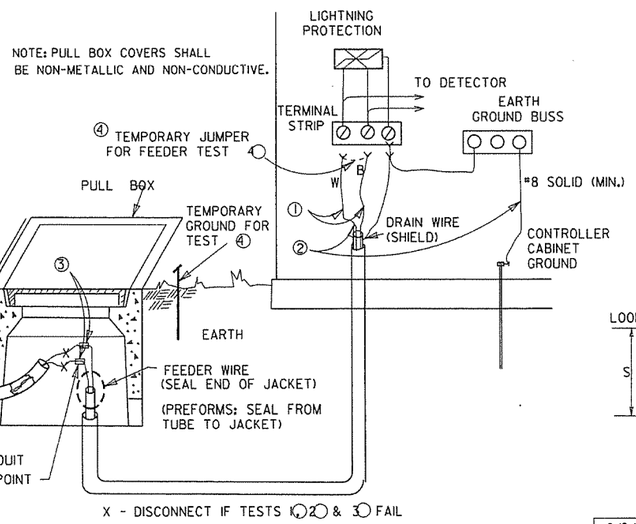
NOTE: CONDUIT SHALL BE INSTALLED IN CURB AS SHOWN OR AS DIRECTED BY THE ENGINEER. END OF CONDUIT SHALL BE WATER-TIGHT.





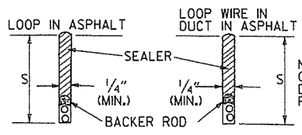
SECTION A-A
1'-6" CONCRETE COMBINATION CURB AND GUTTER

(TYPICAL)

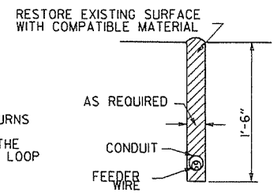


SPECIAL NOTE
IF FEEDER WIRE JACKET IS LEFT UNSEALED AND WATER IS ALLOWED TO ENTER JACKET, CONTRACTOR WILL BE REQUIRED TO REPLACE FEEDER AT NO COST TO THE DEPARTMENT.

TYPICAL SECTIONS FOR PULSE AND PRESENCE LOOP DETECTORS



SECTION C-C
S=2 1/2" IN ASPHALT
S=1 1/2" IN CONCRETE



SECTION D-D

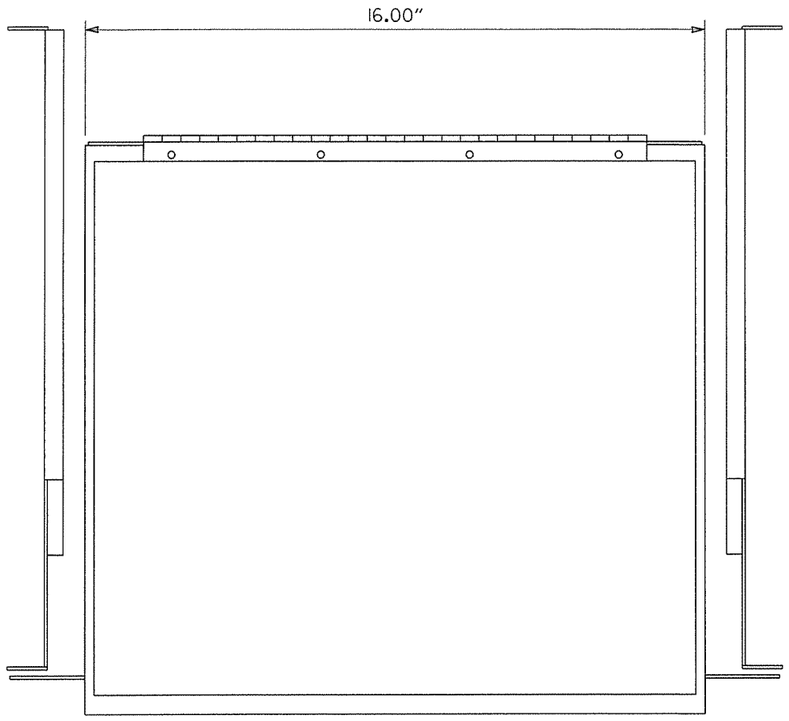
DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
5-17-01	REVISED	
4-11-01	REVISED	
2-4-00	REVISED PRE-EMPTION TEST SWITCH	
11-18-98	REVISED NOTES	
11-21-95	ISSUED	

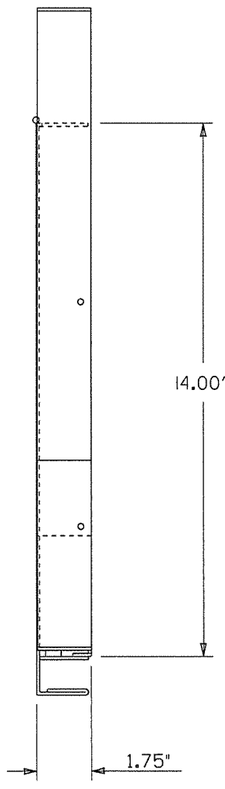
ARKANSAS STATE HIGHWAY COMMISSION

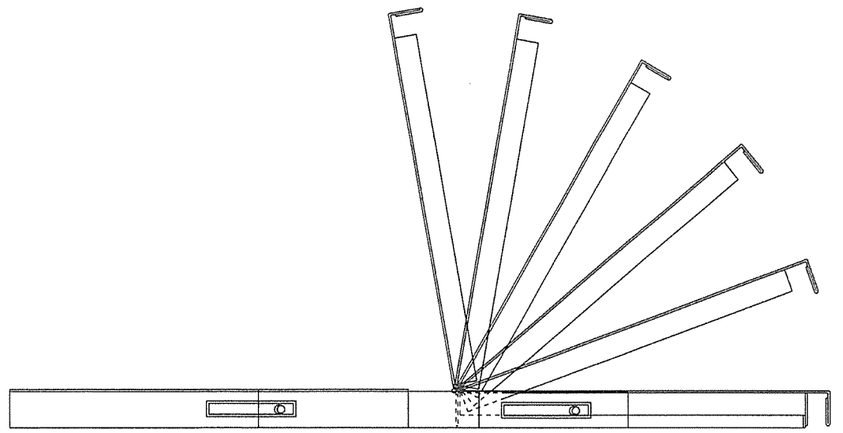
LOOP DETECTOR INSTALLATION

STANDARD DRAWING SD-4

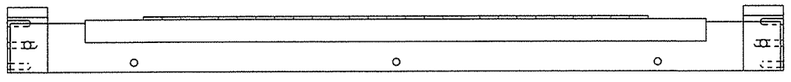
DRAWER PLAN VIEW



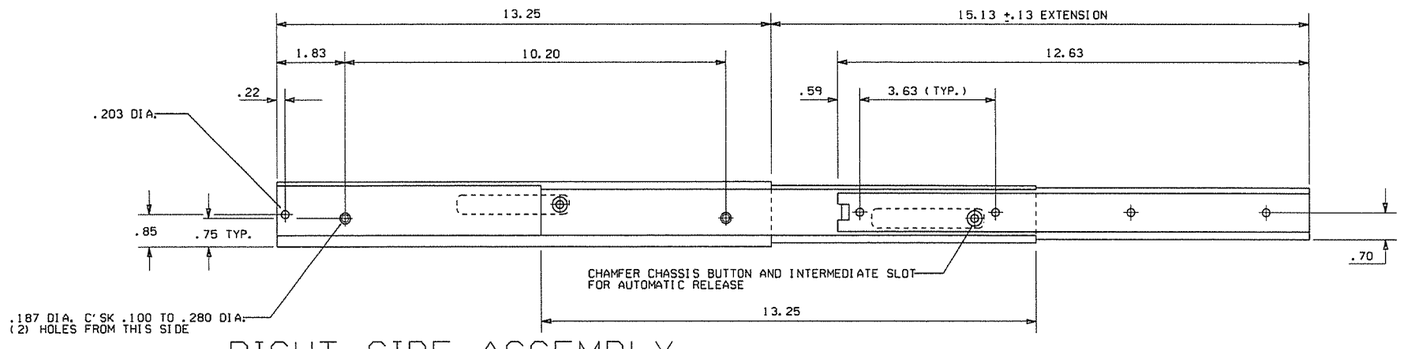




NOTES:
1. RIGHT HAND SLIDE SHOWN, LEFT SLIDE OPPOSITE.
2. GENERAL DEVICES (CC3002-99-0102) OR EQUAL AND CONTAINS (1) RIGHT HAND SLIDE ASSEMBLY, (1) LEFT HAND SLIDE ASSEMBLY.
3. ALL HARDWARE NECESSARY TO FASTEN SLIDE ASSEMBLY TO UNDERSIDE OF CONTROLLER SHELF SHALL BE INCLUDED.



FRONT VIEW



RIGHT SIDE ASSEMBLY

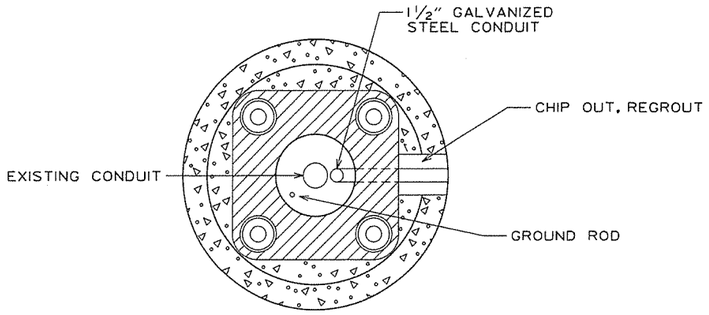
9-12-13	ISSUED AS STANDARD DRAWING	
6-15-05	ISSUED	
DATE	REVISION	DATE FILM

ARKANSAS STATE HIGHWAY COMMISSION

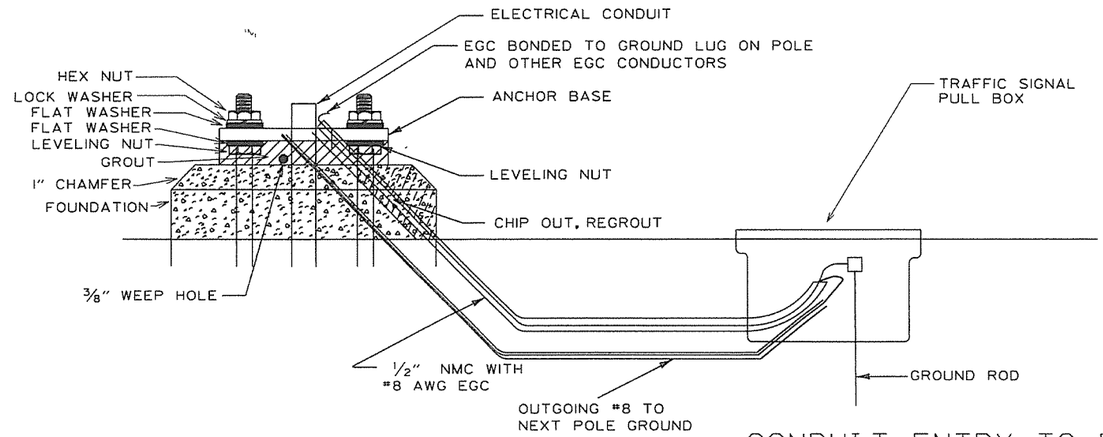
CONTROLLER CABINET UTILITY DRAWER

STANDARD DRAWING SD-5

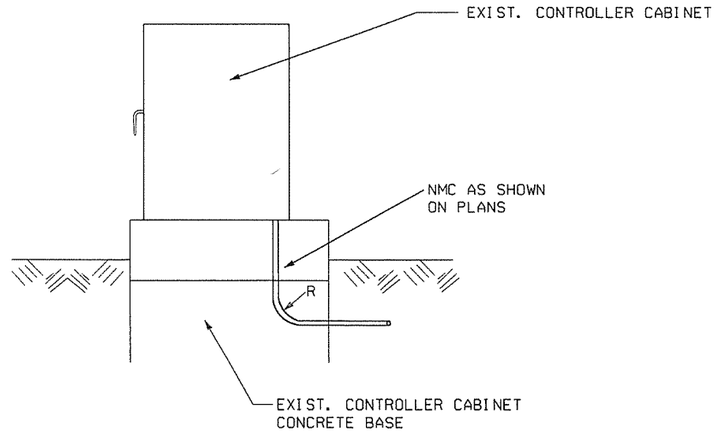
CONDUIT ENTRY TO EXISTING POLE BASE



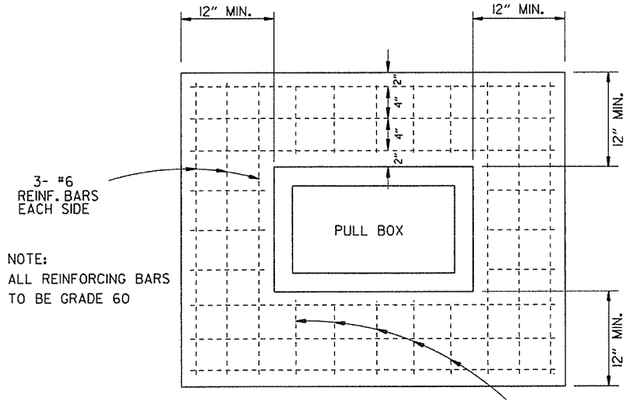
ANCHOR BASE



CONDUIT ENTRY TO EXISTING CONTROLLER CABINET

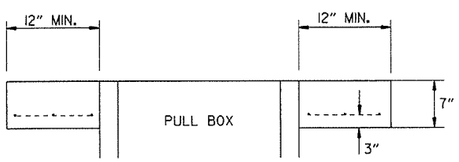


NOTE: ENTRY TO CABINET SHALL BE THROUGH A CUT IN THE BASE SUFFICIENT TO PROVIDE ADEQUATE CONDUIT RADIUS FOR ITEM.



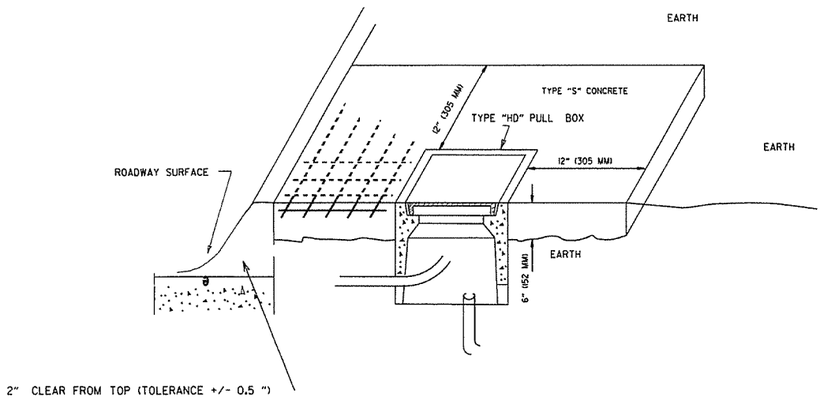
NOTE:
ALL REINFORCING BARS TO BE GRADE 60

TOP



ELEVATION

TYPE "HD" CONCRETE PULL BOX DETAIL



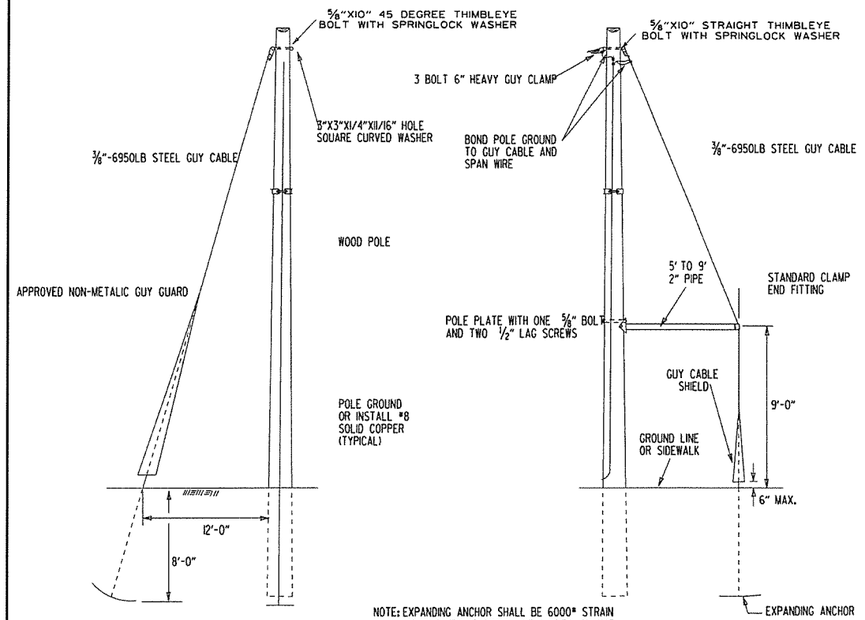
NOTE: ALL TYPE I AND TYPE 2 HD PULL BOXES ARE INSTALLED WITH AN APRON OF CONCRETE 12" (305 MM) WIDE AND 6" (152 MM) IN DEPTH. ALL PAYMENT SHALL BE INCLUDED IN THE PRICE OF THE TYPE HD PULL BOX. PULL BOX SHALL BE INSTALLED FLUSH TO SURROUNDING GRADE UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER. THE CONCRETE 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
9-12-13	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

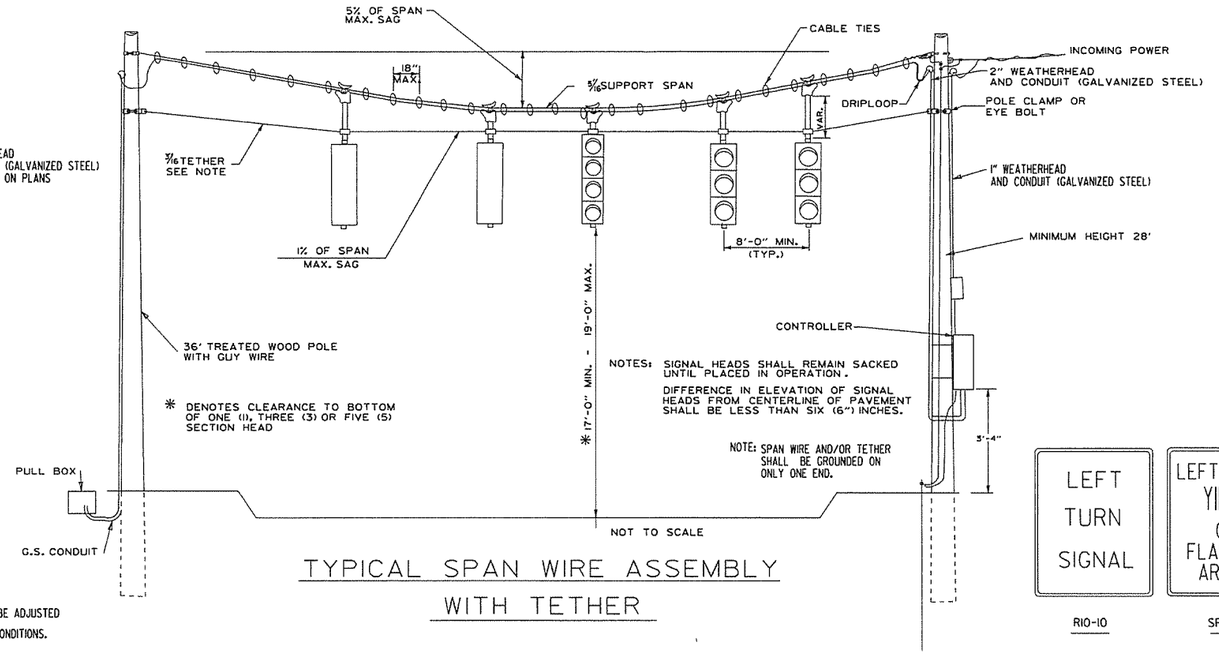


STANDARD GUY INSTALLATION

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.



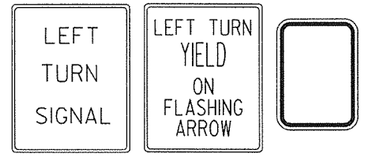
* DENOTES CLEARANCE TO BOTTOM OF ONE (1), THREE (3) OR FIVE (5) SECTION HEAD

NOTES: SIGNAL HEADS SHALL REMAIN SACKED UNTIL PLACED IN OPERATION.

DIFFERENCE IN ELEVATION OF SIGNAL HEADS FROM CENTERLINE OF PAVEMENT SHALL BE LESS THAN SIX (6") INCHES.

NOTE: SPAN WIRE AND/OR TETHER SHALL BE GROUNDED ON ONLY ONE END.

TYPICAL SPAN WIRE ASSEMBLY WITH TETHER

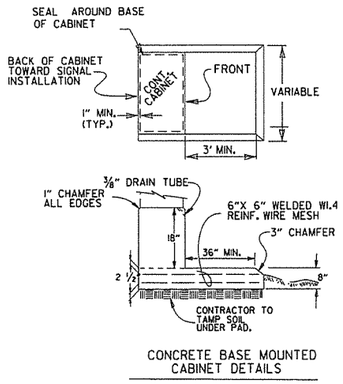


R10-10 SPECIAL R10-3E (SEE MUTCD)

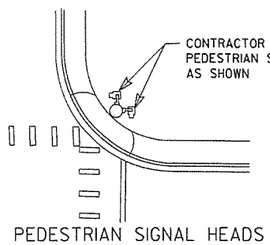
NOTES: SPAN WIRE POLES SHALL BE MOUNTED A MINIMUM OF 4' BEHIND CURB OR SHOULDER.

SPAN WIRE ASSEMBLIES WILL REQUIRE TETHER UNLESS OTHERWISE NOTED ON PLAN SHEETS. CABLE TIES SHALL BE SUITABLE FOR OUTSIDE USE (BLACK).

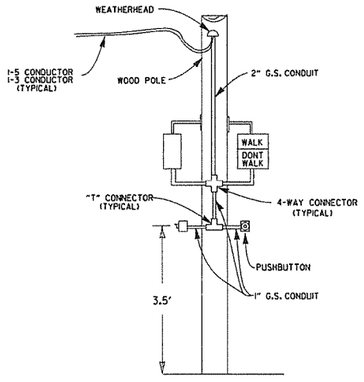
THE CONTROLLER POWER SUPPLY GROUND BUSS SHALL BE BONDED TO THE GROUND ROD WITH A #8 AWG SOLID COPPER WIRE. ON EXISTING INSTALLATIONS WITH NO GROUND ROD, CONTRACTOR SHALL INSTALL A 10' X 5/8" COPPERWELD GROUND ROD.



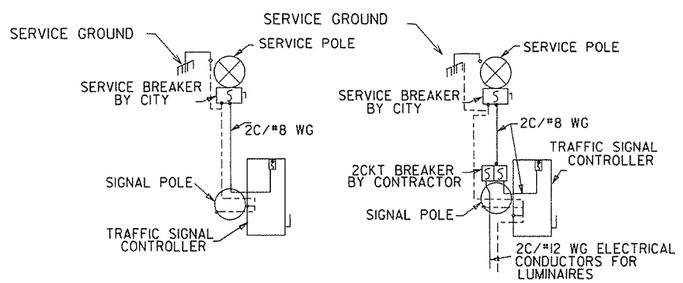
CONCRETE BASE MOUNTED CABINET DETAILS



PEDESTRIAN SIGNAL HEADS



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.

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 (2003 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.

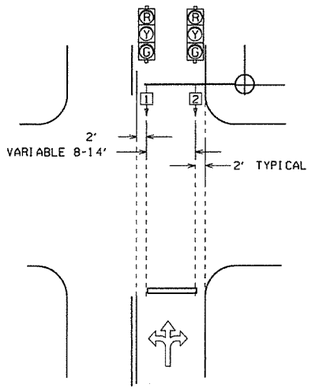
DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
7-21-11	REVISED PED SIGN, CABINET GROUNDING	
4-17-08	REVISED TO 2001 AASHTO STANDARDS	
10-12-04	REV. CABINET ORIENT. & SIGNAL OPER.	
5-22-02	REV. TYP. SPAN WIRE ASSEMBLY	
12-27-99	REVISED	
11-18-98	REVISED NOTES	
11-21-95	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

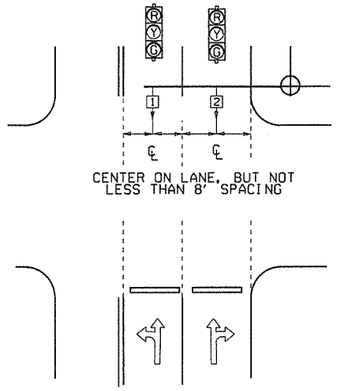
SPAN WIRE ASSEMBLY WOOD POLE

STANDARD DRAWING SD-7

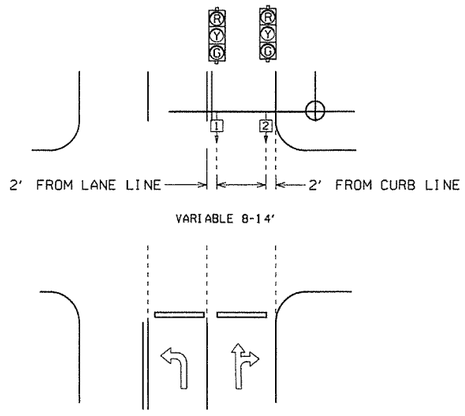
(A)



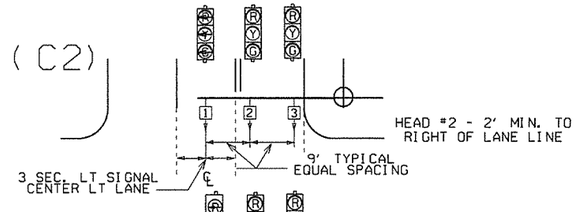
(B)



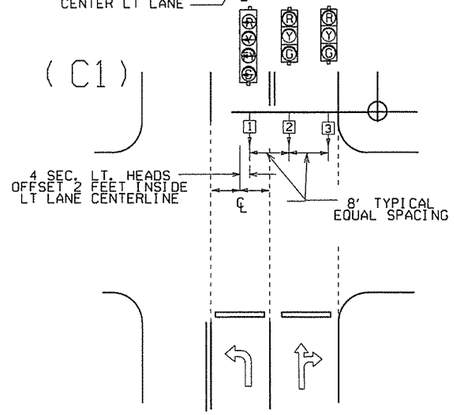
(C)



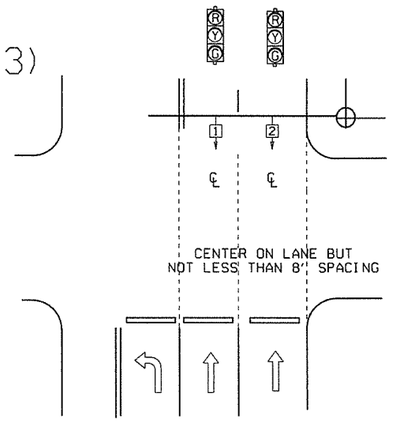
(C2)



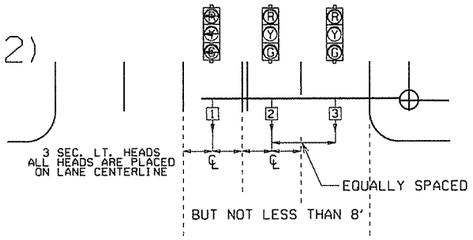
(C1)



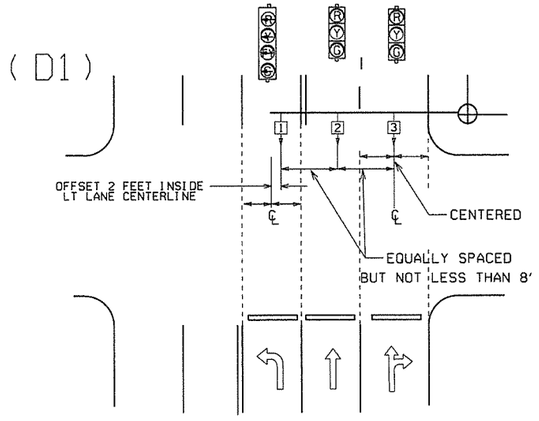
(C3)



(D2)

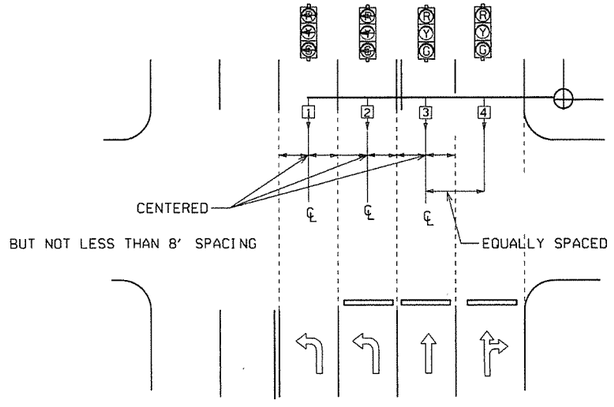


(D1)



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.

(E)



℄ = 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-1 OF 2009 MUTCD.

DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
3-11-10	2009 MUTCD	
12-9-99	ISSUED	

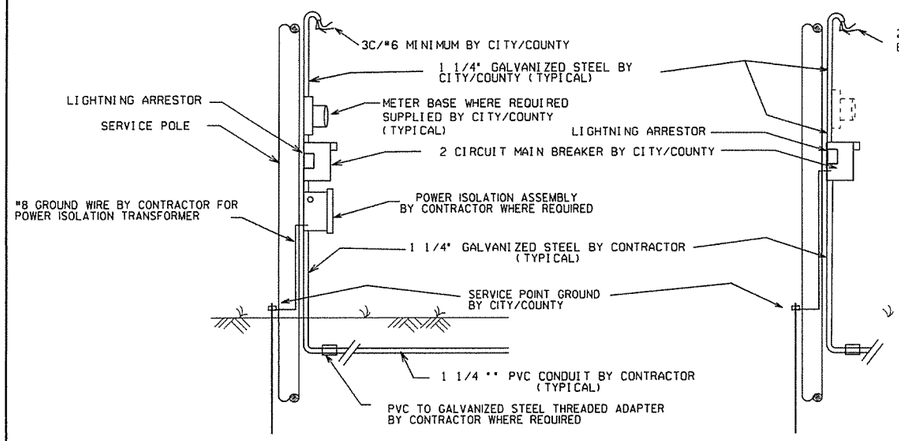
ARKANSAS STATE HIGHWAY COMMISSION

SIGNAL HEAD PLACEMENT

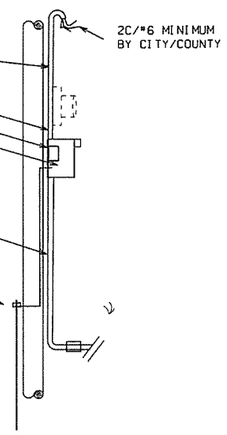
STANDARD DRAWING SD-8

MAIN BREAKER NOT NEAR CONTROLLER CABINET SECONDARY REQUIRED

WITH POWER ISOLATION ASSEMBLY

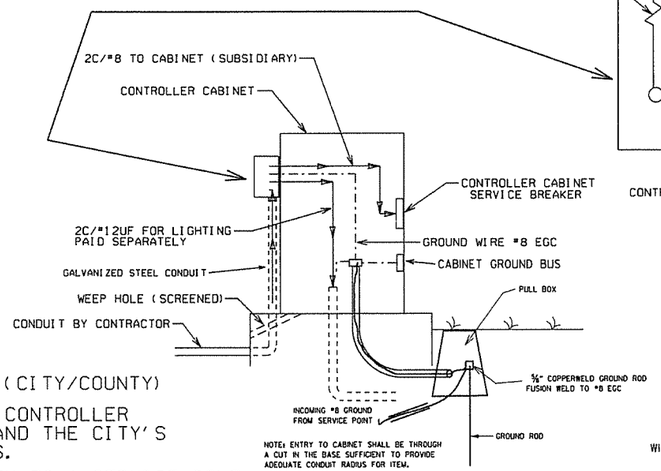


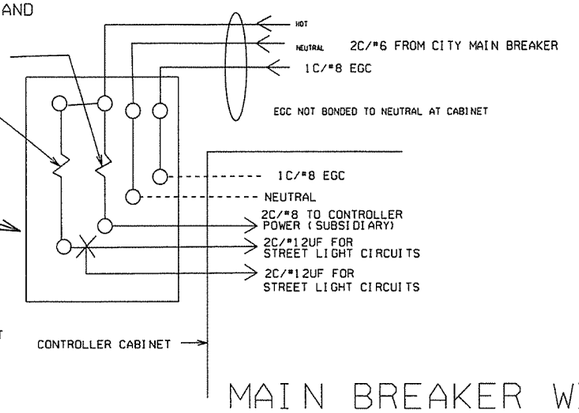
WITHOUT POWER ISOLATION ASSEMBLY



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.

SECONDARY BREAKER BY CONTRACTOR (SUBSIDIARY)





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.

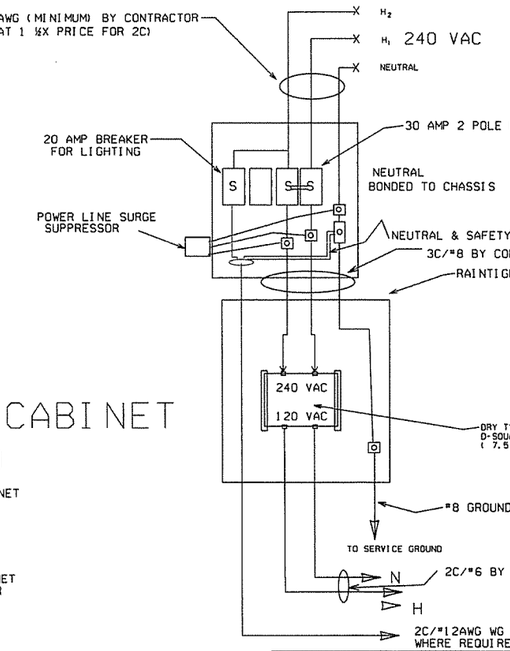
1. ALL SITUATIONS: ELECTRICAL SERVICE SHALL BE PROVIDED BY THE CITY/COUNTY TO A SERVICE POLE WITH EXTERNAL RAINTIGHT BREAKER (MAIN BREAKER) AT A MUTUALLY ACCEPTABLE POINT WITHIN THE RIGHT-OF-WAY. SERVICE POINT INCLUDES GALVANIZED STEEL CONDUIT TO A POINT 18" BELOW GROUND LINE, TWO CIRCUIT MAIN BREAKER, 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.

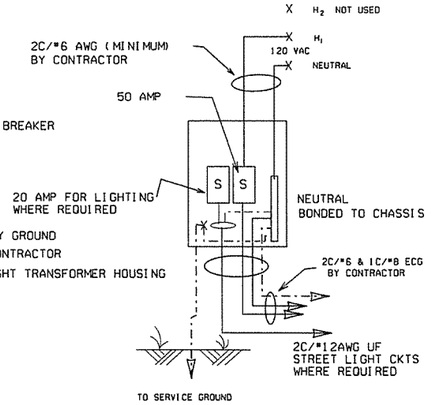
3. MAIN BREAKER NEAR CONTROLLER CABINET: ALL COMPONENTS OF THE SERVICE POINT WITH THE EXCEPTION OF THE WIRE AND WIRING ABOVE THE MAIN BREAKER IS FURNISHED AND INSTALLED BY THE CONTRACTOR. WIRING FROM MAIN BREAKER INCLUDING CONNECTION TO THE UTILITY, IS THE RESPONSIBILITY OF THE CITY/COUNTY. IF METER 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

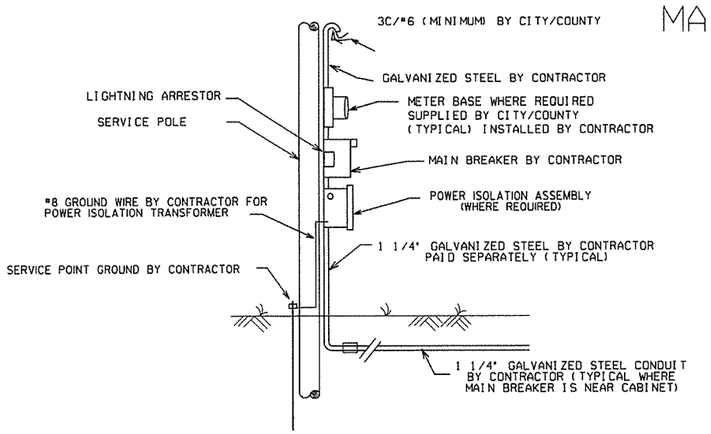


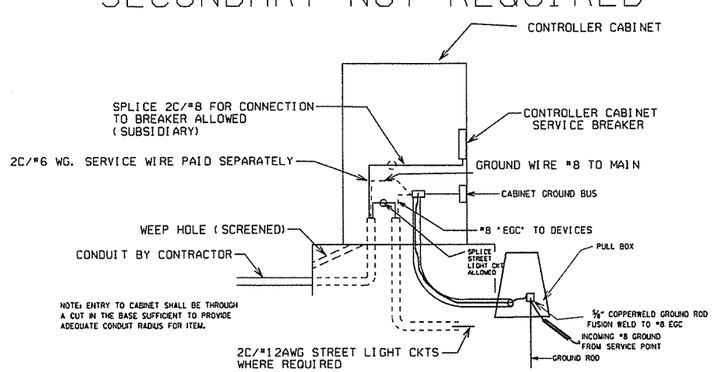
WITHOUT POWER ISOLATION ASSEMBLY
2 CIRCUIT MAIN BREAKER



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 SIGN FACES SHALL BE CONSTRUCTED OF HIGH INTENSITY SHEETING (TYPE III) WITH SILKSCREEN LEGEND AND BORDER.

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 (2003 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", 36 LB., 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.

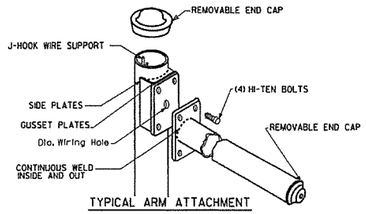
4. POLE/MAST ARM CAP -- POLE AND MAST ARMS CAPS SHALL BE PROVIDED, FABRICATED OF EITHER STEEL OR CAST ALUMINUM.

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).

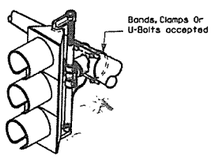
6. POLE/MAST ARM TAPER AND SLOPE - AVERAGE TAPER OF SIGNAL ARMS AND POLE SHALL BE 0.125 TO 0.15 INCHES PER FT.

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.

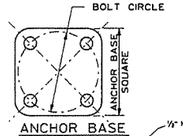
7. NUT COVERS - EACH POLE SHALL INCLUDE A BOLT DOWN NUT COVER FOR EACH ANCHOR BOLT.



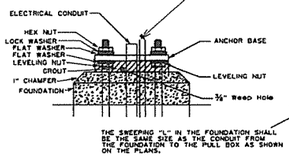
TYPICAL ARM ATTACHMENT

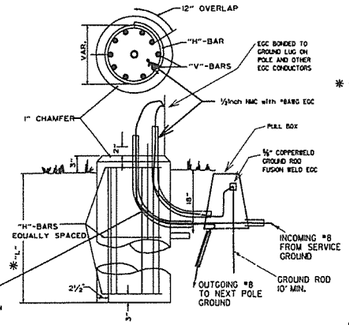


NOTE: THE SIGNAL SHALL BE CONNECTED TO THE MAST ARM BY BRACKETING AS DIRECTED BY THE ENGINEER.



ANCHOR BASE



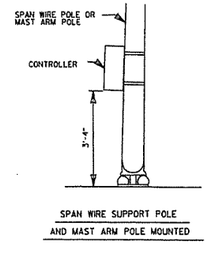


THE GROUND ROD SHALL BE FUSION WELDED TO A 10'/*8 A.W.G. SOLID COPPER GROUND WIRE. ATTACHMENT TO THE PRIMARY GROUND MAY BE BY AN APPROVED CLAMP. THE ROD IS TO BE LOCATED IN THE CONCRETE PULL BOX.

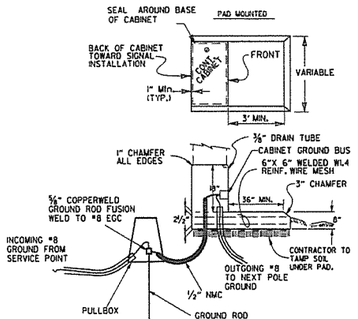
TYPICAL FOUNDATION DETAILS

POLE FOUNDATION MINIMUM DIMENSIONS AND STEEL REINFORCING. ALL REINFORCING STEEL SHALL BE GRADE 40 MIN.

ARM LENGTH	FDN. DIAMETER	DEPTH "L" *	STEEL VERT.	STEEL HORZ.	STEEL 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.

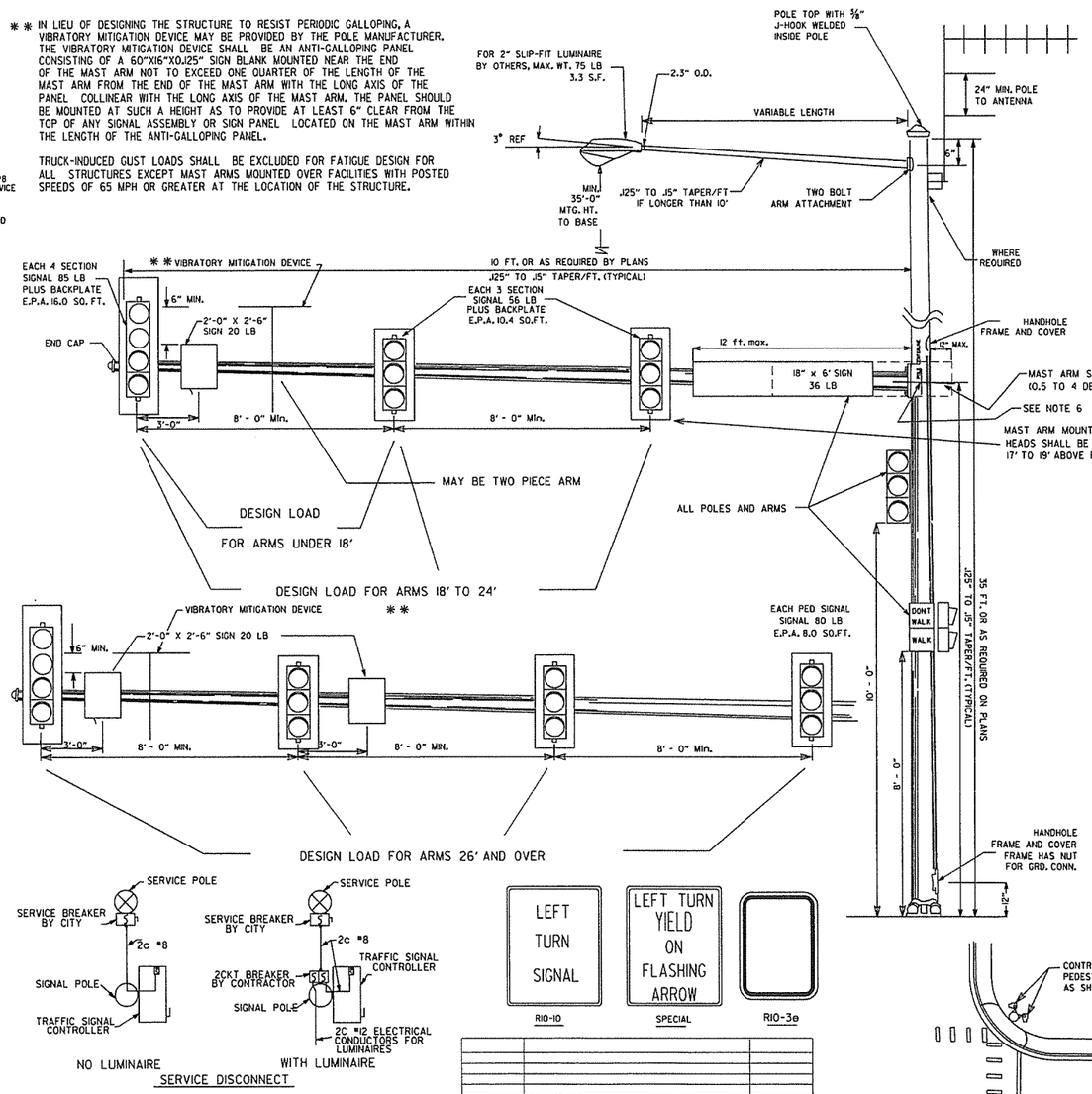
THE CONTRACTOR MAY BE REQUIRED TO ALTER THE FLASHING DISPLAY DURING THE TEMPORARY FLASH PERIOD. AT THE TIME INTERSECTION IS PLACED IN PERMANENT OPERATION, THE FLASH SEQUENCE SHALL THEN BE RETURNED TO THAT INDICATED ON THE PLAN SHEETS. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THESE ALTERATIONS 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

R10-10 SPECIAL R10-3e

DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
7-21-11	REVISED VMD SIGNAL HEADS	
5-21-09	REVISED GROUNDING	
7-30-08	REVISED GROUNDING	
4-25-08	ADDED VIBRATORY MITIGATION DEVICE & NOTES	
4-18-08	REVISED AASHTO NOTES	
4-17-08	REVISED TO 2001 AASHTO STANDARDS	
10-12-04	REVISED CABINET ORIENTATION	
6-23-04	REVISED	
5-2-04	REV. NOTE 3/AASHTO REQUIREMENTS	
6-8-01	REV. NOTES & POLE MAST ARM SLOPE	
4-18-01	REVISED POLE TAPERS	
4-25-00	REV. NOTES & SIGNAL HEAD PLACEMENT	
8-22-99	REVISED FOUNDATION DETAILS	
8-17-98	REVISED DETAILS AND NOTES	
8-21-95	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

STEEL POLE WITH MAST ARM

STANDARD DRAWING SD-11

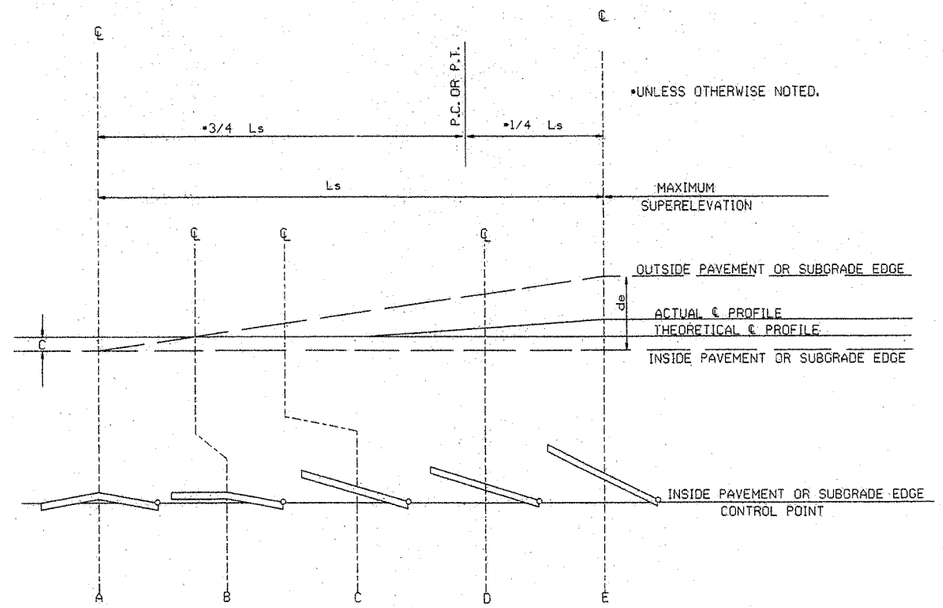
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

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			0.026			0.030			0.037	275	300
1° 15′	N.C.			R.C.			0.026			0.032			0.037			0.046		
1° 30′	N.C.			0.021			0.031	200		0.037	225		0.043	250		0.054		
1° 45′	N.C.			0.025	175		0.036			0.043		300	0.049		300	0.062		
2° 00′	R.C.			0.028			0.040			0.048			0.055			0.070		
2° 15′	R.C.			0.031			0.045		250	0.053			0.061			0.078	300	350
2° 30′	0.021			0.034			0.049			0.058			0.067			0.085	315	
2° 45′	0.023			0.037		200	0.053			0.063			0.072			0.091	335	
3° 00′	0.025			0.040			0.057			0.067	230		0.077	260		0.096	350	
3° 15′	0.027	150		0.043			0.061			0.072	245		0.082	275		0.098	360	400
3° 30′	0.029			0.046			0.065	205		0.076	255		0.086	285		0.100	360	
3° 45′	0.031		200	0.049			0.069	215		0.080	265		0.090	295	350			
4° 00′	0.033			0.051			0.072	225		0.083	270		0.093	305				
4° 30′	0.037			0.056			0.078	240		0.087	280		0.096	315				
5° 00′	0.040			0.061			0.083	250		0.091	295		0.098	320				
5° 30′	0.043			0.066	185		0.088	260		0.094	300	350						
6° 00′	0.046			0.070	190		0.092	270	300	0.096	305							
6° 30′	0.050			0.074	200		0.095	280		0.100	315							
7° 00′	0.053			0.078	210		0.098	285										
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	250												
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	250													
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′ | 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.

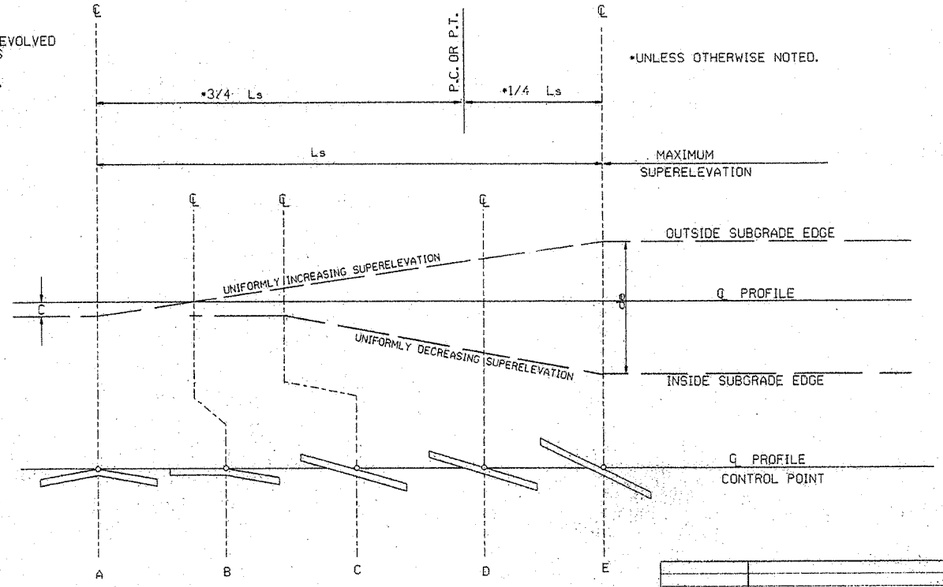
GENERAL NOTES

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

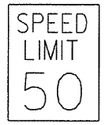
R1-1

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

R1-2

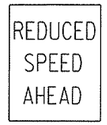
STD. 36"X36"X36"
EXPWY. 48"X48"X48"
FWY. 60"X60"X60"

R2-1



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

R2-5A



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

R2-5C

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

R4-1

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

R4-2

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

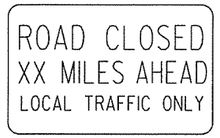
R5-1

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

R11-2

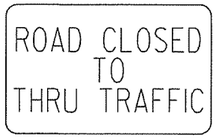
48"X30"

R11-3A



60"X30"

R11-4

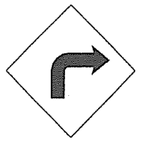


60"X30"

RSP-1

48"X30"

W1-1



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

W1-2

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

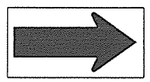
W1-3

STD. 48"X48"

W1-4

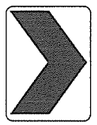
STD. 48"X48"

W1-6



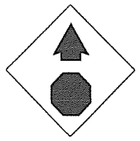
STD. 48"X24"
SPECIAL 60"X30"

W1-8



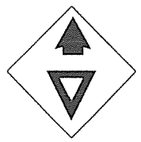
STD. 18"X24"
SPECIAL 24"X30"
EXPWY. 30"X36"
FWY. 36"X48"

W3-1



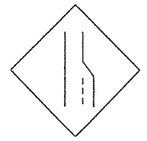
STD. 36"X36"
SPECIAL 48"X48"

W3-2



STD. 36"X36"
SPECIAL 48"X48"

W4-2

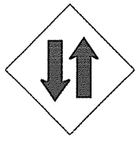


STD. 36"X36"
FWY. 48"X48"

W5-1

STD. 36"X36"
SPECIAL 48"X48"

W6-3



EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7

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

W9-2

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

W13-1

STD. 24"X24"

W20-1

STD. 48"X48"

W20-2

STD. 48"X48"

W20-3

STD. 48"X48"

W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

W20-7a

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

W21-2

STD. 30"X30"
SPECIAL 36"X36"

W21-5

STD. 30"X30"
SPECIAL 36"X36"

W24-1

STD. 36"X36"

W1-4b

STD. 48"X48"

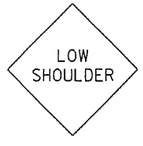
R56-1

STD. 18"X18"

W8-11

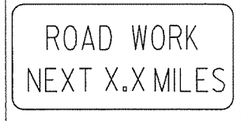
STD. 36"X36"
FWY. 48"X48"

W8-9



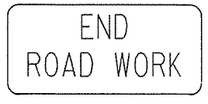
STD. 36"X36"
FWY. 48"X48"

G20-1



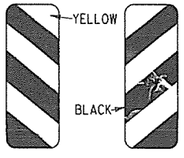
60"X24"

G20-2



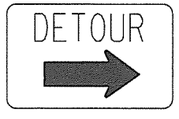
48"X24"

OM-3L OM-3R



12"X36"

M4-9



STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

R55-1

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.

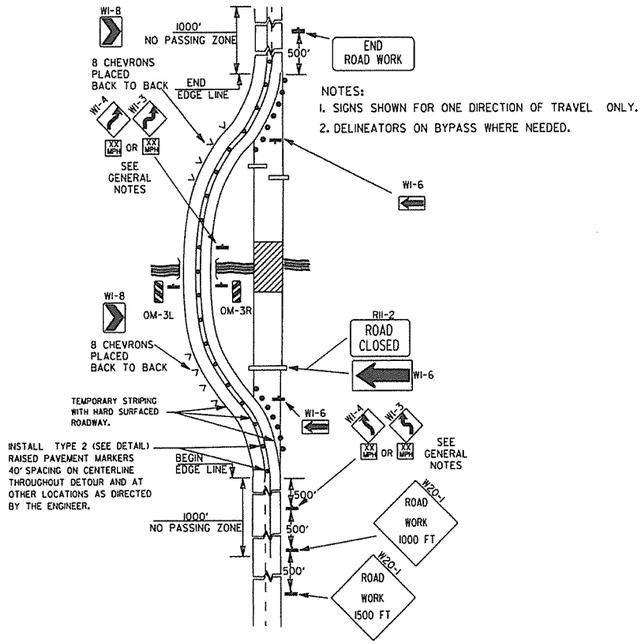
- NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.

DATE	REVISION	FILMED
12-15-11	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7	
10-12-95	ADDED R55-1	
6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	6-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION

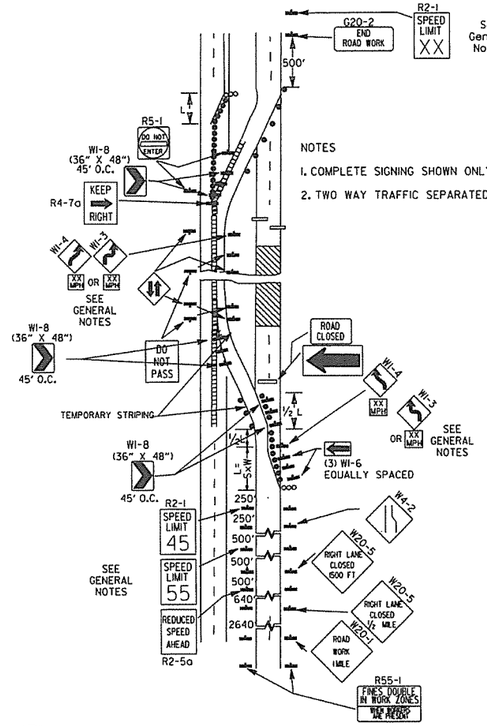
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



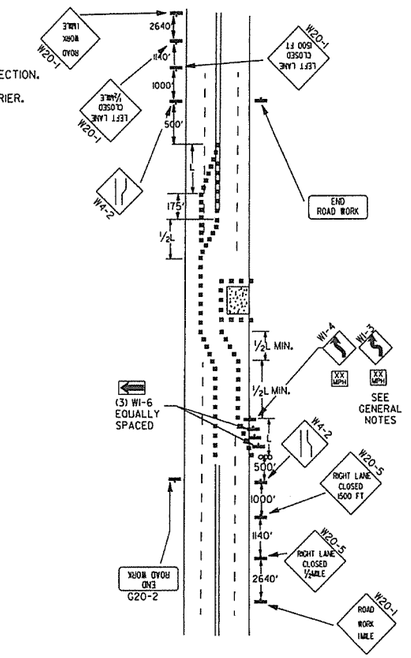
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

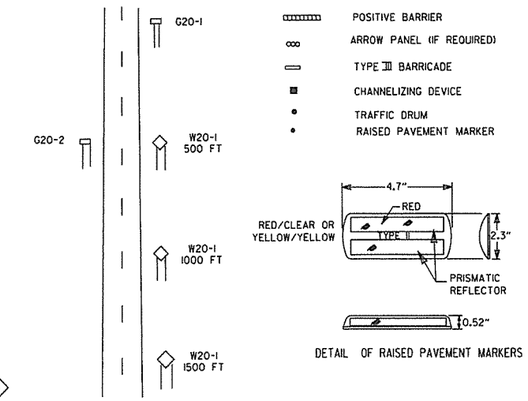


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

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

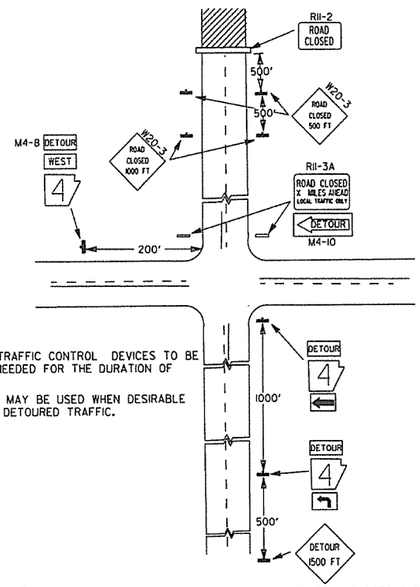


(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



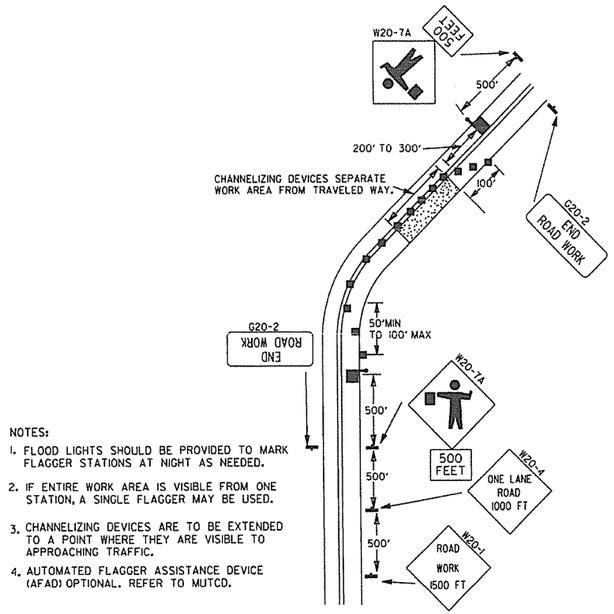
DETAIL OF RAISED PAVEMENT MARKERS

TYPICAL ADVANCE WARNING SIGN PLACEMENT



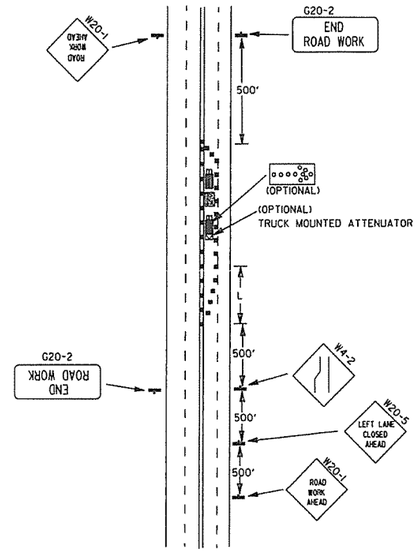
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

(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.

TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

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

WHERE:
L= MINIMUM LENGTH OF TAPER.
S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.
W= WIDTH OF OFFSET.

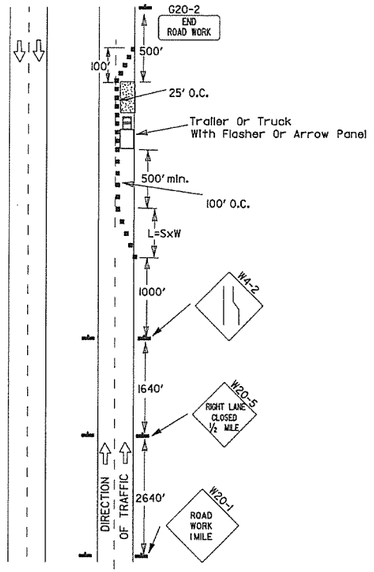
GENERAL NOTES:
1. ADVISORY SPEED POSTED ON WI-3 OR WI-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE WI-4 WHEN SPEED IS GREATER THAN 30MPH AND WI-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE R2-5A 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.

DATE	REVISION	FILMED
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON WI-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

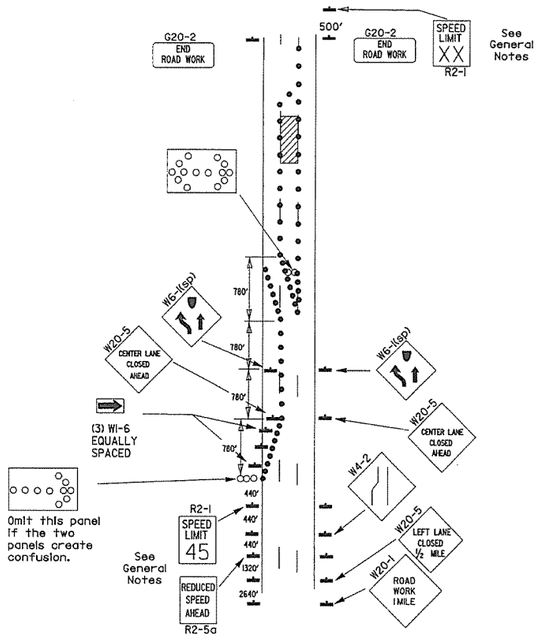
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

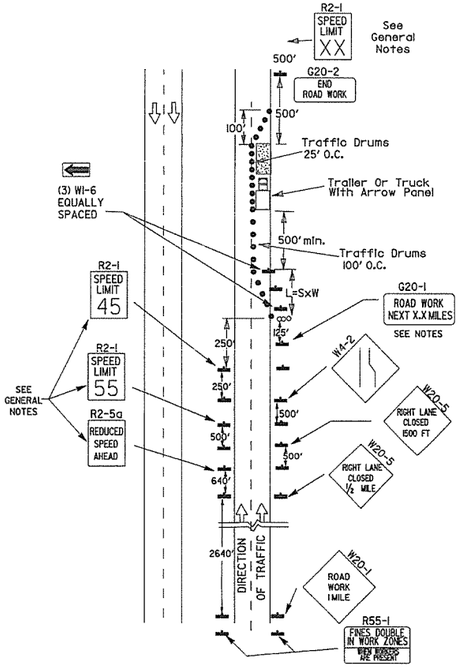
STANDARD DRAWING TC-2



(A) Typical application - daytime maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.



(B) Typical application - 3-lane oneway roadway where center lane is closed.



(C) Typical application - construction operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

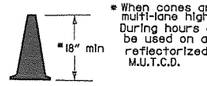
KEY:

- ○○○ Arrow Panel (If Required)
- ■ Channelizing Device
- ● Traffic drum

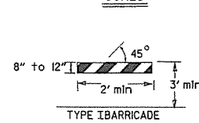
GENERAL NOTES:

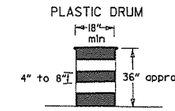
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional 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 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of 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.

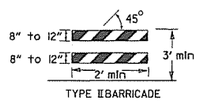
Channelizing devices

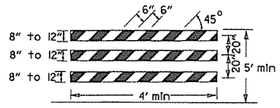


* When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.

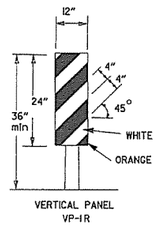




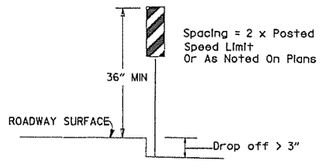




NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.



VERTICAL PANEL PLACEMENT



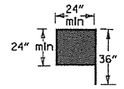
TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

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.

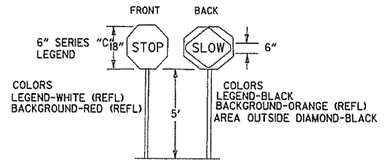
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

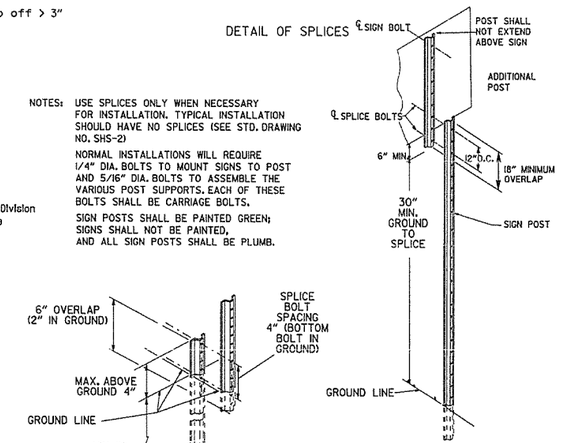
FLAG



Flag shall be of good grade red material

STOP SLOW PADDLE

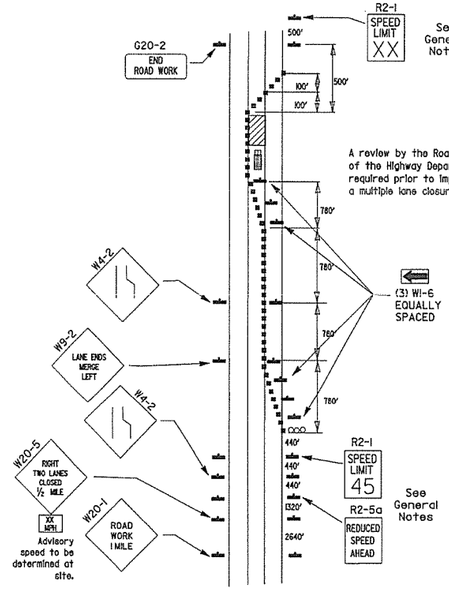




NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-2)

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.

SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.



(D) Typical application - closing multiple lanes of a multilane highway.

DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1 & REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

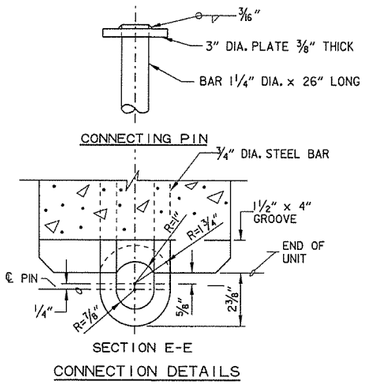
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

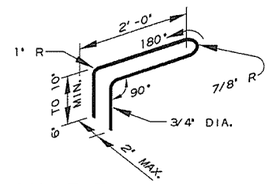
STANDARD DRAWING TC-3

REINFORCING BAR TABLE PER BARRIER UNIT

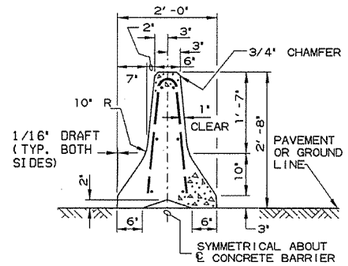
MARK	LOCATION	BAR SIZE	(NO. BARS)	SKETCH
H-1	HORIZONTAL IN BARRIER TIED INSIDE V-1 BARS	#5	(6)	19'-3"
H-2	CENTERED ABOVE DRAIN SLOTS LONG. & TRANSVERSELY	#5	(6)	6'-6"
H-3	TIED ABOVE H-1 BARS TO SUPPORT H-2, TIED TO V-1	#4	(2)	1'-6"
S-1	OVER LIFT HOLES	#4	(2)	2'-5", LIFTING HOLE, 90°, 3 3/8" R
S-2	HORIZ. AROUND SLOTS BETWEEN V-1'S @ DRAIN SLOTS	#4	(2)	1 1/2" R, SLOTS, 7", 1'-6", 1" MIN. CLEAR TO BAR, 5'-1" BAR W/(4) 1 1/2" R BENDS & MIN. 1'-0" OVERLAP
V-1	VERTICAL IN BARRIER(3) EACH END & (2) AT EACH DRAIN SLOTS	#5	(16)	TOTAL LENGTH 4'-9", 2 3/16" R, 12°, ±9 1/2", 4 3/8", 2'-1 3/8"



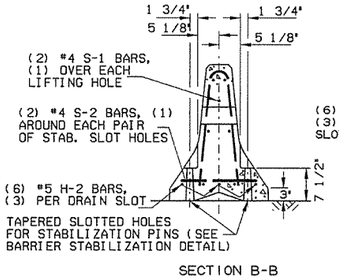
CONNECTION DETAILS



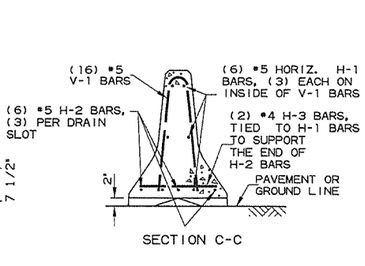
CONNECTION LOOP



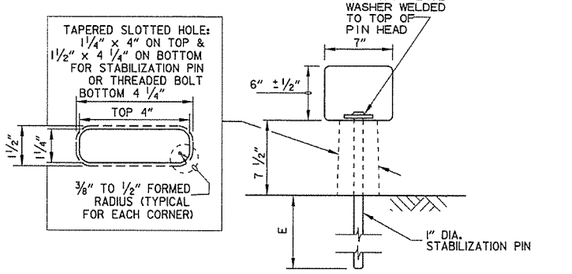
SECTION A-A



SECTION B-B



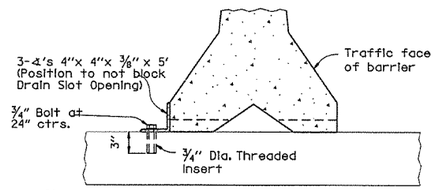
SECTION C-C



BARRIER STABILIZATION DETAIL

ROADWAY SECTION

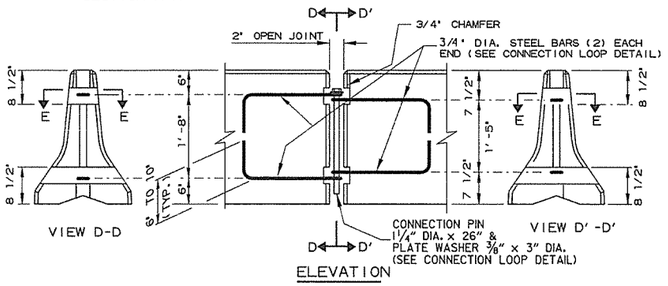
(E) 4" - Concrete Pavement
8" - Asphalt Pavement
12" - Shoulder Areas



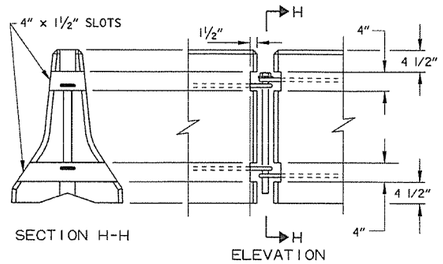
NOTE: 3/4" Threaded Inserts shall be cast in place for all new bridge decks and drilled and grouted for existing bridge decks to be retained. Inserts shall have a minimum ultimate load capacity of 8000 lbs. in tension. After removal of barrier, bolts, and angles, the inserts shall be filled with approved non-shrink epoxy.

BARRIER STABILIZATION DETAIL

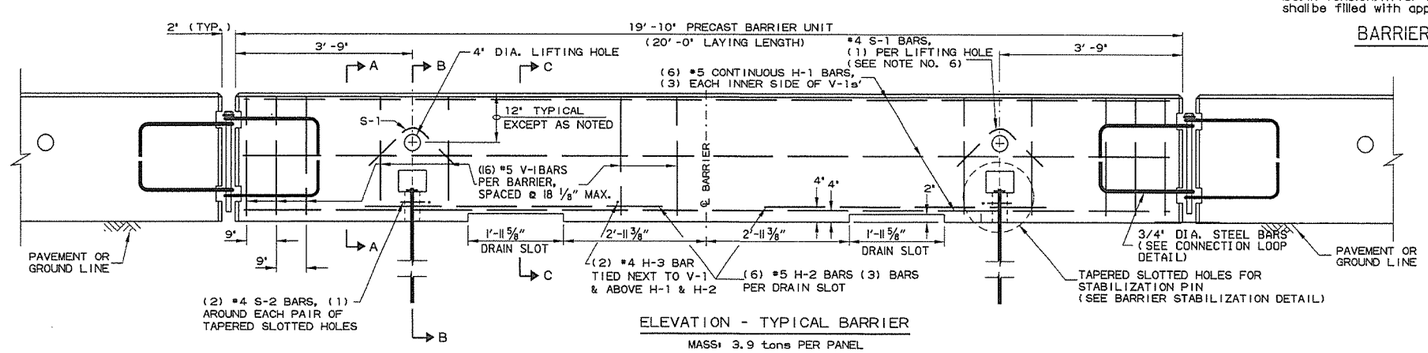
BRIDGE DECKS



ELEVATION



BARRIER REMOVAL SLOT DETAILS



ELEVATION - TYPICAL BARRIER

MASS: 3.9 tons PER PANEL

General Notes

(1) The contractor shall furnish the Precast Concrete Barrier Units and shall be responsible for the manufacture, shipment, storage, placement and removal. At the completion of the project, the precast units will remain the property of the contractor.

(2) Materials shall meet the following minimum requirements:
Concrete: 2500 psi compressive strength at 28 days.
Reinforcing Steel: AASHTO M 31 or M 53, Grade 60
Structural Steel: AASHTO-M270 Grade 36 shall be used for the Connection Pin, Connection Loops, and Stabilization Pins. A One Piece Pin with a 3" rounded top may be used in place of the detailed Connection Pin.
Delineators: Delineators shall be mounted at 10' spacing on top of precast barrier.

In applications where barrier wall is within 6 feet of a traffic lane, additional delineators shall be placed on the barrier at 10' spacing approximately one (1) foot from the top of the barrier. Delineators shall be on the 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.

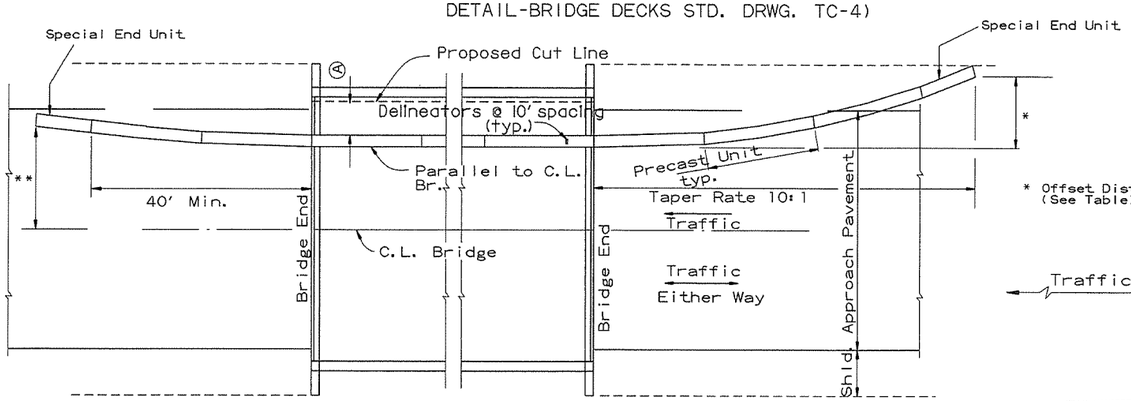
DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
8-5-09	REV. NOTE 3 CONCERNING DRAIN SLOTS	
11-29-07	REVISED NOTE 3	
5-25-06	DELETED GENERAL NOTE 7	
11-18-04	REVISED BARRIER STABILIZATION DETAIL BRIDGE DECKS	
4-10-03	REVISED GENERAL NOTE 2	
8-22-02	ISSUED NEW DRAWING	

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-4

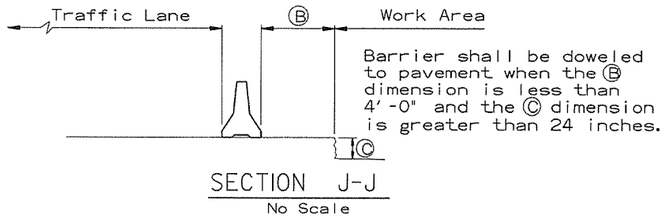
Ⓐ 4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (SEE BARRIER STABILIZATION DETAIL-BRIDGE DECKS STD. DRWG. TC-4)



* Offset Distance (See Table)

BARRIER PLACEMENT ALONG BRIDGE WITH OFFSET

No Scale

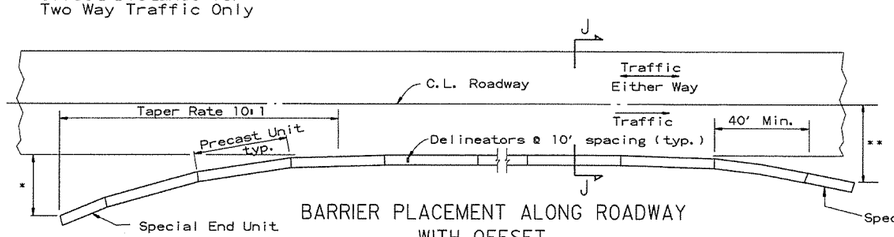


Barrier shall be doweled to pavement when the Ⓑ dimension is less than 4'-0" and the Ⓒ dimension is greater than 24 inches.

SECTION J-J

No Scale

** Offset Distance for Two Way Traffic Only



BARRIER PLACEMENT ALONG ROADWAY WITH OFFSET

No Scale

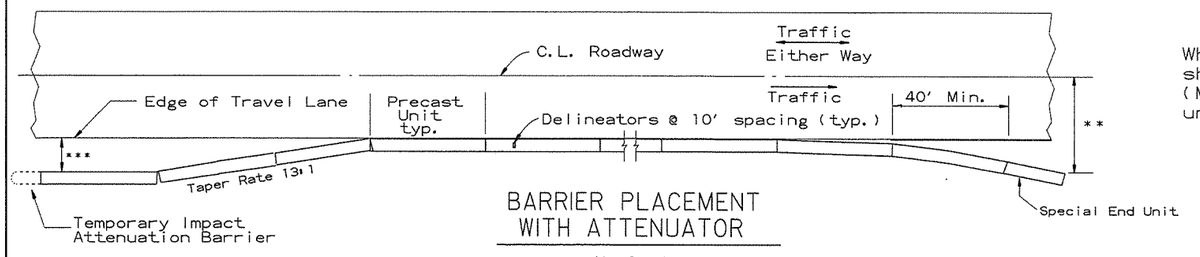
* Offset Distance (See Table)

** Offset Distance For Two Way Traffic Only

Offset Distance Table

Speed (MPH)	Offset Distance (FT.)
≤ 45	12
> 45	18

If offset distance is not attainable, then see 'Barrier Placement With Attenuator' Detail shown below.

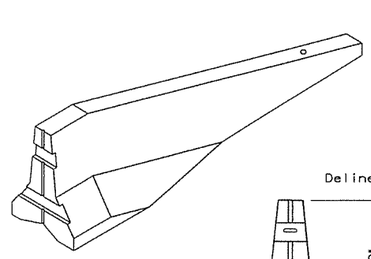


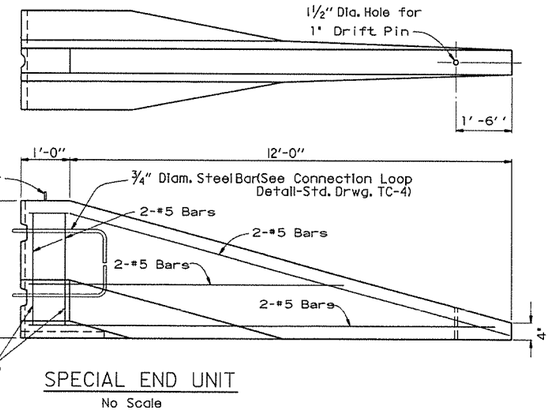
BARRIER PLACEMENT WITH ATTENUATOR

No Scale

*** Min. 3'-0" From Edge of Travel Lane to Nearest Edge of Attenuator

** Offset Distance For Two Way Traffic Only





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	

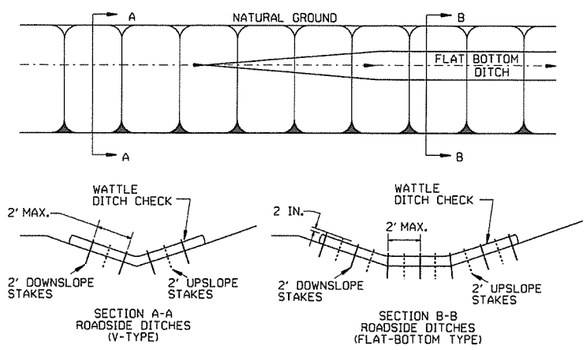
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION - TEMPORARY PRECAST BARRIER

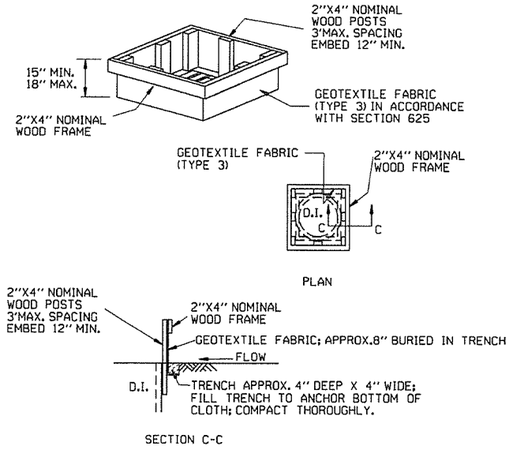
STANDARD DRAWING TC-5

GENERAL NOTES

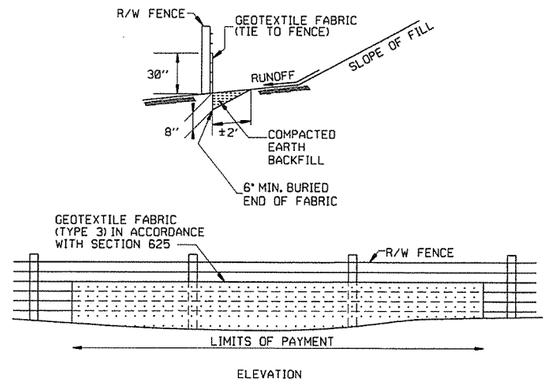
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



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

GENERAL NOTES

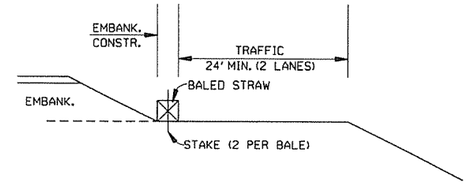
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

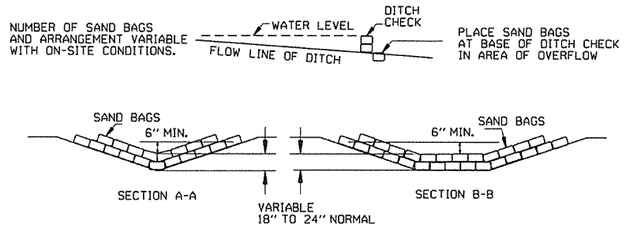
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

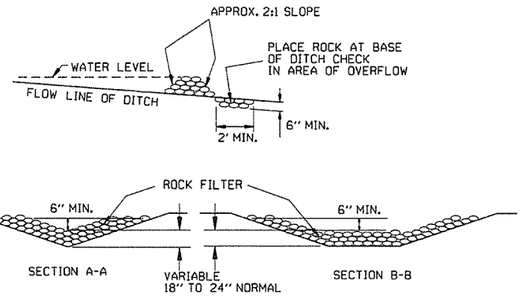
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



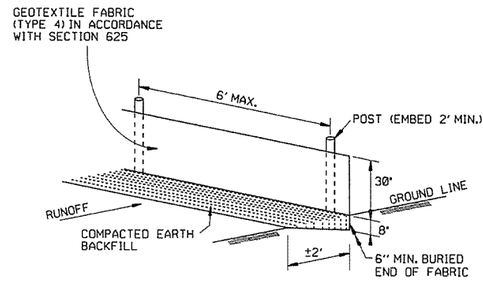
BALED STRAW FILTER BARRIER (E-2)



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

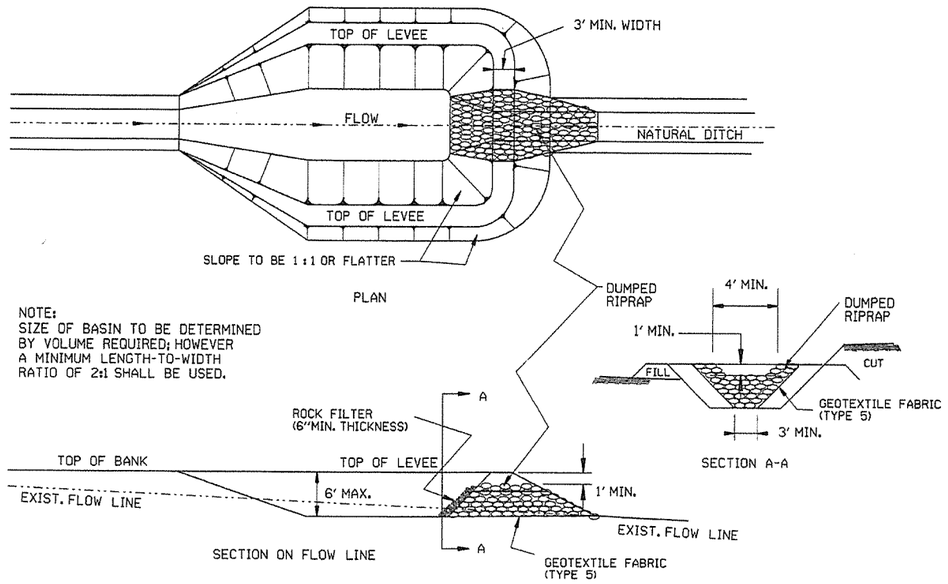
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

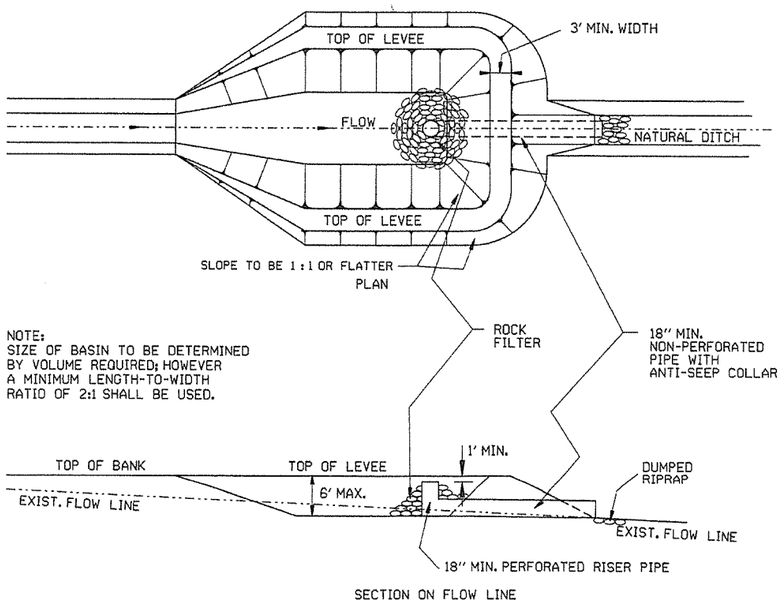
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

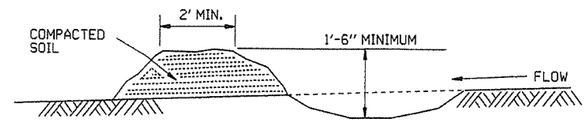
STANDARD DRAWING TEC-1



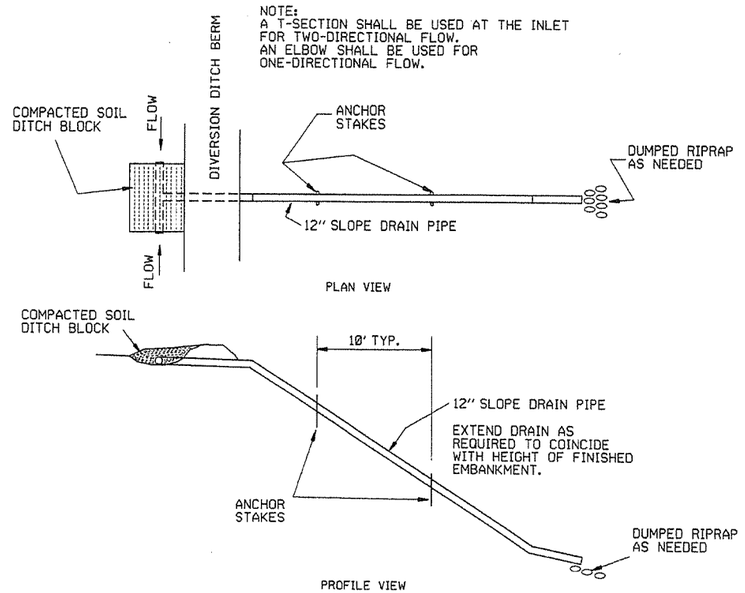
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



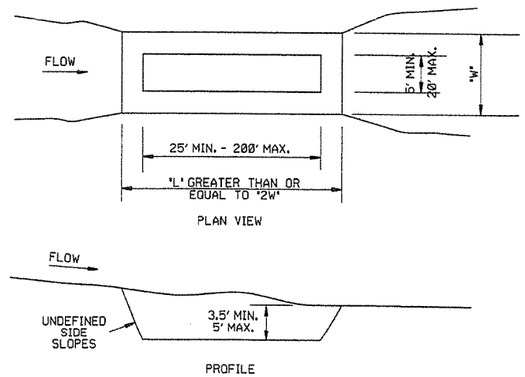
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



DIVERSION DITCH (E-8)



SLOPE DRAIN (E-12)



SEDIMENT BASIN (E-14)

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

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

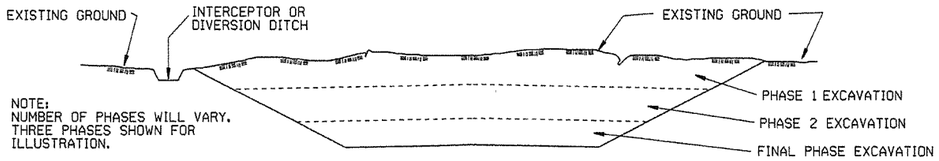
STANDARD DRAWING TEC-2

CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE

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

EXCAVATION



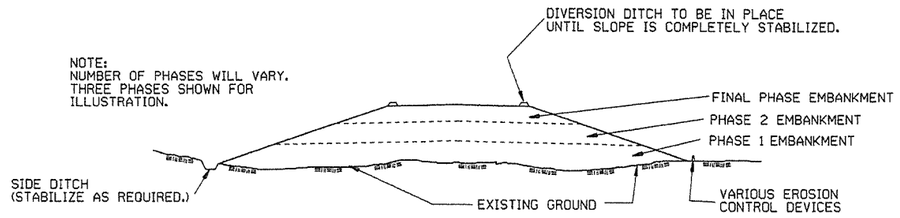
GENERAL NOTE

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

CONSTRUCTION SEQUENCE

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

EMBANKMENT



GENERAL NOTE

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

CONSTRUCTION SEQUENCE

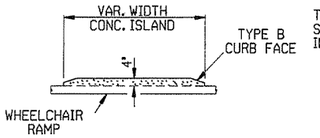
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD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

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

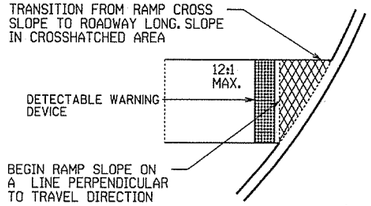
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3



CONCRETE ISLAND DETAIL



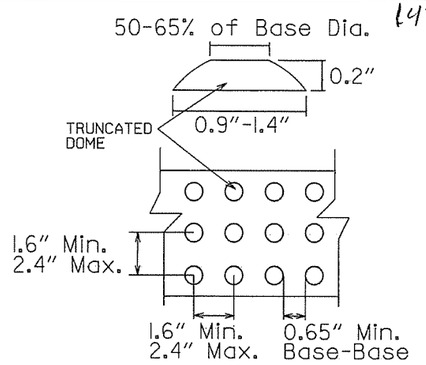
SLOPE TRANSITION DETAILS

TYPE 1 RAMP DIMENSIONS AND QUANTITIES

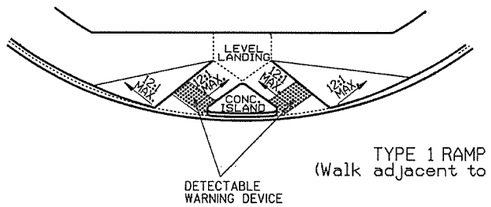
RADIUS "R" FEET	DISTANCE "X" FEET	DISTANCE "Y" FEET	LENGTH "L" FEET	RAMP AREA "A" SQ. YD.
15	11.67	18.82	32.18	26.21
20	11.52	22.28	35.46	30.07
25	11.43	26.60	38.77	33.80
30	11.37	30.26	40.93	36.90
35	11.33	33.51	43.11	39.77
40	11.30	36.45	45.26	42.45
45	11.27	39.16	47.34	44.97
50	11.25	41.69	49.36	47.35
55	11.24	44.07	51.31	49.63
60	11.22	46.33	53.21	51.80

GENERAL NOTES FOR DETECTABLE WARNING DEVICES

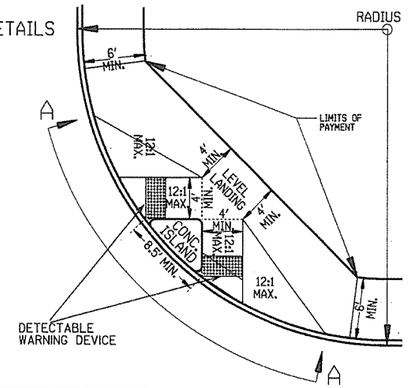
THE DETECTABLE WARNING DEVICE SHALL BE LOCATED SO THAT THE NEAREST EDGE OF THE DEVICE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB.
TRUNCATED DOMES IN THE DETECTABLE WARNING SURFACE SHALL MEET THE REQUIREMENTS OF THE GEOMETRIC CONFIGURATION SHOWN.
DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
DETECTABLE WARNING DEVICE SHALL BE 24 INCHES IN THE DIRECTION OF TRAVEL AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE.
DETECTABLE WARNING DEVICE SHALL BE ON THE AHTD QUALIFIED PRODUCTS LIST FOR CAST-IN-PLACE TACTILE PANELS (ADA DETECTABLE WARNING).

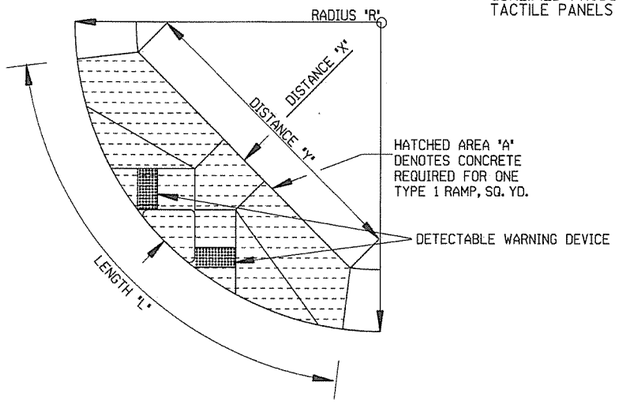


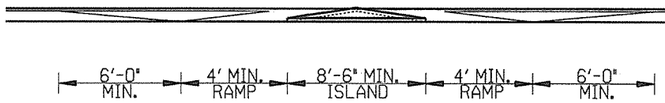
DETECTABLE WARNING DEVICE DETAIL



TYPE 1 RAMP
(Walk adjacent to curb)



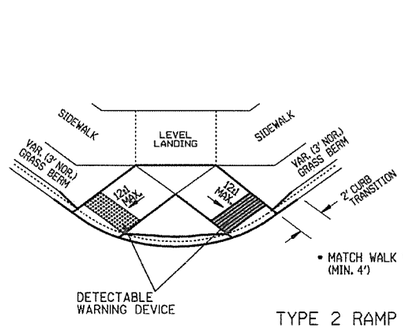




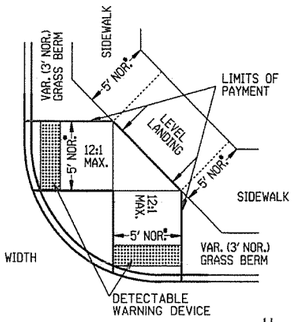
SECTION A-A

GENERAL NOTES:

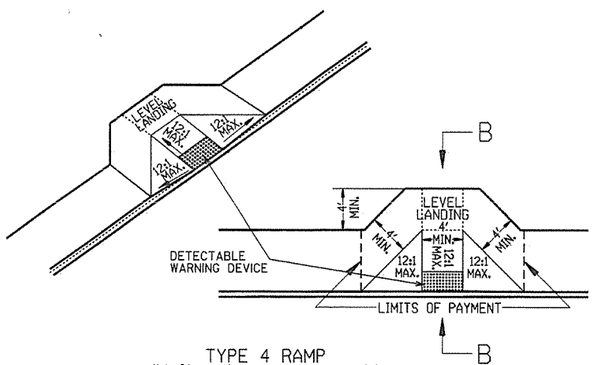
IN NEW CONSTRUCTION, UNLESS OTHERWISE INDICATED ON THE PLANS, WHEELCHAIR RAMPS ARE TO BE PROVIDED AT ALL CORNERS OF CURBED STREET INTERSECTIONS AND MID-BLOCK CROSSWALK LOCATIONS.
IN ALTERATIONS WHEELCHAIR RAMPS ARE TO BE PROVIDED AT CURBED STREET INTERSECTIONS WITH PEDESTRIAN TRAFFIC AND MID-BLOCK CROSSWALK 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.



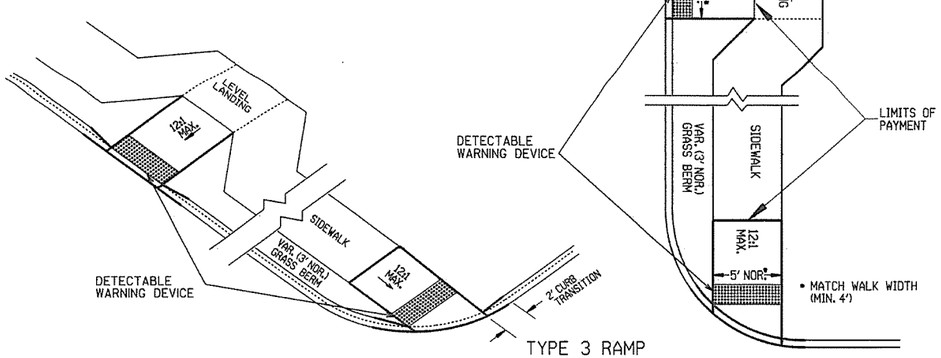
TYPE 2 RAMP



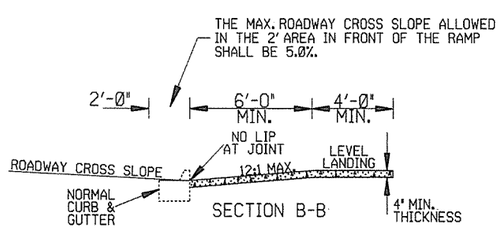
NOTE:
THE CROSS SLOPE OF THE RAMPS, LEVEL LANDINGS, AND SIDEWALKS SHALL NOT EXCEED 2.0% UNLESS REQUIRED TO MATCH STREET LONGTITUDINAL GRADE.



TYPE 4 RAMP
(Walk adjacent to curb)



TYPE 3 RAMP



SECTION B-B

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.

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	FROM8:1TO12:1MAX.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

RESHOT 3-4-93

150

FED. ROAD PROJ.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
D	ARK.			198	
JOB No.					

REAR ELEVATION OF WING - SHOWING BACK FACE REINF.

PLAN OF WING - SHOWING FOOTING REINF.

SECTION A-A

END VIEW OF WING

SECTION B-B THRU EXPANSION JOINT

DETAIL AT TOP OF WING

WING DIMENSIONS

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	THICKNESS OF WING AT HEADWALL = C	WINGWALL HEIGHTS AT HEADWALL	WINGWALL HEIGHTS AT END OF WING	WIDTHS OF WING FOOTINGS AT HEADWALL	WIDTHS OF WING FOOTINGS AT END OF WING	PERPENDICULAR FOOTING DIMENSION	PERPENDICULAR DIST. FROM HDWL TO END OF WING	LENGTH OF WINGWALLS	INSIDE FOOTING DIMENSION	* QUANTITY PER WING CLASS S CONCRETE	
											INLET END	OUTLET END
H	WB	C_W	WH_1	WH_2	WF_1	WF_2	F	E	W_1	W_2	CU.YD.	CU.YD.
9'	10"	9"	9'-10"	3'-0"	5'-2"	2'-10½"	4'-3"	20'-6"	23'-8"	24'-11"	7.492	7.810
10'	11"	10"	10'-10"	3'-9"	5'-8"	3'-0"	4'-10"	22'-6"	25'-11⅝"	27'-6½"	9.554	9.905
11'	12"	11"	11'-10"	3'-8"	6'-2"	3'-1½"	5'-5"	24'-6"	28'-3½"	30'-1½"	11.977	12.361
12'	13"	12"	12'-11"	4'-0"	6'-8"	3'-3"	6'-0"	26'-6"	30'-7⅞"	32'-9½"	14.791	15.206

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W_3.

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING 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	C_W	WB	LB.	CU.YD.	CU.YD.	CU.YD.	CU.YD.	CU.YD.
7'	9'	9"	10"	2133.2	31.16	32.84	34.51	36.19	37.87
8'	9'	9"	10"	2133.2	31.39	33.26	35.16	37.05	38.94
	10'	10"	11"	2651.5	39.56	41.98	43.90	45.83	47.25
9'	9'	9"	10"	2133.2	31.61	33.73	35.81	37.91	40.01
	10	10"	11"	2651.6	39.78	41.93	44.05	46.20	48.33
	11'	11"	12"	3243.1	49.39	51.55	53.70	55.87	58.02
10'	9'	9"	10"	2133.2	31.83	34.17	36.47	38.73	41.12
	10'	10"	11"	2651.5	40.01	42.37	44.70	47.05	49.41
	11'	11"	12"	3243.1	49.62	52.00	54.36	56.73	59.11
	12'	12"	13"	4099.2	60.79	63.19	65.57	67.97	70.37
11'	9'	9"	10"	2133.2	32.06	34.69	37.15	39.68	
	10'	10"	11"	2651.5	40.22	42.83	45.37	47.99	
	11'	11"	12"	3243.1	49.86	52.45	55.02	57.61	
	12'	12"	13"	4099.2	61.01	63.64	66.24	68.85	
12'	9'	9"	10"	2133.2	32.27	35.11	37.84	40.59	
	10'	10"	11"	2651.5	40.44	43.30	46.06	48.82	
	11'	11"	12"	3243.1	50.06	52.92	55.68	58.48	
	12'	12"	13"	4099.2	61.24	64.10	66.90	69.73	

® For reinforcing steel in Headwalls and Aprons, see Details of Standard Barrel Sections for R.C. Box Culverts for the desired Span and Height.

CLEAR SPAN	CLEAR HEIGHT	FOOTING DIMENSION	W_3 = (OW - 2F) SINGLE BARREL CULVERT		DOUBLE BARREL CULVERT		TRIPLE BARREL CULVERT		QUADRUPLE BARREL CULVERT		QUINTUPLE BARREL CULVERT	
S	H	2F	OW	W_3	OW	W_3	OW	W_3	OW	W_3	OW	W_3
7'	9'	6'-6"	8'-6"	0'-0"	16'-5"	7'-11"	24'-4"	15'-10"	32'-3"	23'-9"	40'-2"	31'-8"
8'	9'	6'-6"	9'-6"	1'-0"	18'-5"	9'-11"	27'-4"	18'-10"	36'-3"	27'-9"	45'-2"	36'-8"
	10'	9'-8"	9'-8"	0'-0"	18'-8"	9'-0"	27'-8"	18'-0"	36'-8"	27'-0"	45'-8"	36'-0"
9'	9'	6'-6"	10'-6"	2'-0"	20'-5"	11'-11"	30'-4"	21'-10"	40'-3"	31'-9"	50'-3"	41'-8"
	10'	9'-8"	10'-8"	1'-0"	20'-8"	11'-0"	30'-8"	21'-0"	40'-8"	31'-0"	50'-8"	41'-0"
	11'	10'-10"	10'-0"	0'-0"	20'-10"	10'-0"	30'-10"	20'-0"	40'-10"	30'-0"	50'-10"	40'-0"
10'	9'	6'-6"	11'-6"	3'-0"	22'-5"	13'-11"	33'-4"	24'-10"	44'-3"	35'-9"	55'-3"	46'-8"
	10'	9'-8"	11'-8"	2'-0"	22'-8"	13'-0"	33'-8"	24'-0"	44'-8"	35'-0"	55'-8"	46'-0"
	11'	10'-10"	11'-0"	1'-0"	22'-10"	12'-0"	33'-10"	23'-0"	44'-10"	34'-0"	55'-10"	45'-0"
	12'	12'-0"	12'-0"	0'-0"	23'-0"	11'-0"	34'-0"	22'-0"	45'-0"	33'-0"	56'-0"	44'-0"
11'	9'	6'-6"	12'-6"	4'-0"	24'-5"	15'-11"	36'-4"	27'-10"	48'-3"	39'-9"		
	10'	9'-8"	12'-8"	3'-0"	24'-8"	15'-0"	36'-8"	27'-0"	48'-8"	39'-0"		
	11'	10'-10"	12'-10"	2'-0"	24'-10"	14'-0"	36'-10"	26'-0"	48'-10"	38'-0"		
	12'	12'-0"	13'-0"	1'-0"	25'-0"	13'-0"	37'-0"	26'-0"	49'-0"	37'-0"		
12'	9'	6'-6"	13'-6"	5'-0"	26'-5"	17'-11"	39'-4"	30'-10"	52'-3"	43'-9"		
	10'	9'-8"	13'-8"	4'-0"	26'-8"	17'-0"	39'-8"	30'-0"	52'-8"	43'-0"		
	11'	10'-10"	13'-10"	3'-0"	26'-10"	16'-0"	39'-10"	29'-0"	52'-10"	42'-0"		
	12'	12'-0"	14'-0"	2'-0"	27'-0"	15'-0"	40'-0"	28'-0"	53'-0"	41'-0"		

PART PLAN — SINGLE BARREL CULVERT

PART PLAN — DOUBLE BARREL CULVERT

PART PLAN — TRIPLE BARREL CULVERT

END ELEVATION — SINGLE BARREL CULVERT

END ELEVATION — DOUBLE BARREL CULVERT

END ELEVATION — TRIPLE BARREL CULVERT

NOTE:- Plans and Elevations are not to scale.

HALF PART PLAN — QUADRUPLE BARREL CULVERT

HALF PART PLAN — QUINTUPLE BARREL CULVERT

HALF END ELEVATION — QUADRUPLE BARREL CULVERT

HALF END ELEVATION — QUINTUPLE BARREL CULVERT

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 wingwalls, footings and sidewalls shall be only where shown on plans.

MEMBRANE:- A membrane waterproofing 12" wide, consisting of three moppings of waterproofing asphalt and two alternate layers of treated cotton fabric shall be applied to the back face of wing to cover the expansion joints.

Payment for the membrane waterproofing and bituminous felt shall be included in unit price bid for Class S Concrete.

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-X2	R-200X-X2	R-300X-X2	R-400X-X2	
	R-200X-X3	R-300X-X3		

BAR LIST FOR ONE WING - 4 REQUIRED

CLEAR HEIGHT	F_1 BENT: In bottom of footing, bent up into back face of wing. One bar of each length. SIZE	SPACING	NO. REQ'D	LENGTHS VARY MIN.	MAX.	X MIN.	X MAX.	Y MIN.	Y MAX.
H									
9'	#5	12"	24	5'-0"	13'-10"	1'-6"	3'-8"	3'-7"	10'-3"
10'	#5	12"	27	5'-6"	15'-5"	1'-7"	4'-2"	3'-10"	11'-4"
11'	#5	12"	29	6'-0"	16'-11"	1'-9"	4'-7"	4'-1"	12'-5"
12'	#5	12"	31	6'-8"	18'-5"	1'-11"	5'-0"	4'-10"	13'-6"

CLEAR HEIGHT	F_2 BENT: In bottom of footing, bent up into back face of wing. Alt. with F_1 bars. SIZE	SPACING	NO. REQ'D	LENGTH	X	Y
H						
9'	#5	12"	3	7'-6"	2'-1"	5'-6"
10'	#5	12"	2	8'-6"	2'-9"	6'-3"
11'	#6	12"	6	8'-6"	2'-9"	6'-3"
12'	#7	12"	6	9'-6"	2'-9"	7'-0"

CLEAR HEIGHT	F_3 BENT: In bottom of footing, bent up into back face of wing. Alt. with F_1 bars. SIZE	SPACING	NO. REQ'D	LENGTH	X	Y
H						
9'	#5	12"	7	6'-6"	1'-10"	4'-9"
10'	#5	12"	9	7'-6"	2'-1"	5'-6"
11'	#5	12"	9	7'-6"	2'-1"	5'-6"
12'	#6	12"	7	8'-6"	2'-9"	6'-3"

CLEAR HEIGHT	F_4 BENT: In bottom of footing, bent up into back face of wing... Alt. with F_1 bars. SIZE	SPACING	NO. REQ'D	LENGTH	X	Y
H						
9'	—	—	—	—	—	—
10'	#4	12"	7	6'-6"	1'-10"	4'-9"
11'	#4	12"	7	6'-6"	1'-10"	4'-9"
12'	#4	12"	7	6'-6"	1'-10"	4'-9"

CLEAR HEIGHT	F_5 STRAIGHT: Longitudinal in top of wing footing heel. SIZE	NO. REQ'D	LENGTH
H			
9'	#4	1	26'-5"
10'	#4	1	28'-6"
11'	#4	1	30'-8"
12'	#4	1	33'-0"

CLEAR HEIGHT	F_6 STRAIGHT: Longitudinal in bottom of wing footing toe. SIZE	NO. REQ'D	LENGTH
H			
9'	#4	4	26'-3"
10'	#4	4	29'-0"
11'	#4	4	31'-6"
12'	#4	4	34'-0"

CLEAR HEIGHT	H_1 STRAIGHT: Horizontal in back face of wing. SIZE	SPACING	NO. REQ'D	LENGTH
H				
9'	#4	12"	3	23'-5"
10'	#4	12"	3	25'-8"
11'	#4	12"	4	28'-0"
12'	#4	12"	4	30'-4"

CLEAR HEIGHT	H_2 STRAIGHT: Horizontal in back face of wing. One bar of each length. SIZE	SPACING	NO. REQ'D	LENGTHS VARY MAX.	MIN.
H					
9'	#4	12"	6	21'-2"	4'-0"
10'	#4	12"	7	24'-7"	4'-0"
11'	#4	12"	7	24'-7"	4'-0"
12'	#4	12"	8	28'-0"	4'-0"

CLEAR HEIGHT	H_3 In back face of wing at top-on slope SIZE	NO. REQ'D	LENGTH
H			
9'	#4	1	24'-1"
10'	#4	1	26'-6"
11'	#4	1	28'-11"
12'	#4	1	31'-6"

CLEAR HEIGHT	F_7 BENT: Footing dowels extending up into front face of wing. SIZE	SPACING	NO. REQ'D	LENGTH	X	QUANTITY REINFORCING STEEL PER WING LB.
H						
9'	#4	18"	16	4'-0"	3'-6"	538.3
10'	#5	18"	18	4'-3"	3'-9"	662.9
11'	#5	18"	19	4'-9"	4'-3"	810.8
12'	#5	18"	21	5'-0"	4'-6"	1012.3

BAR BENDING DIAGRAMS

F_1 - F_6 45° Pin

F_7 3" Pin

NOTE:- Dimensions are to bar centers.

© Except as shown at headwall.

Designed By:- W.C.H. 7-25-62 Checked By:- RHS 1-3-63 Reviewed By:

Drawn By:- W.C.H. 12-31-62 Checked By:- RHS 1-31-63

Quantities By:- W.C.H. 1-11-63 Checked By:-

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS

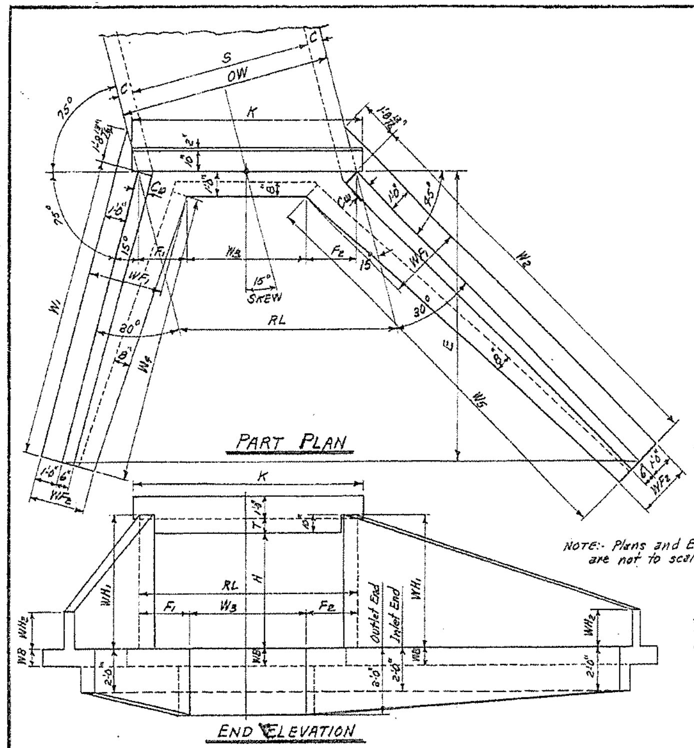
7', 8', 9', 10', 11' & 12' SPANS — 3:1 SLOPES

SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — FOR H = 9'-0" & OVER

STANDARD DRAWING NO. W-X003-2

(21)

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			149	
JOB No.					

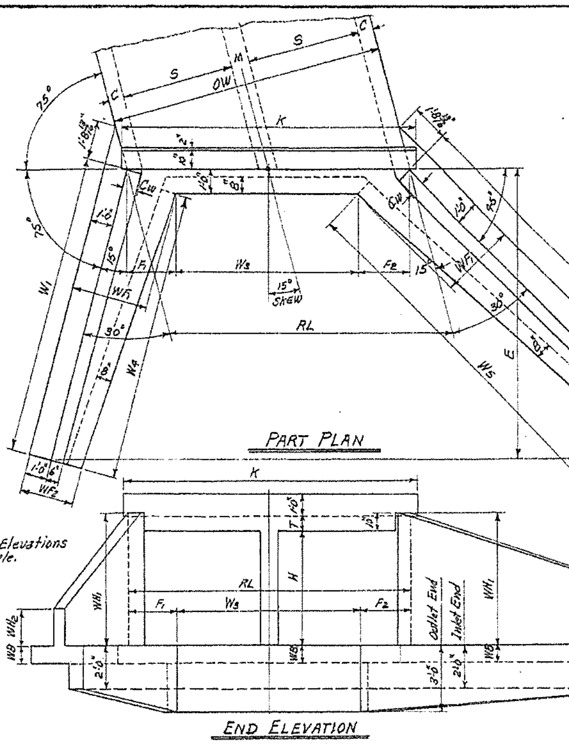


PART PLAN

END ELEVATION

SINGLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

Details of Culvert with 15° Skew Left Forward is reversed, see Layout below.



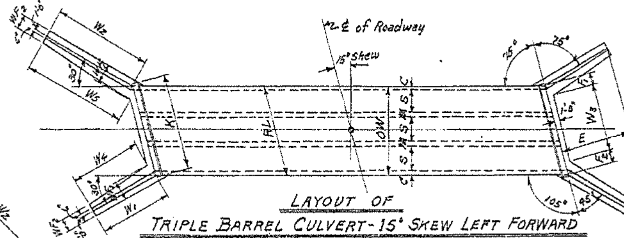
NOTE:- Plans and Elevations are not to scale.

PART PLAN

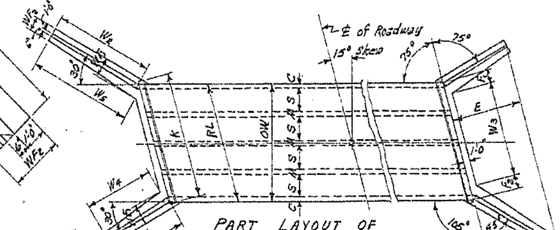
END ELEVATION

DOUBLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

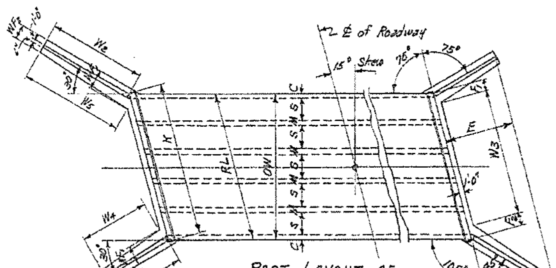
Details of Culvert with 15° Skew Left Forward is reversed, see Layout below.



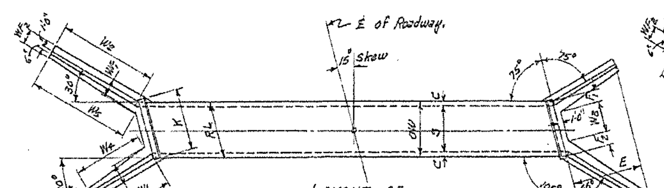
LAYOUT OF TRIPLE BARREL CULVERT - 15° SKEW LEFT FORWARD



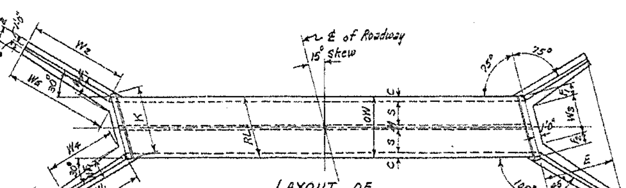
PART LAYOUT OF QUADRUPLE BARREL CULVERT - 15° SKEW LEFT FORWARD



PART LAYOUT OF QUINTUPLE BARREL CULVERT - 15° SKEW LEFT FORWARD



LAYOUT OF SINGLE BARREL CULVERT - 15° SKEW LEFT FORWARD



LAYOUT OF DOUBLE BARREL CULVERT - 15° SKEW LEFT FORWARD

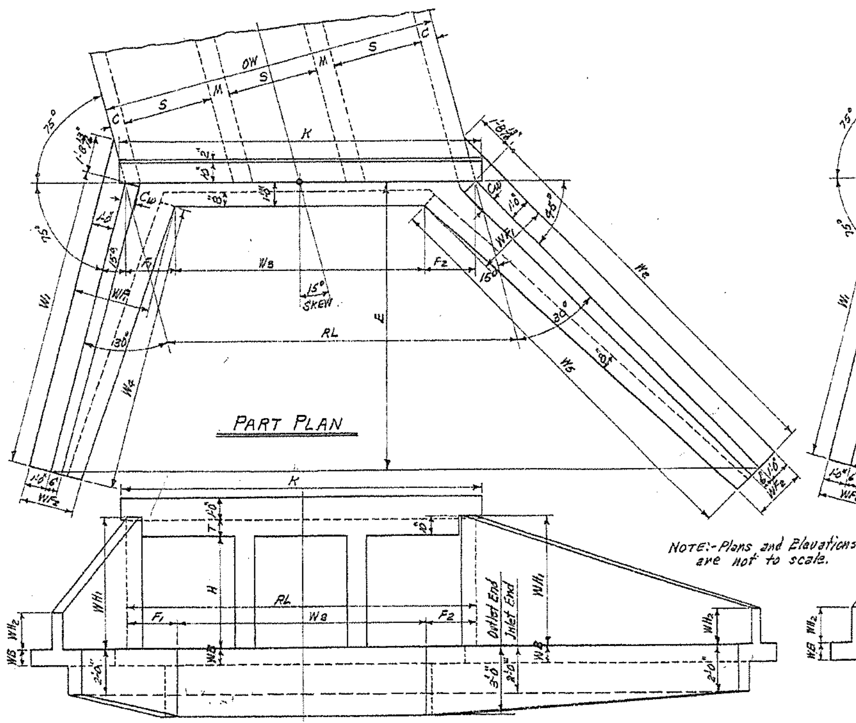
NOTE:- The length of the wings for the Plans, Elevations, and Layouts, as drawn, are proportioned for 3:1 slopes. For 2:1 slopes the wings are proportionally shorter, while for 4:1 slopes they are longer.

ROADWAY LENGTH RL — HEADWALL LENGTH K — APRON DIMENSION W_3

$RL = OW \times 1.035276$ — $K = RL + (6\frac{1}{2}")$ — $W_3 = RL - (F_1 + F_2)$

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'-6 1/2"	8'-0"	14'-4"	14'-10"	15'-4 1/2"	12'-10"	19'-0"	19'-8"	20'-2 1/2"	17'-8"	23'-8"	24'-6"	25'-0 1/2"	22'-6"
		3'	2'-9 3/4"	5'-0"	"	"	2'-4 3/8"	9'-8"	"	"	7'-2 1/4"	14'-4"	"	"	12'-0 1/4"	19'-0"	"	"	16'-10 1/4"	23'-8"	"	"	21'-8 1/4"
		4'	3'-7 5/8"	5'-0"	"	"	1'-6 1/2"	9'-8"	"	"	6'-4 1/4"	14'-4"	"	"	11'-2 1/2"	19'-0"	"	"	16'-0 1/2"	23'-8"	"	"	20'-10 1/2"
		5'	4'-5 3/8"	5'-0"	"	"	0'-8 3/4"	9'-8"	"	"	5'-6 3/4"	14'-4"	"	"	10'-4 3/4"	19'-0"	"	"	15'-2 3/4"	23'-8"	"	"	20'-0 3/4"
		6'	5'-3 1/8"	5'-2"	5'-4 1/8"	5'-10 5/8"	0'-1"	9'-11"	10'-3 1/8"	10'-9 5/8"	5'-0"	14'-8"	15'-2 1/4"	15'-8 3/4"	9'-11"	19'-5"	20'-1 1/4"	20'-7 3/4"	14'-10"	24'-2"	25'-0 1/4"	25'-6 3/4"	19'-9"
	5'	3'	2'-9 3/4"	6'-0"	6'-2 1/2"	6'-9"	3'-4 3/4"	11'-8"	12'-1"	12'-7 1/2"	9'-3 1/4"	17'-4"	17'-11 3/8"	18'-5 3/4"	15'-1 1/2"	23'-0"	23'-9 3/4"	24'-4 1/4"	21'-0"	28'-8"	29'-8 1/8"	30'-2 1/8"	26'-10 1/4"
		4'	3'-7 5/8"	6'-0"	"	"	2'-7"	11'-8"	"	"	8'-5 3/8"	17'-4"	"	"	14'-3 3/4"	23'-0"	"	"	20'-2 1/4"	28'-8"	"	"	26'-0 1/8"
		5'	4'-5 3/8"	6'-0"	"	"	1'-9 1/8"	11'-8"	"	"	7'-7 5/8"	17'-4"	"	"	13'-6"	23'-0"	"	"	19'-4 1/4"	28'-8"	"	"	25'-2 3/4"
		6'	5'-3 1/8"	6'-2"	6'-4 5/8"	6'-11 1/8"	1'-1 1/8"	11'-11"	12'-4"	12'-10 1/2"	7'-0 7/8"	17'-8"	18'-3 1/2"	18'-10"	13'-0 1/4"	23'-5"	24'-2 7/8"	24'-9 1/4"	18'-11 3/4"	29'-2"	30'-2 3/8"	30'-8 3/4"	24'-11 1/4"
		7'	6'-5 7/8"	6'-3"	6'-5 5/8"	7'-0 1/8"	Ⓐ 0"	12'-1"	12'-6 1/8"	13'-0 1/2"	6'-0 1/4"	17'-11"	18'-6 3/8"	19'-1"	12'-0 3/4"	23'-9"	24'-7"	25'-1 1/2"	18'-1 1/4"	29'-7"	30'-7 1/4"	31'-2"	24'-1 3/8"
	6'	3'	2'-9 3/4"	7'-0"	7'-3"	7'-9 1/2"	4'-5 1/4"	13'-8"	14'-1 3/4"	14'-8 1/4"	11'-4"	20'-4"	21'-0 5/8"	21'-7"	18'-2 3/4"	27'-0"	27'-11 3/8"	28'-5 3/4"	25'-1 3/4"	33'-8"	34'-10 1/4"	35'-4 3/4"	32'-0 1/2"
		4'	3'-7 5/8"	7'-0"	"	"	3'-7 3/8"	13'-8"	"	"	10'-6 1/2"	20'-4"	"	"	17'-5"	27'-0"	"	"	24'-3 3/4"	33'-8"	"	"	31'-2 3/4"
		5'	4'-5 3/8"	7'-0"	"	"	2'-9 5/8"	13'-8"	"	"	9'-8 3/8"	20'-4"	"	"	16'-7 1/4"	27'-0"	"	"	23'-6"	33'-8"	"	"	30'-4 3/4"
		6'	5'-3 1/8"	7'-2"	7'-5"	7'-11 1/2"	2'-1 7/8"	13'-11"	14'-5"	14'-11 1/2"	9'-1 3/4"	20'-8"	21'-4 3/4"	21'-11 1/4"	16'-1 1/4"	27'-5"	28'-4 5/8"	28'-11"	23'-1 1/2"	34'-2"	35'-4 1/2"	35'-11"	30'-1 1/4"
		7'	6'-5 7/8"	7'-3"	7'-6"	8'-0 1/2"	1'-0 1/4"	14'-1"	14'-7"	15'-1 1/2"	8'-1 1/8"	20'-11"	21'-7 3/8"	22'-2 1/4"	15'-2"	27'-9"	28'-8 3/4"	29'-3 1/8"	22'-3"	34'-7"	35'-9 5/8"	36'-4"	29'-3 3/4"
		8'	7'-8 5/8"	7'-4"	7'-7 1/8"	8'-1 5/8"	Ⓐ 0"	14'-2"	14'-8"	15'-2 1/2"	6'-11 3/4"	21'-0"	21'-8 7/8"	22'-3 1/4"	14'-0 1/4"	27'-10"	28'-9 3/4"	29'-4 1/4"	21'-1 1/4"	34'-8"	35'-10 5/8"	36'-5"	28'-2"
	7'	4'	3'-7 5/8"	8'-0"	8'-3 3/8"	8'-9 7/8"	4'-7 1/4"	15'-8"	16'-2 5/8"	16'-9"	12'-7"	23'-4"	24'-1 1/8"	24'-8 1/2"	20'-6 1/4"	31'-0"	32'-1 1/8"	32'-7 1/2"	28'-5 1/4"	38'-8"	40'-0 3/8"	40'-6 3/4"	36'-4 3/8"
		5'	4'-5 3/8"	8'-0"	"	"	3'-10"	15'-8"	"	"	11'-9 1/4"	23'-4"	"	"	19'-8 1/2"	31'-0"	"	"	27'-7 3/4"	38'-8"	"	"	35'-7"
		6'	5'-3 1/8"	8'-2"	8'-5 1/2"	9'-0"	3'-2 1/4"	15'-11"	16'-5 3/4"	17'-0 1/4"	11'-2 1/2"	23'-8"	24'-6"	25'-0 1/2"	19'-2 3/4"	31'-5"	32'-6 1/2"	33'-0 3/4"	27'-3"	39'-2"	40'-6 3/8"	41'-1"	35'-3 1/2"
		7'	6'-5 7/8"	8'-3"	8'-6 1/2"	9'-1"	2'-0 3/8"	16'-1"	16'-7 3/4"	17'-2 1/4"	10'-2"	23'-11"	24'-9 1/8"	25'-3 1/2"	18'-3 1/4"	31'-9"	32'-10 1/2"	33'-5"	26'-4 1/2"	39'-7"	40'-11 3/4"	41'-6 1/4"	34'-6"
		8'	7'-8 5/8"	8'-4"	8'-7 1/2"	9'-2"	0'-11"	16'-2"	16'-8 7/8"	17'-3 1/4"	9'-0 1/4"	24'-0"	24'-10 3/8"	25'-4 1/2"	17'-1 1/4"	31'-10"	32'-11 1/2"	33'-6"	25'-3"	39'-8"	41'-0 3/4"	41'-7 1/2"	33'-4 1/4"
	8'	4'	3'-7 5/8"	9'-0"	9'-3 3/4"	9'-10 1/4"	5'-8 1/4"	17'-8"	18'-3 1/2"	18'-10"	14'-8"	26'-4"	27'-3 1/8"	27'-9 1/2"	23'-7 1/4"	35'-0"	36'-2 7/8"	36'-9 1/4"	32'-7 1/4"	43'-8"	45'-2 1/8"	45'-9"	41'-7"
		5'	4'-5 3/8"	9'-2"	9'-5 7/8"	10'-0 1/4"	5'-0 1/2"	17'-11"	18'-6 5/8"	19'-1"	14'-1 1/4"	26'-8"	27'-7 1/4"	28'-1 3/4"	23'-2"	35'-5"	36'-8"	37'-2 1/2"	32'-2 3/4"	44'-2"	45'-8 3/4"	46'-3 1/4"	41'-3 1/4"
		6'	5'-3 1/8"	9'-2"	"	"	4'-2 3/4"	17'-11"	"	"	13'-3 1/2"	26'-8"	"	"	22'-4"	35'-5"	"	"	31'-4 3/4"	44'-2"	"	"	40'-5 1/2"
		7'	6'-5 7/8"	9'-3"	9'-6 7/8"	10'-1 1/4"	3'-1"	18'-1"	18'-8 5/8"	19'-3"	12'-2 3/4"	26'-11"	27'-10 3/8"	28'-4 3/4"	21'-4 1/2"	35'-9"	37'-0 1/8"	37'-6 1/2"	30'-6 1/4"	44'-7"	46'-1 7/8"	46'-8 1/4"	39'-8"
		8'	7'-8 5/8"	9'-4"	9'-8"	10'-2 1/2"	1'-11 1/2"	18'-2"	18'-9 3/4"	19'-4 1/4"	11'-1 1/4"	27'-0"	27'-11 3/8"	28'-5 3/4"	20'-2 3/4"	35'-10"	37'-1 1/4"	37'-7 1/2"	29'-4 1/2"	44'-8"	46'-2 7/8"	46'-9 1/2"	38'-6 1/4"
	9'	5'	4'-5 3/8"	10'-2"	10'-6 1/4"	11'-0 3/4"	6'-1"	19'-11"	20'-7 1/4"	21'-2"	16'-2"	29'-8"	30'-8 1/2"	31'-3"	26'-3 1/4"	39'-5"	40'-9 3/4"	41'-4 1/4"	36'-4 1/4"	49'-2"	50'-10 3/4"	51'-5 1/4"	46'-5 1/8"
		6'	5'-3 1/8"	10'-3"	10'-7 3/8"	11'-1 7/8"	5'-4 1/2"	20'-1"	20'-9 1/2"	21'-4"	15'-6 1/4"	29'-11"	30'-11 5/8"	31'-6"	25'-8 1/2"	39'-9"	41'-1 3/8"	41'-8 1/4"	35'-10 3/4"	49'-7"	51'-4"	51'-10 1/2"	46'-0 3/4"
		7'	6'-5 7/8"	10'-3"	"	"	4'-1 1/2"	20'-1"	"	"	14'-3 3/4"	29'-11"	"	"	24'-5 3/4"	39'-9"	"	"	34'-8"	49'-7"	"	"	44'-10"
		8'	7'-8 5/8"	10'-4"	10'-8 3/8"	11'-2 3/4"	2'-11 3/8"	20'-2"	20'-11 1/4"	21'-5"	13'-2"	30'-0"	31'-0 3/4"	31'-7 1/4"	23'-4 1/4"	39'-10"	41'-2 7/8"	41'-9 1/4"	33'-6 1/2"	49'-8"	51'-5"	51'-11 1/2"	43'-8 1/2"
	10'	5'	4'-5 3/8"	11'-2"	11'-6 3/4"	12'-1 1/4"	7'-1 3/8"	21'-11"	22'-8 1/4"	23'-2 3/4"	18'-3"	32'-8"	33'-9 3/4"	34'-4 1/4"	29'-4 1/2"	43'-5"	44'-11 1/2"	45'-6"	40'-6"	54'-2"	56'-1"	56'-7 1/2"	51'-7 1/2"
		6'	5'-3 1/8"	11'-3"	11'-7 3/4"	12'-2 1/4"	6'-4 5/8"	22'-1"	22'-10 3/8"	23'-4 3/4"	17'-4 1/4"	32'-11"	34'-1"	34'-7 1/2"	28'-9 3/4"	43'-9"	45'-3 1/2"	45'-10"	40'-0 1/4"	54'-7"	56'-6"	57'-0 1/2"	51'-3"
		7'	6'-5 7/8"	11'-3"	"	"	5'-1 3/8"	22'-1"	"	"	16'-4 1/2"	32'-11"	"	"	27'-7"	43'-9"	"	"	38'-9 3/4"	54'-7"	"	"	50'-0 1/4"
		8'	7'-8 5/8"	11'-4"	11'-8 3/4"	12'-3 1/4"	4'-0 1/4"	22'-2"	22'-11 3/8"	23'-5 3/4"	15'-2 3/4"	33'-0"	34'-2"	34'-8 1/2"	26'-5 1/2"	43'-10"	45'-4 1/2"	45'-11"	37'-8"	54'-8"	56'-7 1/4"	57'-1 1/2"	48'-10 1/2"
	11'	6'	5'-3 1/8"	12'-4"	12'-9 1/4"	13'-3 3/4"	7'-6"	24'-2"	25'-0 1/4"	25'-6 3/4"	19'-9"	36'-0"	37'-3 1/4"	37'-9 3/4"	32'-0"	47'-10"	49'-6 1/4"	50'-0 3/4"	44'-3"	—	—	—	—
		7'	6'-5 7/8"	12'-4"	"	"	6'-3 3/4"	24'-2"	"	"	18'-6 1/4"	36'-0"	"	"	30'-9 1/4"	47'-10"	"	"	43'-0 1/2"	—	—	—	—
		8'	7'-8 5/8"	12'-4"	"	"	5'-0 5/8"	24'-2"	"	"	17'-3 3/4"	36'-0"	"	"	29'-6 3/4"	47'-10"	"	"	41'-9 3/4"	—	—	—	—
	12'	6'	5'-3 1/8"	13'-4"	13'-9 5/8"	14'-4"	8'-6 1/4"	26'-2"	27'-1"	27'-7 1/2"	21'-10"	39'-0"	40'-4 1/2"	40'-11"	35'-1 1/4"	51'-10"	53'-8"	54'-2 1/2"	48'-4 3/4"	—	—	—	—
		7'	6'-5 7/8"	13'-4"	"	"	7'-3 3/4"	26'-2"	"	"	20'-7 1/2"	39'-0"	"	"	33'-10 3/4"	51'-10"	"	"	47'-2"	—	—	—	—
		8'	7'-8 5/8"	13'-4"	"	"	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 1/4"	8'-6"	8'-9 3/8"	9'-4"	Ⓐ 0"	16'-5"	17'-0"	17'-6 1/2"	8'-0 1/4"	24'-4"	25'-2 1/2"	25'-8 3/4"	16'-3"	32'-3"	33'-4 5/8"	33'-11"	24'-5 3/4"	40'-2"	41'-7"	42'-1 1/2"	32'-7 3/4"
	8'	9'	8'-11 1/4"	9'-6"	9'-10"	10'-4 1/2"	0'-10 3/4"	18'-5"	19'-0 3/4"	19'-7 1/4"	10'-1 1/2"	27'-4"	28'-3 5/8"	28'-10"	19'-4 1/4"	36'-3"	37'-6 3/4"	38'-0 3/4"	28'-7"	45'-2"	46'-9 1/8"	47'-3 1/2"	37'-9 3/4"
		10'	10'-2"	9'-8"	10'-0 1/2"	10'-6 1/2"	Ⓐ 0"	18'-8"	19'-3 7/8"	19'-10 1/4"	9'-2"	27'-8"	28'-7 3/4"	29'-2 1/4"	18'-5 3/4"	36'-8"	37'-11 1/2"	38'-6"	27'-9 1/2"	45'-8"	47'-3 3/8"	47'-9 3/4"	37'-1 1/2"
	9'	9'	8'-11 1/4"	10'-6"	10'-10 1/2"	11'-5"	1'-11 1/4"	20'-5"	21'-1 7/8"	21'-8 1/4"	12'-2 1/2"	30'-4"	31'-4 7/8"	31'-11 1/4"	22'-5 1/2"	40'-3"	41'-8"	42'-2 1/2"	32'-8 3/4"	50'-2"	51'-11 1/4"	52'-5 3/4"	43'-0"
		10'	10'-2"	10'-8"	11'-0 1/2"	11'-7"	0'-10 1/8"	20'-8"	21'-4 3/4"	21'-11 1/4"	11'-2 3/4"	30'-8"	31'-9"	32'-3 1/2"	21'-7"	40'-8"	42'-1 1/2"	42'-7 3/4"	31'-11 1/4"	50'-8"	52'-5 1/2"	53'-0"	42'-3 1/2"
		11'	11'-4 5/8"	10'-10"	11'-2 5/8"	11'-9"	Ⓐ 0"	20'-10"	21'-6 3/8"	22'-1 1/4"	10'-2 1/4"	30'-10"	31'-11"	32'-5 1/2"	20'-6 1/2"	40'-10"	42'-3 1/4"	42'-9 3/4"	30'-10 3/4"	50'-10"	52'-7 1/2"	53'-2"	41'-2 3/4"
	10'	9'	8'-11 1/4"	11'-6"	11'-10 1/2"	12'-5 1/4"	2'-11 3/8"	22'-5"	23'-2 1/2"	23'-9"	14'-3 1/4"	33'-4"	34'-6 1/2"	35'-0 1/2"	25'-6 3/4"	44'-3"	45'-9 3/4"	46'-4 1/4"	36'-10 1/2"	55'-2"	57'-1 3/8"	57'-7 3/4"	48'-2"
		10'	10'-2"	11'-8"	12'-1"	12'-7 1/2"	1'-11"	22'-8"	23'-5 5/8"	24'-0"	13'-3 3/4"	33'-8"	34'-10 1/4"	35'-4 3/4"	24'-8 1/2"	44'-8"	46'-2 7/8"	46'-9 1/4"	36'-1"	55'-8"	57'-7 3/8"	58'-2"	47'-5 1/2"
		11'	11'-4 5/8"	11'-10"	12'-3"	12'-9 1/2"	0'-10 3/8"	22'-10"	23'-7 3/8"	24'-2"	12'-3"	33'-10"	35'-0 3/8"	35'-6 3/4"	23'-7 3/4"	44'-10"	46'-5"	46'-11 1/2"	35'-0 1/4"	55'-10"	57'-9 5/8"	58'-4"	46'-5"
		12'	12'-7 3/8"	12'-0"	12'-5 1/8"	12'-11 1/2"	Ⓐ 0"	23'-0"	23'-9 3/4"	24'-4 1/4"	11'-2 1/2"	34'-0"	35'-2 3/4"	35'-8 3/4"	22'-7"	45'-0"	46'-7"	47'-1 1/2"	33'-11 3/4"	56'-0"	57'-11 3/8"	58'-6"	45'-4 1/4"
	11'	9'	8'-11 1/4"	12'-6"	12'-11 1/4"	13'-5 3/4"	4'-0"	24'-5"	25'-3 3/4"	25'-9 3/4"	16'-4"	36'-4"	37'-7 3/8"	38'-1 3/4"	28'-8"	48'-3"	49'-11 3/8"	50'-5 3/4"	41'-0 1/4"	—	—	—	—
		10'	10'-2"	12'-8"	13'-1 3/4"	13'-7 3/4"	2'-11 3/8"	24'-8"	25'-6 1/2"	26'-1"	15'-4 1/2"	36'-8"	37'-11 1/2"	38'-6"	27'-9 1/2"	48'-8"	50'-4 5/8"	50'-11"	40'-2 3/4"	—	—	—	—
		11'	11'-4 5/8"	12'-10"	13'-3 3/4"	13'-10"	1'-10 3/4"	24'-10"	25'-8 1/2"	26'-3"	14'-3 3/4"	36'-10"	38'-1 5/8"	38'-8"	26'-9"	48'-10"	50'-6 5/8"	51'-1"	39'-2"	—	—	—	—
		12'	12'-7 3/8"	13'-0"	13'-5 1/2"	14'-0"	0'-10 1/2"	25'-0"	25'-10 5/8"	26'-5"	13'-3 1/4"	37'-0"	38'-3 5/8"	38'-10"	25'-8 1/4"	49'-0"	50'-8 3/4"	51'-3 1/4"	38'-1 1/2"	—	—	—	—
	12'	9'	8'-11 1/4"	13'-6"	13'-11 3/4"	14'-6 1/4"	5'-0 1/2"	26'-5"	27'-4 1/4"	27'-10 3/4"	18'-5"	39'-4"	40'-8 5/8"	41'-3"	31'-9 1/2"	52'-3"	54'-1 1/8"	54'-7 1/2"	45'-1 3/4"	—	—	—	—
		10'	10'-2"	13'-8"	14'-1 3/4"	14'-8 1/4"	3'-11 3/4"	26'-8"	27'-7 1/2"	28'-1 3/4"	17'-5 1/4"	39'-8"	41'-0 3/4"	41'-7 1/4"	30'-10 3/4"	52'-8"	54'-6 1/4"	55'-0 3/4"	44'-4 1/2"	—	—	—	—
		11'	11'-4 5/8"	13'-10"	14'-3 7/8"	14'-10 1/4"	2'-11 1/4"	26'-10"	27'-9 3/8"	28'-3 3/4"	16'-4 3/4"	39'-10"	41'-2 7/8"	41'-9 1/4"	29'-10 1/4"	52'-10"	54'-8 3/4"	55'-2 3/4"	43'-3 3/4"	—	—	—	—
		12'	12'-7 3/8"	14'-0"	14'-5 7/8"	15'-0 1/4"	1'-10 1/2"	27'-0"	27'-11 3/8"	28'-6"	15'-4"	40'-0"	41'-4 7/8"	41'-11 1/4"	28'-9 1/2"	53'-0"	54'-10 3/4"	55'-4 3/4"	42'-3"	—	—	—	—

Ⓐ Special case for these boxes, See Detail "A" and Table "A" for revised values of F_1, F_2, W_4 and W_5, when apron width is more than 1'-0" and W_3 = 0". For Detail "A" and Tables "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.



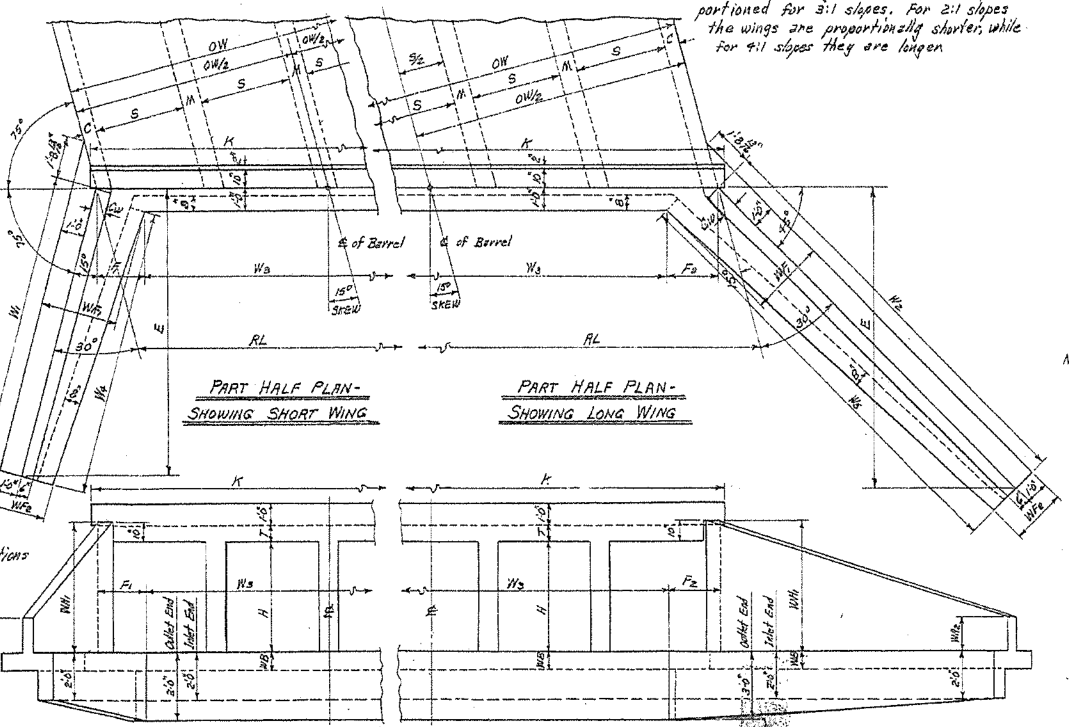
PART PLAN

NOTE:- Plans and Elevations are not to scale.

END ELEVATION

TRIPLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

Details of Culvert with 15° Skew Left Forward is reversed, see Layout at top center of sheet.



PART HALF PLAN - SHOWING SHORT WING

PART HALF PLAN - SHOWING LONG WING

PART END ELEVATION

QUADRUPLE BARREL CULVERT - 15° SKEW RT. FWD.

Details of Culvert with 15° Skew Left Forward is reversed, see Layout at above center.

PART END ELEVATION

QUINTUPLE BARREL CULVERT - 15° SKEW RT. FWD.

Details of Culvert with 15° Skew Left Forward is reversed, see Layout above.

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

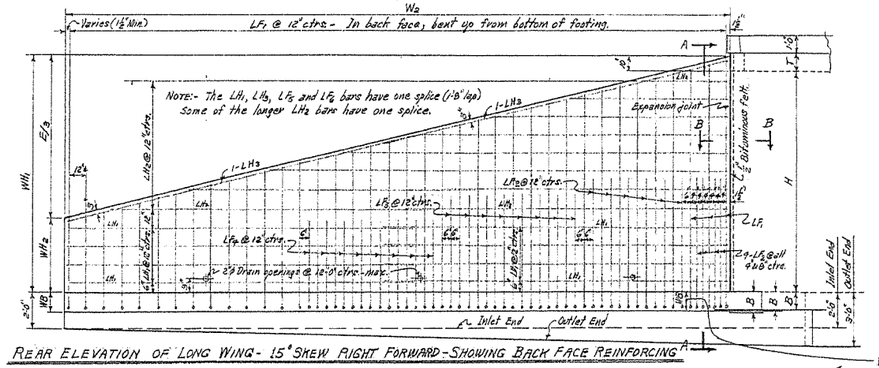
DETAILS OF STANDARD WINGS FOR REINFORCED CONCRETE BOX CULVERTS 15° SKEW

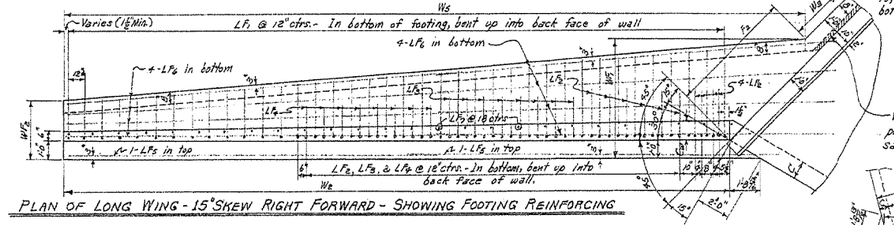
4, 5, 6, 7, 8, 9, 10, 11 & 12 SPANS — 2:1, 3:1 & 4:1 SLOPES

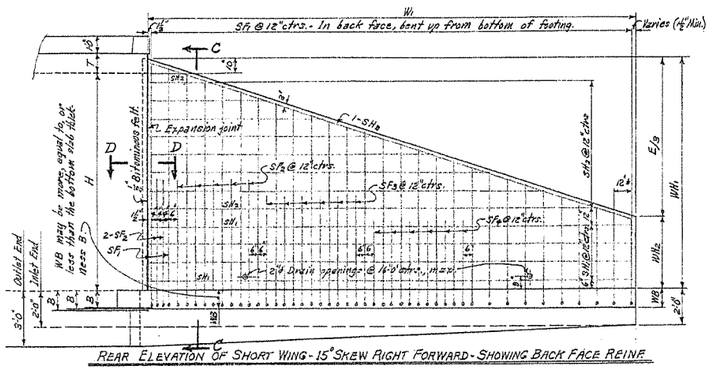
SINGLES, DOUBLES, TRIPLES, QUADRUPLES & QUINTUPLES. — ALL DEPTHS OF COVER H = 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 & 12.

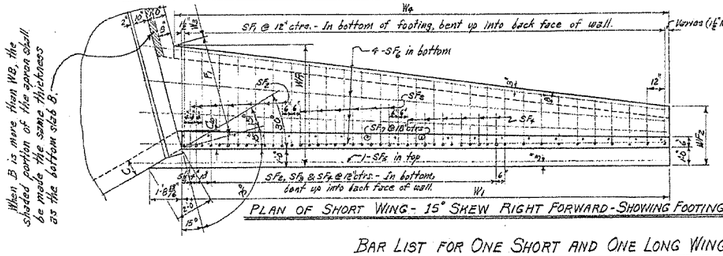
STANDARD DRAWING NO. W-X15

Designed by:- W.C.H. 5-22-63 Checked by:-
Traced by:- W.C.H. 6-13-63 Checked by:- J.E.M. 6-20-63
Quantities by:- Checked by:-









Reshot 3-8-93

393 ~~176~~

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			150	
JOB No.					

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		

Note:- The LH1, LH2, LF2 and LF3 bars have one splice (1'-8" lap). Some of the longer LH2 bars have one splice.

REAR ELEVATION OF LONG WING - 15° SKEW RIGHT FORWARD - SHOWING BACK FACE REINFORCING

WB may be more, equal to, or less than the bottom slab thickness B.

When B is more than WB, the shaded portion of the apron shall be made the same thickness as the bottom slab B.

PLAN OF LONG WING - 15° SKEW RIGHT FORWARD - SHOWING FOOTING REINFORCING

REAR ELEVATION OF SHORT WING - 15° SKEW RIGHT FORWARD - SHOWING BACK FACE REINF.

When B is more than WB, the shaded portion of the apron shall be made the same thickness as the bottom slab B.

PLAN OF SHORT WING - 15° SKEW RIGHT FORWARD - SHOWING FOOTING REINF.

TYPICAL END VIEW OF WING

SECTION A-A

SECTION C-C

TABLE "A" - DIMENSIONS FOR DETAIL "A"

S	H	F1	F2	W3	Y	W4	W5
7'	9'	4'-0⅛"	4'-9½"	0"	1'-1⅛"	21'-2½"	31'-7¼"
8'	10'	4'-6¼"	5'-5¾"	0"	1'-1¼"	23'-9¾"	34'-11"
9'	11'	5'-0½"	6'-2⅛"	0"	1'-1⅜"	25'-7¼"	38'-2¾"
10'	12'	5'-6⅝"	6'-10½"	0"	1'-1½"	27'-9½"	41'-6½"

DETAIL "A"

PART PLAN

END ELEVATION

SINGLE BARREL CULVERT - 15° SKEW RIGHT FORWARD

Details of Culvert with 15° Skew Left Forward is reversed. See Drwg. No. W-X15.

TYPICAL WING DETAILS

SECTION B-B

SECTION D-D

SECTIONS THRU EXPANSION JOINTS

DETAILS AT TOP OF WINGS - 15° SKEW RIGHT FORWARD

NOTE:- For remainder of General Plans and Elevations of Single, Double, Triple, Quadruple and Quintuple Span Culverts, see Std. Drawing No. W-X15. For values of RL, K and W3 for each box, see above Std. also.

REGULAR WING DIMENSIONS - 3:1 SLOPES

CLEAR HEIGHT OF BOX	THICKNESS OF WING FOOTING	THICKNESS OF WING AT HDWL.=C.	WINGWALL HEIGHTS		WIDTHS OF WING FOOTINGS		FOOTING DIMENSION - PARALLEL WITH HEADWALL		PERPENDICULAR DIST. FROM HDWL. TO END OF WING	LENGTHS OF WINGWALLS		INSIDE FOOTING DIMENSIONS		* QUANTITY PER WING - CLASS S CONCRETE			
			AT HEADWALL	AT END OF WING	AT HEADWALL	AT END OF WING	SHORT WING	LONG WING		SHORT WING	LONG WING	SHORT WING	LONG WING	INLET END SHORT WING	INLET END LONG WING	OUTLET END SHORT WING	OUTLET END LONG WING
H	WB	Cw	WH1	WH2	WF1	WF2	F1	F2	E	W1	W2	W4	W5	CU.YD.	CU.YD.	CU.YD.	CU.YD.
9' ✱	10"	9"	9'-10"	3'-0"	5'-2"	2'-10½"	4'-0½"	4'-10¾"	20'-6"	21'-2¾"	29'-0"	21'-3¾"	31'-9"	6.651	9.246	6.928	9.647
10' ✱	11"	10"	10'-10"	3'-4"	5'-8"	3'-0"	4'-6¾"	5'-7¼"	22'-6"	23'-3½"	31'-9¾"	23'-6"	35'-0¾"	8.477	11.784	8.782	12.225
11' ✱	12"	11"	11'-10"	3'-8"	6'-2"	3'-1½"	5'-1"	6'-3⅝"	24'-6"	25'-4½"	34'-7¾"	25'-8½"	38'-4¾"	10.632	14.771	10.964	15.253
12' ✱	13"	12"	12'-10"	4'-0"	6'-8"	3'-3"	5'-7⅞"	7'-0⅛"	26'-6"	27'-5¼"	37'-5⅜"	27'-11"	41'-8¾"	13.128	18.242	13.987	18.765

* Quantity per wing does not include headwall or that portion of apron or toewall for the length W3.
✱ See Table "A" for special values of F1 & F2 and W4 & W5 for Single 7'x9', 8'x10', 9'x11' and 10'x12' Box Culverts.

QUANTITIES

CLEAR SPAN	CLEAR HEIGHT	THICKNESS OF WING AT HEADWALL	THICKNESS OF WING 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.
7'									
	9'	9"	10"	2362	33.07	34.81	36.53	38.27	40.00
8'	9'	9"	10"	2362	33.30	35.26	37.21	39.17	41.11
	10'	10"	11"	2932	41.94	43.94	45.92	47.82	49.90
9'	9'	9"	10"	2362	33.53	35.72	37.88	40.06	42.22
	10'	10"	11"	2932	42.18	44.39	46.60	48.81	51.02
	11'	11"	12"	3523	52.37	54.61	56.83	59.07	61.30
10'	9'	9"	10"	2362	33.76	36.19	38.56	40.92	43.32
	10'	10"	11"	2932	42.41	44.86	47.27	49.70	52.13
	11'	11"	12"	3523	52.61	55.07	57.52	59.96	62.42
	12'	12"	13"	4482	64.45	66.94	69.40	71.87	74.36
11'	9'	9"	10"	2362	33.99	36.67	39.28	41.86	——
	10'	10"	11"	2932	42.63	45.33	47.96	60.59	——
	11'	11"	12"	3523	52.83	55.54	58.20	60.87	——
	12'	12"	13"	4482	64.68	67.40	70.09	72.79	——
12'	9'	9"	10"	2362	34.21	37.16	39.99	42.83	——
	10'	10"	11"	2932	42.86	45.82	48.67	51.53	——
	11'	11"	12"	3523	53.07	56.02	58.88	61.78	——
	12'	12"	13"	4482	64.91	67.88	70.78	73.71	——

⊕ For reinforcing steel in Headwalls and Aprons, see Drawings listed at top of sheet.

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 wingwalls, footings and sidewalls shall be only where shown on plans.

MEMBRANE:- A membrane waterproofing 12" wide, consisting of three moppings of waterproofing asphalt and two alternate layers of treated cotton fabric shall be applied to the back face of wing to cover the expansion joints.

Payment for the membrane waterproofing and bituminous felt shall be included in unit price bid for Class S Concrete.

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#/□"

BAR LIST FOR ONE SHORT AND ONE LONG WING - 2 EACH REQUIRED

CLEAR HEIGHT	WING LOCATION	SF1 & LF1									SF2 & LF2						SF3 & LF3					
		BENT									BENT											
		In bottom of footing, bent up into back face of wing. One bar of each length.									In bottom of footing, bent up into back face of wing. Alt. with F1 bars.						In bottom of footing, bent up into back face of wing. Alt. with F1 bars.					
		SIZE	SPACING	NO. REQ'D	LENGTHS VARY MIN.	LENGTHS VARY MAX.	X MIN.	X MAX.	Y MIN.	Y MAX.	SIZE	⊙ SPACING	NO. REQ'D	LENGTH	X	Y	SIZE	SPACING	NO. REQ'D	LENGTH	X	Y
H	SHORT OR LONG																					
9'	Short	#5	12"	22	4'-11"	14'-0"	1'-6"	3'-10"	3'-6"	10'-3"	#5	12"	4	7'-6"	2'-1"	5'-6"	#4	12"	6	6'-6"	1'-10"	4'-9"
	Long	#5	12"	30	4'-10"	13'-10"	1'-6"	3'-8"	3'-5"	10'-3"	#5	12"	6	7'-6"	2'-1"	5'-6"	#4	12"	8	6'-6"	1'-10"	4'-9"
10'	Short	#5	12"	24	5'-6"	15'-7"	1'-8"	4'-4"	3'-11"	11'-4"	#6	12"	3	8'-6"	2'-4"	6'-3"	#5	12"	4	7'-6"	2'-1"	5'-6"
	Long	#5	12"	33	5'-5"	15'-4"	1'-8"	4'-1"	3'-10"	11'-4"	#6	12"	4	8'-6"	2'-4"	6'-3"	#5	12"	6	7'-6"	2'-1"	5'-6"
11'	Short	#5	12"	26	6'-0"	17'-2"	1'-9"	4'-10"	4'-4"	12'-5"	#6	12"	6	8'-6"	2'-4"	6'-3"	#5	12"	4	7'-6"	2'-1"	5'-6"
	Long	#5	12"	35	6'-1"	16'-11"	1'-9"	4'-7"	4'-5"	12'-5"	#6	12"	8	8'-6"	2'-4"	6'-3"	#5	12"	6	7'-6"	2'-1"	5'-6"
12'	Short	#5	12"	28	6'-8"	18'-9"	1'-11"	5'-4"	4'-10"	13'-6"	#7	12"	7	9'-6"	2'-7"	7'-0"	#6	12"	6	8'-6"	2'-4"	6'-3"
	Long	#5	12"	38	6'-7"	18'-5"	1'-11"	5'-0"	4'-9"	13'-6"	#7	12"	10	9'-6"	2'-7"	7'-0"	#6	12"	8	8'-6"	2'-4"	6'-3"

CLEAR HEIGHT	WING LOCATION	SF4 & LF4						SF5 & LF5			SF6 & LF6			SF7 & LF7					SH1 & LH1				SH2 & LH2					SH3 & LH3			QUANTITY	
		BENT						STRAIGHT						BENT					STRAIGHT												REINFORCING STEEL PER WING - LBS.	
		In bottom of footing, bent up into back face of wing. Alt. with F1 bars.						Longitudinal in top of wing footing heel.			Longitudinal in bottom of wing footing toe.			Footing dowels extending up into front face of wing.					Horizontal in back face of wing.				Horizontal in back face of wing. One bar of each length. *					In back face of wing at top - on slope.				
		SIZE	SPACING	NO. REQ'D	LENGTH	X	Y	SIZE	NO. REQ'D	LENGTH	SIZE	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTH	X	SIZE	SPACING	NO. REQ'D	LENGTH	SIZE	SPACING	NO. REQ'D	LENGTHS VARY MAX.	LENGTHS VARY MIN.	SIZE	NO. REQ'D	LENGTH	SHORT WING	LONG WING
H	SHORT OR LONG																															
9'	Short	—	—	—	—	—	—	#4	1	23'-9"	#4	4	23'-3"	#4	18"	15	4'-0"	3'-6"	#4	12"	3	20'-11"	#4	12"	6	18'-11"	3'-6"	#4	1	22'-0"	494.0	686.8
	Long	—	—	—	—	—	—	#4	2	16'-7"	#4	8	17'-8"	#4	18"	20	4'-0"	3'-6"	#4	12"	6	15'-3"	#4	12"	6	25'-11"	4'-8"	#4	2	15'-6"		
10'	Short	#4	12"	6	6'-6"	1'-10"	4'-9"	#4	1	25'-10"	#4	4	25'-6"	#4	18"	16	4'-4"	3'-10"	#4	12"	3	23'-0"	#4	12"	7	22'-0"	3'-6"	#4	1	24'-2"	613.1	853.0
	Long	#4	12"	8	6'-6"	1'-10"	4'-9"	#4	2	18'-0"	#4	8	19'-4"	#4	18"	22	4'-4"	3'-10"	#4	12"	6	16'-8"	#4	12"	7	*30'-2"	4'-8"	#4	2	17'-0"		
11'	Short	#4	12"	6	6'-6"	1'-10"	4'-9"	#4	1	27'-11"	#4	4	27'-9"	#4	18"	18	4'-8"	4'-2"	#4	12"	4	25'-1"	#4	12"	7	22'-6"	3'-6"	#4	1	26'-4"	741.2	1020.5
	Long	#4	12"	8	6'-6"	1'-10"	4'-9"	#4	2	19'-5"	#4	8	21'-0"	#4	18"	24	4'-8"	4'-2"	#4	12"	8	18'-1"	#4	12"	7	*30'-2"	4'-8"	#4	2	18'-6"		
12'	Short	#4	12"	6	6'-6"	1'-10"	4'-9"	#4	1	30'-0"	#4	4	30'-0"	#4	18"	19	5'-0"	4'-6"	#4	12"	4	27'-2"	#4	12"	8	25'-1"	3'-6"	#4	1	28'-6"	941.4	1299.9
	Long	#4	12"	8	6'-6"	1'-10"	4'-9"	#4	2	20'-10"	#4	8	22'-8"	#4	18"	26	5'-0"	4'-6"	#4	12"	8	19'-6"	#4	12"	8	*34'-5"	4'-8"	#4	2	20'-0"		

BAR BENDING DIAGRAMS

NOTE:- Dimensions are to bar centers.

NOTE:- Bars for short wing to be marked with prefix letter "S", while those for long wing shall be marked with letter "L".

⊙ Except as shown at headwall.

* Lengths without splice. Bars over 29'-0" length may be spliced. (1'-8" lap.) Quantities include laps for LH2 bars over 29'-0" length.

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD WINGS
FOR
REINFORCED CONCRETE BOX CULVERTS
15° SKEW

7', 8', 9', 10', 11' & 12' SPANS
SINGLES, DOUBLES, TRIPLES,
QUADRUPLES & QUINTUPLES

3:1 SLOPES
ALL DEPTHS OF COVER
FOR H = 9'-0" & OVER

STANDARD DRAWING NO. W-X153-2

Designed by:- W.C.H. 5-13-63
Drawn by:- W.C.H. 6-12-63
Quantities by:- W.C.H. 9-24-63

Checked by:-
Checked By T.A.S. 8-7-63
Checked by:-

RESHOT 3-5-93

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			151	
JOB No.					

BAR LIST FOR VARIOUS SECTIONS OF BARREL

NOTE:- Bars for each Section to be marked with the Section letter, thus for Section B, the bars should be marked Ba, Bb, Bb2, Bc, Bd, Bd1, Be and Bf.

SECTION & BAR GROUP	LENGTHS OF SECTION	DEPTH OF COVER	CLEAR SPAN	CLEAR HEIGHT	"a" bars					"b" bars								"b2" bars								"c" bars					"d" bars				"d1" bars				"e" bars				"f" bars				
					STRAIGHT					BENT - See Diagram below.								BENT - See Diagram below								STRAIGHT					STRAIGHT												STRAIGHT				
					In Top and Bottom Slab of Barrel 2 Add'l in Apron and Headwall - Each.					In Bottom of Top Slab bent up over Division Wall - hooked. Alternate with "a" and "c" bars.								In Top of Bottom Slab bent down under Division Wall - hooked. Alternate with "a" and "c" bars.								In Top and Bottom Slab of Barrel. Alternate with "b" and "b2" bars.					Longitudinal in Top Slab of Barrel				Longitudinal in Sidewalls and Division Walls				Longitudinal in Bottom Slab of Barrel				Vertical in Sidewalls and Division Walls				
		D	S	H	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	X	Y	Z	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	X	Y	Z	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH	SIZE	SPACING	No. REQ'D	LENGTH	SIZE	SPACING	No. REQ'D	LENGTH	SIZE	SPACING	No. REQ'D	LENGTH	SIZE	SPACING	NUMBER REQ'D 3:1	NUMBER REQ'D 4:1	LENGTH
SECTION "A" & BAR GROUP "A"	3:1 = 22'-0" 4:1 = 32'-0"	0' TO 10'-0"	2 @ 8'	5'	#5	13"	46	64	17'-8"	#6	13"	20	29	19'-1"	0'-5⅜"	3'-8"	6'-6"	#6	13"	20	29	19'-2"	0'-6¼"	3'-7"	6'-6"	#7	13"	42	60	8'-9"	#4	12"	23	33'-3" for 32'-0" Section	#4	12"	20	33'-3" for 32'-0" Section	#4	12"	23	34'-3" for 32'-0" Section	#4	12"	88	128	6'-4"
				6'			46	64	17'-8"			20	29	19'-1"	0'-5⅜"	3'-8"	6'-6"			20	29	19'-2"	0'-6¼"	3'-7"	6'-6"			42	60	8'-9"			23				24				23				88	128	7'-4"
				7'			46	64	17'-10"			20	29	19'-3"	0'-5⅜"	3'-9"	6'-6½"			20	29	19'-4"	0'-6¼"	3'-8"	6'-6½"			42	60	8'-10"			23				28				23			10"	108	156	8'-4"
				8'			46	64	17'-11"			20	29	19'-4"	0'-5⅜"	3'-9"	6'-7"			20	29	19'-5"	0'-6¼"	3'-8"	6'-7"			42	60	8'-10"			23				32				23		#5	11"	96	140	9'-4"
				9'			46	64	18'-2"			20	29	19'-7"	0'-5⅜"	3'-10"	6'-8"			20	29	19'-8"	0'-6¼"	3'-9"	6'-8"			42	60	8'-11"			23				36				23			10"	108	156	10'-4"
				10'			46	64	18'-5"			20	29	19'-10"	0'-5⅜"	3'-11"	6'-9"			20	29	19'-11"	0'-6¼"	3'-10"	6'-9"			42	60	9'-0"			23				40				23		#6	12"	88	128	11'-4"
			2 @ 10'	6'	#5	12"	48	68	21'-10"	#6	12"	22	32	23'-4"	0'-7¼"	4'-7½"	7'-11½"	#6	12"	22	32	23'-5"	0'-8"	4'-6"	7'-11½"	#8	12"	44	64	10'-10"	#4	12"	27		#4	12"	24		#4	12"	27		#4	12"	88	128	7'-7"
				7'			48	68	21'-10"			22	32	23'-4"	0'-7¼"	4'-7½"	7'-11½"			22	32	23'-5"	0'-8"	4'-6"	7'-11½"			44	64	10'-10"			27				28				27			10"	108	156	8'-7"
				8'			48	68	21'-11"			22	32	23'-5"	0'-7¼"	4'-7½"	8'-0"			22	32	23'-6"	0'-8"	4'-6"	8'-0"			44	64	10'-10"			27				32				27		#5	12"	88	128	9'-7"
				9'			48	68	22'-2"			22	32	23'-8"	0'-7¼"	4'-8½"	8'-1"			22	32	23'-9"	0'-8"	4'-7"	8'-1"			44	64	10'-11"			27				36				27			10"	108	156	10'-7"
				10'			48	68	22'-5"			22	32	23'-11"	0'-7¼"	4'-9½"	8'-2"			22	32	24'-0"	0'-8"	4'-8"	8'-2"			44	64	11'-0"			27				40				27		#6	12"	88	128	11'-7"
				11'			48	68	22'-7"			22	32	24'-1"	0'-7¼"	4'-9½"	8'-3"			22	32	24'-2"	0'-8"	4'-8"	8'-3"			44	64	11'-0"			27				44				27			11"	96	140	12'-7"
				12'			48	68	22'-9"			22	32	24'-3"	0'-7¼"	4'-9½"	8'-4"			22	32	24'-4"	0'-8"	4'-8"	8'-4"			44	64	11'-0"			27				48				27			10"	108	156	13'-7"
			2 @ 12'	6'	#5	11"	52	74	25'-11"	#7	11"	24	35	27'-8"	0'-8¾"	5'-4½"	9'-6"	#7	11"	24	35	27'-9"	0'-9¾"	5'-2½"	9'-6"	#8	11"	48	70	12'-10"	#4	12"	31		#4	12"	24		#4	12"	31		#4	12"	88	128	7'-11"
				7'			52	74	25'-11"			24	35	27'-8"	0'-8¾"	5'-4½"	9'-6"			24	35	27'-9"	0'-9¾"	5'-2½"	9'-6"			48	70	12'-10"			31				28				31				88	128	8'-11"
				8'			52	74	25'-11"			24	35	27'-8"	0'-8¾"	5'-4½"	9'-6"			24	35	27'-9"	0'-9¾"	5'-2½"	9'-6"			48	70	12'-10"			31				32				31		#5	12"	88	128	9'-11"
				9'			52	74	26'-2"			24	35	27'-11"	0'-8¾"	5'-5½"	9'-7"			24	35	28'-0"	0'-9¾"	5'-3½"	9'-7"			48	70	12'-11"			31				36				31			10"	108	156	10'-11"
				10'			52	74	26'-5"			24	35	28'-2"	0'-8¾"	5'-6½"	9'-8"			24	35	28'-3"	0'-9¾"	5'-4½"	9'-8"			48	70	13'-0"			31				40				31		#6	12"	88	128	11'-11"
				11'			52	74	26'-7"			24	35	28'-4"	0'-8¾"	5'-6½"	9'-9"			24	35	28'-5"	0'-9¾"	5'-4½"	9'-9"			48	70	13'-0"			31				44				31			11"	96	140	12'-11"
				12'			52	74	26'-9"			24	35	28'-6"	0'-8¾"	5'-6½"	9'-10"			24	35	28'-7"	0'-9¾"	5'-4½"	9'-10"			48	70	13'-0"			31				48				31			9"	120	172	13'-11"
SECTION "B" & BAR GROUP "B"	3:1 = 11'-0" 4:1 = 16'-0"	10'-0" TO 15'-0"	2 @ 8'	5'	#5	12"	22	32	17'-8"	#6	12"	11	16	19'-2"	0'-6⅜"	3'-6"	6'-6"	#6	12"	11	16	19'-3"	0'-7⅛"	3'-5"	6'-6"	#7	12"	22	32	8'-9"	#4	12"	23	34'-3" for 33'-0" Length Section	#4	12"	20	34'-3" for 33'-0" Length Section	#4	12"	23	34'-3" for 33'-0" Length Section	#4	12"	44	64	6'-6"
				6'			22	32	17'-8"			11	16	19'-2"	0'-6⅜"	3'-6"	6'-6"			11	16	19'-3"	0'-7⅛"	3'-5"	6'-6"			22	32	8'-9"			23				24				23				44	64	7'-6"
				7'			22	32	17'-10"			11	16	19'-4"	0'-6⅜"	3'-7"	6'-6½"			11	16	19'-5"	0'-7⅛"	3'-6"	6'-6½"			22	32	8'-10"			23				28				23		#5	12"	44	64	8'-6"
				8'			22	32	17'-11"			11	16	19'-5"	0'-6⅜"	3'-7"	6'-7"			11	16	19'-6"	0'-7⅛"	3'-6"	6'-7"			22	32	8'-10"			23				32				23			9"	60	89	9'-6"
				9'			22	32	18'-2"			11	16	19'-8"	0'-6⅜"	3'-8"	6'-8"			11	16	19'-9"	0'-7⅛"	3'-7"	6'-8"			22	32	8'-11"			23				36				23		#6	11"	48	68	10'-6"
				10'			22	32	18'-5"			11	16	19'-11"	0'-6⅜"	3'-9"	6'-9"			11	16	20'-0"	0'-7⅛"	3'-8"	6'-9"			22	32	9'-0"			23				40				23			10"	56	80	11'-6"
			2 @ 10'	6'	#5	12"	22	32	21'-10"	#7	12"	11	16	23'-7"	0'-8¼"	4'-5½"	7'-11½"	#7	12"	11	16	23'-8"	0'-9⅛"	4'-3½"	7'-11½"	#8	12"	22	32	10'-10"	#4	12"	27		#4	12"	24		#4	12"	27		#4	12"	44	64	7'-10"
				7'			22	32	21'-10"			11	16	23'-7"	0'-8¼"	4'-5½"	7'-11½"			11	16	23'-8"	0'-9⅛"	4'-3½"	7'-11½"			22	32	10'-10"			27				28				27		#5	12"	44	64	8'-10"
				8'			22	32	21'-11"			11	16	23'-8"	0'-8¼"	4'-5½"	8'-0"			11	16	23'-9"	0'-9⅛"	4'-3½"	8'-0"			22	32	10'-10"			27				32				27			9"	60	88	9'-10"
				9'			22	32	22'-2"			11	16	23'-11"	0'-8¼"	4'-6½"	8'-1"			11	16	24'-0"	0'-9⅛"	4'-4½"	8'-1"			22	32	10'-11"			27				36				27		#6	12"	44	64	10'-10"
				10'			22	32	22'-5"			11	16	24'-2"	0'-8¼"	4'-7½"	8'-2"			11	16	24'-3"	0'-9⅛"	4'-5½"	8'-2"			22	32	11'-0"			27				40				27			10"	56	80	11'-10"
				11'			22	32	22'-7"			11	16	24'-4"	0'-8¼"	4'-7½"	8'-3"			11	16	24'-5"	0'-9⅛"	4'-5½"	8'-3"			22	32	11'-0"			27				44				27			9"	60	88	12'-10"
				12'			22	32	22'-9"			11	16	24'-6"	0'-8¼"	4'-7½"	8'-4"			11	16	24'-7"	0'-9⅛"	4'-5½"	8'-4"			22	32	11'-0"			27				48				27			8"	64	96	13'-10"
			2 @ 12'	6'	#6	13"	20	30	25'-11"	#8	13"	10	15	28'-0"	0'-10⅛"	5'-1"	9'-6"	#8	13"	10	15	28'-1"	0'-11⅛"	4'-11½"	9'-6"	#9	13"	20	30	12'-10"	#4	12"	31		#4	12"	24		#4	12"	31		#4	12"	44	64	8'-2"
				7'			20	30	25'-11"			10	15	28'-0"	0'-10⅛"	5'-1"	9'-6"			10	15	28'-1"	0'-11⅛"	4'-11½"	9'-6"			20	30	12'-10"			31				28				31			9"	60	88	9'-2"
				8'			20	30	25'-11"			10	15	28'-0"	0'-10⅛"	5'-1"	9'-6"			10	15	28'-1"	0'-11⅛"	4'-11½"	9'-6"			20	30	12'-10"			31				32				31		#6	12"	44	64	10'-2"
				9'			20	30	26'-2"			10	15	28'-3"	0'-10⅛"	5'-2"	9'-7"			10	15	28'-4"	0'-11⅛"	5'-0½"	9'-7"			20	30	12'-11"			31				36				31			11"	48	68	11'-2"
				10'			20	30	26'-5"			10	15	28'-6"	0'-10⅛"	5'-3"	9'-8"			10	15	28'-7"	0'-11⅛"	5'-1½"	9'-8"			20	30	13'-0"			31				40				31			9"	60	88	12'-2"
				11'			20	30	26'-7"			10	15	28'-8"	0'-10⅛"	5'-3"	9'-9"			10	15	28'-9"	0'-11⅛"	5'-1½"	9'-9"			20	30	13'-0"			31				44				31		#7	11"	48	72	13'-2"
				12'			20	30	26'-9"			10	15	28'-10"	0'-10⅛"	5'-3"	9'-10"			10	15	28'-11"	0'-11⅛"	5'-1½"	9'-10"			20	30	13'-0"			31				48				31			10"	52	76	14'-2"
SECTION "C" & BAR GROUP "C"	3:1 = 11'-0" 4:1 = 16'-0"	15'-0" TO 20'-0"	2 @ 8'	5'	#5	12"	22	32	17'-8"	#6	12"	11	16	19'-3"	0'-7¾"	3'-4"	6'-6"	#6	12"	11	16	19'-3"	0'-8⅝"	3'-3"	6'-6"	#8	12"	22	32	8'-9"	#4	12"	23	34'-3" for 33'-0" Length Section	#4	12"	20	34'-3" for 33'-0" Length Section	#4	12"	23	34'-3" for 33'-0" Length Section	#4	12"	44	64	6'-8"
				6'			22	32	17'-8"			11	16	19'-3"	0'-7¾"	3'-4"	6'-6"			11	16	19'-3"	0'-8⅝"	3'-3"	6'-6"			22	32	8'-9"			23				24				23				44	64	7'-8"
				7'			22	32	17'-10"			11	16	19'-5"	0'-7¾"	3'-5"	6'-6½"			11	16	19'-5"	0'-8⅝"	3'-4"	6'-6½"			22	32	8'-10"			23				28				23		#5	11"	48	68	8'-8"
				8'			22	32	17'-11"			11	16	19'-6"	0'-7¾"	3'-5"	6'-7"			11	16	19'-6"	0'-8⅝"	3'-4"	6'-7"			22	32	8'-10"			23				32				23		#6	11"	48	68	9'-8"
				9'			22	32	18'-2"			11	16	19'-9"	0'-7¾"	3'-6"	6'-8"			11	16	19'-9"	0'-8⅝"	3'-5"	6'-8"			22	32	8'-11"			23				36				23			10"	52	76	10'-8"
				10'			22	32	18'-5"			11	16	20'-0"	0'-7¾"	3'-7"	6'-9"			11	16	20'-0"	0'-8⅝"	3'-6"	6'-9"			22	32	9'-0"			23				40				23		#7	10"	52	76	11'-8"
			2 @ 10'	6'	#6	13"	20	30	21'-11"	#8	13"	10	15	23'-11"	0'-9¾"	4'-2½"	8'-0"	#8	13"	10	15	24'-0"	0'-10½"	4'-1"	8'-0"	#9	13"	20	30	10'-10"	#4	12"	27		#4	12"	24		#4	12"	27		#4	12"	44	64	8'-0"
				7'			20	30	21'-11"			10	15	23'-11"	0'-9¾"	4'-2½"	8'-0"			10	15	24'-0"	0'-10½"	4'-1"	8'-0"			20	30	10'-10"			27				28				27		#5	12"	44	64	9'-0"
				8'			20	30	22'-0"			10	15	24'-0"	0'-9¾"	4'-2½"	8'-0½"			10	15	24'-1"	0'-10½"	4'-1"	8'-0½"			20	30	10'-10"			27				32				27		#6	12"	44	64	10'-0"
				9'			20	30	22'-3"			10	15	24'-3"	0'-9¾"	4'-3½"	8'-1½"			10	15	24'-4"	0'-10½"	4'-2"	8'-1½"			20	30	10'-11"			27				36				27			10"	52	76	11'-0"
				10'			20	30	22'-5"			10	15	24'-6"	0'-9¾"	4'-4½"	8'-2½"			10	15	24'-7"	0'-10½"	4'-3"	8'-2½"			20	30	11'-0"			27				40				27		#7	12"	44	64	12'-0"
				11'			20	30	22'-7"			10	15	24'-7"	0'-9¾"	4'-4½"	8'-3"			10	15	24'-8"	0'-10½"	4'-3"	8'-3"			20	30	11'-0"			27				44				27			10"	52	76	13'-0"
				12'			20	30	22'-9"			10	15	24'-9"	0'-9¾"	4'-4½"	8'-4"			10	15	24'-10"	0'-10½"	4'-3"	8'-4"			20	30	11'-0"			27				48				27			9"	60	84	14'-0"
			2 @ 12'	6'	#6	11"	24	34	25'-11"	#8	11"	12	17	28'-2"	1'-0¼"	4'-9½"	9'-6"	#8	11"	12	17	28'-2"	1'-0¾"	4'-8½"	9'-6"	#9	11"	24	34	12'-10"	#4	11"	33		#4	12"	24		#4	11"	33		#4	12"	44	64	8'-5"
				7'			24	34	25'-11"			12	17	28'-2"	1'-0¼"	4'-9½"	9'-6"			12	17	28'-2"	1'-0¾"	4'-8½"	9'-6"			24	34	12'-10"			33				28				33		#5	11"	48	68	9'-5"
				8'			24	34	26'-0"			12	17	28'-3"	1'-0¼"	4'-9½"	9'-6¾"			12	17	28'-3"	1'-0¾"	4'-8½"	9'-6¾"			24	34	12'-10"			33				32				33		#6	12"	44	64	10'-5"
				9'			24	34	26'-3"			12	17	28'-6"	1'-0¼"	4'-10½"	9'-7¾"			12	17	28'-6"	1'-0¾"	4'-9½"	9'-7¾"			24	34	12'-11"			33				36				33			10"	52	76	11'-5"
				10'			24	34	26'-5"			12	17	28'-8"	1'-0¼"	4'-11½"	9'-8¾"			12	17	28'-8"	1'-0¾"	4'-10½"	9'-8¾"			24	34	13'-0"			33				40				33			11"	48	68	12'-5"
				11'			24	34	26'-7"			12	17	28'-10"	1'-0¼"	4'-11½"	9'-9¾"			12	17	28'-10"	1'-0¾"	4'-10½"	9'-9¾"			24	34	13'-0"			33				44				33		#7	10"	56	76	13'-5"
				12'			24	34	26'-9"			12	17	29'-0"	1'-0¼"	4'-11½"	9'-10¾"			12	17	29'-0"	1'-0¾"	4'-10½"	9'-10¾"			24	34	13'-0"			33				48				33			8"	64	96	14'-5"
SECTION "D" & BAR GROUP "D"	Varies with Length of Barrel	20'-0" TO 25'-0"	2 @ 8'	5'	#5	11"	Varies with length of Barrel.	Varies with length of Barrel.	17'-8"	#6	11"	Varies with length of Barrel.	Varies with length of Barrel.	19'-4"	0'-8¾"	3'-2"	6'-6"	#6	11"	Varies with length of Barrel.	Varies with length of Barrel.	19'-4"	0'-9½"	3'-1"	6'-6"	#8	11"	Varies with length of Barrel.	Varies with length of Barrel.	8'-9"	#4	12"	23	Varies with length of Barrel.	#4	12"	20	Varies with length of Barrel.	#4	12"	23	Varies with length of Barrel.	#4	12"	Varies with length of Barrel.	Varies with length of Barrel.	6'-10"
				6'					17'-9"					19'-5"	0'-8¾"	3'-2"	6'-6½"					19'-5"	0'-9½"	3'-1"	6'-6½"					8'-9"			23				24				23			10"			7'-10"
				7'					18'-0"					19'-8"	0'-8¾"	3'-3"	6'-7½"					19'-8"	0'-9½"	3'-2"	6'-7½"					8'-10"			23				28				23		#5	10"			8'-10"
				8'					18'-1"					19'-9"	0'-8¾"	3'-3"	6'-8"					19'-9"	0'-9½"	3'-2"	6'-8"					8'-10"			23				32				23		#6	11"			9'-10"
				9'					18'-4"					20'-0"	0'-8¾"	3'-4"	6'-9"					20'-0"	0'-9½"	3'-3"	6'-9"					8'-11"			23				36				23			9"			10'-10"
				10'					18'-7"					20'-3"	0'-8¾"	3'-5"	6'-10"					20'-3"	0'-9½"	3'-4"	6'-10"					9'-0"			23				40				23			8"			11'-10"
			2 @ 10'	6'	#6	12"			21'-11"	#8	12"			24'-0"	0'-10⅜"	4'-0½"	8'-0"	#8	12"			24'-1"	0'-11½"	3'-11"	8'-0"	#9	12"			10'-10"	#4	12"	27		#4	12"	24		#4	12"	27		#4	12"			8'-2"
				7'					22'-0"					24'-1"	0'-10⅜"	4'-0½"	8'-0½"					24'-2"	0'-11½"	3'-11"	8'-0½"					10'-10"			27				28				27		#5	11"			9'-2"
				8'					22'-1"					24'-3"	0'-10⅜"	4'-0½"	8'-1½"					24'-3"	0'-11½"	3'-11"	8'-1½"					10'-10"			27				32				27		#6	12"			10'-2"
				9'					22'-4"					24'-6"	0'-10⅜"	4'-1½"	8'-2½"					24'-6"	0'-11½"	4'-0"	8'-2½"					10'-11"			27				36				27			10"			11'-2"
				10'					22'-7"					24'-9"	0'-10⅜"	4'-2½"	8'-3½"					24'-9"	0'-11½"	4'-1"	8'-3½"					11'-0"			27				40				27		#7	11"			12'-2"
				11'					22'-9"					24'-10"	0'-10⅜"	4'-2½"	8'-4"					24'-11"	0'-11½"	4'-1"	8'-4"					11'-0"			27				44				27			9"			13'-2"
				12'					22'-10"					25'-0"	0'-10⅜"	4'-2½"	8'-4½"					25'-0"	0'-11½"	4'-1"	8'-4½"					11'-0"			27				48				27			8"			14'-2"
			2 @ 12'	6'	#6	10"			25'-11"	#8	10"			28'-3"	1'-1⅜"	4'-6½"	9'-6"	#8	10"			28'-3"	1'-2⅛"	4'-5½"	9'-6"	#9	10"			12'-10"	#4	10½"	35		#4	12"	24		#4	10½"	35		#4	12"			8'-8"
				7'					26'-0"					28'-4"	1'-1⅜"	4'-6½"	9'-6¾"					28'-5"	1'-2⅛"	4'-5½"	9'-6¾"					12'-10"			35				28				35		#5	11"			9'-8"
				8'					26'-2"					28'-6"	1'-1⅜"	4'-6½"	9'-7½"					28'-6"	1'-2⅛"	4'-5½"	9'-7½"					12'-10"			35				32				35		#6	12"			10'-8"
				9'					26'-5"					28'-9"	1'-1⅜"	4'-7½"	9'-8¼"					28'-9"	1'-2⅛"	4'-6½"	9'-8¼"					12'-11"			35				36				35			10"			11'-8"
				10'					26'-7"					28'-11"	1'-1⅜"	4'-8½"	9'-9¼"					29'-0"	1'-2⅛"	4'-7½"	9'-9¼"					13'-0"			35				40				35		#7	11"			12'-8"
				11'					26'-9"					29'-1"	1'-1⅜"	4'-8½"	9'-10¼"					29'-2"	1'-2⅛"	4'-7½"	9'-10¼"					13'-0"			35				44				35			9"			13'-8"
				12'					26'-11"					29'-3"	1'-1⅜"	4'-8½"	9'-11¼"					29'-4"	1'-2⅛"	4'-7½"	9'-11¼"					13'-0"			35				48				35			8"			14'-8"

DIMENSIONS / QUANTITIES

MAX. DESIGN DEPTH OF COVER	BARREL DIMENSIONS									UNIT QUANTITIES			
	CLEAR SPANS	CLEAR HEIGHT	SQ. FT. OPENING	OVERALL WIDTH	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS	THICKNESS OF DIVISION WALL	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT	CLASS S CONC. PER LIN. FT. OF BARREL	REINFORCING STEEL PER LIN. FT. OF BARREL	ADDITIONAL PER LAP	ADDITIONAL TWO HEADWALLS & APRONS
D	S	H	A	OW	T	C	M	B	OH	CU. YD.	LB.	LB.	LB.
SECTION "A" - 10'-0"	2 @ 8'	5'	80	17'-11"	9¼"	7"	9"	9¾"	6'-7"	1.406	181.08	55.11	250.28
		6'	96	17'-11"		7"	9"		7'-7"	1.477	186.42	58.45	250.28
		7'	112	18'-1"		7½"	10"		8'-7"	1.601	197.32	61.79	251.67
		8'	128	18'-2"		8"	10"		9'-7"	1.707	216.14	65.13	252.37
		9'	144	18'-5"		9"	11"		10'-7"	1.886	229.36	68.47	254.46
		10'	160	18'-8"		10"	12"		11'-7"	2.082	250.08	71.81	256.54
	2 @ 10'	6'	120	22'-1"	10¾"	7½"	10"	11½"	7'-10¼"	1.979	245.98	65.13	315.55
		7'	140	22'-1"		7½"	10"		8'-10¼"	2.057	265.91	68.47	315.55
		8'	160	22'-2"		8"	10"		9'-10¼"	2.164	271.47	71.81	316.25
		9'	180	22'-5"		9"	11"		10'-10¼"	2.345	288.86	75.15	318.34
		10'	200	22'-8"		10"	12"		11'-10¼"	2.549	309.86	78.49	320.42
		11'	220	22'-10"		11"	12"		12'-10¼"	2.722	326.26	81.83	321.81
		12'	240	23'-0"		12"	12"		13'-10¼"	2.913	345.24	85.17	323.20
	2 @ 12'	6'	144	26'-2"	12½"	8"	10"	13½"	8'-2"	2.581	335.91	71.81	383.92
		7'	168	26'-2"		8"	10"		9'-2"	2.662	341.25	75.15	383.92
		8'	192	26'-2"		8"	10"		10'-2"	2.742	361.47	78.49	383.92
		9'	216	26'-5"		9"	11"		11'-2"	2.925	379.59	81.83	386.00
		10'	240	26'-8"		10"	12"		12'-2"	3.128	401.88	85.17	388.09
		11'	264	26'-10"		11"	12"		13'-2"	3.308	418.23	88.51	389.48
		12'	288	27'-0"		12"	12"		14'-2"	3.500	448.85	91.85	390.87
SECTION "B" - 15'-0"	2 @ 8'	5'	80	17'-11"	10¼"	7"	9"	10¾"	6'-9"	1.516	191.78	55.11	
		6'	96	17'-11"		7"	9"		7'-9"	1.587	197.13	58.45	
		7'	112	18'-1"		7½"	10"		8'-9"	1.712	216.41	61.79	
		8'	128	18'-2"		8"	10"		9'-9"	1.819	236.89	65.13	
		9'	144	18'-5"		9"	11"		10'-9"	1.999	257.15	68.47	
		10'	160	18'-8"		10"	12"		11'-9"	2.198	275.52	71.81	
	2 @ 10'	6'	120	22'-1"	12"	7½"	10"	13"	8'-1"	2.167	273.01	65.13	
		7'	140	22'-1"		7½"	10"		9'-1"	2.244	291.60	68.47	
		8'	160	22'-2"		8"	10"		10'-1"	2.352	312.64	71.81	
		9'	180	22'-5"		9"	11"		11'-1"	2.535	327.68	75.15	
		10'	200	22'-8"		10"	12"		12'-1"	2.737	352.57	78.49	
		11'	220	22'-10"		11"	12"		13'-1"	2.916	379.76	81.83	
		12'	240	23'-0"		12"	12"		14'-1"	3.108	399.33	85.17	
	2 @ 12'	6'	144	26'-2"	14¼"	8"	10"	15"	8'-5¼"	2.849	369.91	71.81	
		7'	168	26'-2"		8"	10"		9'-5¼"	2.924	383.92	75.15	
		8'	192	26'-2"		8"	10"		10'-5¼"	3.004	414.52	78.49	
		9'	216	26'-5"		9"	11"		11'-5¼"	3.190	431.74	81.83	
		10'	240	26'-8"		10"	12"		12'-5¼"	3.395	461.14	85.17	
		11'	264	26'-10"		11"	12"		13'-5¼"	3.577	485.07	88.51	
		12'	288	27'-0"		12"	12"		14'-5¼"	3.771	510.58	91.85	
SECTION "C" - 20'-0"	2 @ 8'	5'	80	17'-11"	11¼"	7"	9"	11¾"	6'-11"	1.627	203.81	55.11	
		6'	96	17'-11½"		7¼"	9"		7'-11"	1.710	208.65	58.45	
		7'	112	18'-1½"		7¾"	10"		8'-11"	1.838	231.37	61.79	
		8'	128	18'-2½"		8½"	10"		9'-11"	1.947	258.58	65.13	
		9'	144	18'-5½"		9½"	11"		10'-11"	2.150	276.52	68.47	
		10'	160	18'-8½"		10½"	12"		11'-11"	2.331	318.47	71.81	
	2 @ 10'	6'	120	22'-2"	13½"	8"	10"	14¼"	8'-3¾"	2.380	320.35	65.13	
		7'	140	22'-2"		8"	10"		9'-3¾"	2.460	339.19	68.47	
		8'	160	22'-3"		8½"	10"		10'-3¾"	2.572	365.09	71.81	
		9'	180	22'-6"		9½"	11"		11'-3¾"	2.760	389.39	75.15	
		10'	200	22'-8½"		10½"	12"		12'-3¾"	2.948	413.08	78.49	
		11'	220	22'-10"		11"	12"		13'-3¾"	3.110	446.06	81.83	
		12'	240	23'-0"		12"	12"		14'-3¾"	3.303	475.09	85.17	
	2 @ 12'	6'	144	26'-2"	16"	8"	10"	16½"	8'-8½"	3.106	426.82	75.15	
		7'	168	26'-2"		8"	10"		9'-8½"	3.186	443.87	78.49	
		8'	192	26'-3½"		8¾"	10"		10'-8½"	3.316	473.02	81.83	
		9'	216	26'-6"		9½"	11"		11'-8½"	3.492	498.31	85.17	
		10'	240	26'-8½"		10½"	12"		12'-8½"	3.682	531.56	88.51	
		11'	264	26'-10½"		11½"	12"		13'-8½"	3.867	556.63	91.85	
		12'	288	27'-0½"		12½"	12"		14'-8½"	4.064	605.99	95.19	
SECTION "D" - 25'-0"	2 @ 8'	5'	80	17'-11"	12¼"	7"	9"	12¾"	7'-1"	1.737	216.88	55.11	
		6'	96	18'-0½"		7¾"	9"		8'-1"	1.846	226.87	58.45	
		7'	112	18'-5"		8½"	10"		9'-1"	1.992	250.52	61.79	
		8'	128	18'-4½"		9¼"	10"		10'-1"	2.122	273.89	65.13	
		9'	144	18'-7"		10"	11"		11'-1"	2.295	300.76	68.47	
		10'	160	18'-10"		11"	12"		12'-1"	2.503	326.17	71.81	
	2 @ 10'	6'	120	22'-2"	14½"	8"	10"	15¼"	8'-5¾"	2.517	341.87	65.13	
		7'	140	22'-3"		8½"	10"		9'-5¾"	2.626	365.08	68.47	
		8'	160	22'-4½"		9¼"	10"		10'-5¾"	2.758	388.03	71.81	
		9'	180	22'-7¼"		10¼"	11"		11'-5¾"	2.952	412.78	75.15	
		10'	200	22'-10½"		11½"	12"		12'-5¾"	3.165	446.12	78.49	
		11'	220	23'-0"		12"	12"		13'-5¾"	3.334	489.97	81.83	
		12'	240	23'-1½"		12¾"	12"		14'-5¾"	3.512	518.79	85.17	
	2 @ 12'	6'	144	26'-2"	17½"	8"	10"	18"	8'-11½"	3.349	465.12	78.49	
		7'	168	26'-3½"		8¾"	10"		9'-11½"	3.475	489.73	81.83	
		8'	192	26'-5"		9½"	10"		10'-11½"	3.610	513.90	85.17	
		9'	216	26'-8"		10½"	11"		11'-11½"	3.811	539.78	88.51	
		10'	240	26'-10½"		11¼"	12"		12'-11½"	4.009	578.93	91.85	
		11'	264	27'-0½"		12¼"	12"		13'-11½"	4.202	619.28	95.19	
		12'	288	27'-2½"		13¼"	12"		14'-11½"	4.407	649.51	98.53	

TYPICAL SECTION M-M

NOTE:- For details of wings and bar lists, see Drawing Nos. W-X002-1 or W-X002-2, W-X003-1 or W-X003-2, and W-X004-1 or W-X004-2.

PART LONGITUDINAL SECTION

TYPICAL LONGITUDINAL SECTION-SHOWING SECTIONS AND BAR GROUPS FOR VARIOUS DEPTHS OF COVER

NOTE:- Lengths of Sections, with Bar Groups to be shown on Cross Section Sheets.

NOTE:- This drawing to be used in conjunction with Standard 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.
To use this Drawing for skewed culverts, multiply the length of each section by the secant of the skew angle. For 15° by 1.0353, for 30° by 1.1547, and for 45° by 1.4142.

REVISIONS:-
Wing Drwg. Nos.- W.C.H. 1-14-63.

BAR SIZE	PIN DIAM.	K.	ADD FOR 2 HOOKS	BENDING DIAGRAM FOR BARS "b" and "b2"
#6	3"	5"	1'-1½"	
#7	3½"	5¾"	1'-3⅜"	
#8	4"	6½"	1'-6"	

DOWEL BARS FOR TWO HEADWALLS S	SIZE	SPACING	No. REQ'D	LENGTH	X	Bars "x" Dowel bars in Headwalls
8'	#4	12¼"	36	3'-0"	1'-6"	
10'	#4	12¼"	46	3'-2"	1'-7"	
12'	#4	12"	54	3'-6"	1'-9"	

NOTE:- Dimension are to centers of bars. ("b" and "b2").

SECTIONS AND BAR GROUPS TO BE USED FOR VARIOUS DEPTHS OF COVER

DEPTHS OF COVER	SECTIONS & BAR GROUPS FOR END SECTIONS A	B	C	MID-SECTION AND BAR GROUP
5.0' to 9.5'	✓			A
10.0' to 14.5'	✓			B
15.0' to 19.5'	✓	✓		C
20.0' to 25.0'	✓	✓	✓	D

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'-0". 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#/□"

CLASS S CONCRETE

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS
FOR
REINFORCED CONCRETE BOX CULVERTS

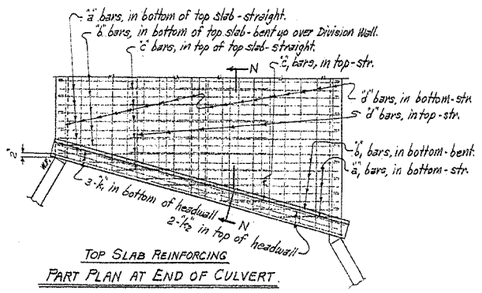
8', 10' & 12' SPANS
DOUBLES

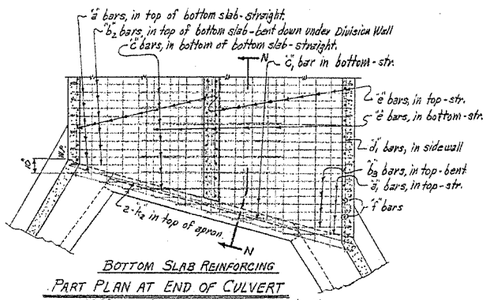
3:1 OR 4:1 SLOPES
OVER 5'-0" COVER

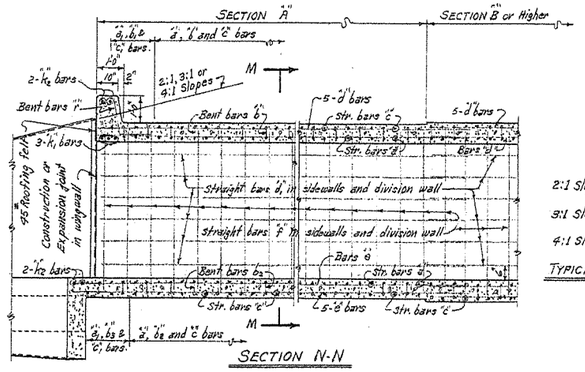
STANDARD DRAWING No. R-200X-X2

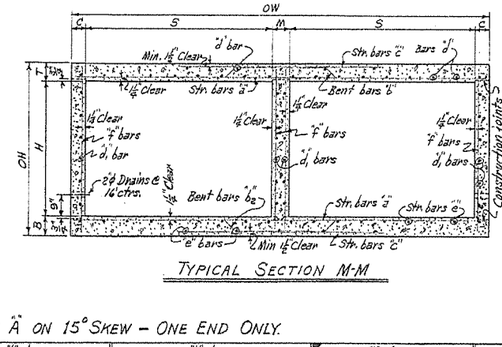
Designed by: W.C. Haigh 6-26-62 Checked by:- R.H.S. 7-16-62
Drawn by: W.C. Haigh 7-6-62 Checked by:- R.H.S. 7-20-62
Quantities by: W.C. Haigh 7-5-62 Checked by:- R.H.S. 7-19-62

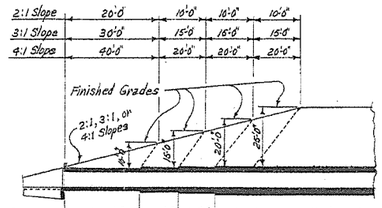
(17)

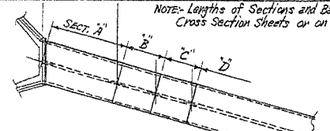












Reshot 3-8-93 433

FED. ROAD No.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
6	ARK.			152	
JOB No.					

TOP SLAB REINFORCING
PART PLAN AT END OF CULVERT.

BOTTOM SLAB REINFORCING
PART PLAN AT END OF CULVERT

NOTE:- The "d", "d1" and "e" bars vary in length. They should extend 1'-9" into SECTION "B".

NOTE:- For Details of Standard Wings and bar lists, see Drawing No. 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.

SECTION N-N

TYPICAL SECTION M-M

TYPICAL LONGITUDINAL SECTION - SHOWING SECTIONS AND BAR GROUPS FOR VARIOUS DEPTHS OF COVER

NOTE:- Lengths of Sections and Bar Groups are to be shown on Cross Section Sheets or on Special Culvert Layout Sheet.

PART PLAN

LENGTH OF SECTIONS ON 15° SKEW

SLOPE	2:1		3:1		4:1	
SECTIONS	A	B & C	A	B & C	A	B & C
LENGTHS	12'-5"	6'-2½"	22'-9¼"	11'-4⅝"	33'-1½"	16'-6¾"

NOTE:- For Details and Bar Lists for Sections B, C & D, see Barrel Drawing Nos. R-200X-X2 and R-200X-X3.

SECTIONS AND BAR GROUPS TO BE USED FOR VARIOUS DEPTHS OF COVER

DEPTHS OF COVER	SECTIONS & BAR GROUPS FOR END SECTIONS A	B	C		MID-SECTION AND BAR GROUP
5.0' to 9.5'	A				A
10.0' to 14.5'	A				B
15.0' to 19.5'	A	B			C
20.0' to 25.0'	A	B	C		D

OR ALT.

DEPTHS OF COVER	SECTIONS & BAR GROUPS FOR END SECTIONS A	B	C		MID-SECTION AND BAR GROUP
5.0' to 9.5'	A				A
10.0' to 14.5'	A				B
15.0' to 19.5'	A	B			C
20.0' to 25.0'	A	2@C			D

MAX. DESIGN DEPTH OF COVER	CLEAR SPANS	CLEAR HEIGHT	SQ. FT. OPENING	OVERALL WIDTH	THICKNESS OF TOP SLAB	THICKNESS OF SIDEWALLS	THICKNESS OF DIVISION WALL	THICKNESS OF BOTTOM SLAB	OVERALL HEIGHT	ROADWAY LENGTH	LENGTH OF HEADWALL	* QUANTITIES - ONE SECTION "A": CLASS S CONCRETE, BARREL ONLY 2:1	3:1	4:1	REINFORCING STEEL, BARREL, APRON AND HEADWALL. 2:1	3:1	4:1
D	S	H	A	OW	T	C	M	B	OH	RL	K	CU.YD.	CU.YD.	CU.YD.	LB.	LB.	LB.
SECTION "A" = 10'-0"	2 @ 9'	5'	90	19'-11"	10"	7"	9"	10¾"	6'-8¾"	20'-7⅛"	21'-2"	20.24	37.12	53.99	3124	5423	7767
		6'	108	20'-1"		7½"	10"		7'-8¾"	20'-9½"	21'-4"	21.72	39.83	57.94	3216	5593	7997
		7'	126	20'-1"		7½"	10"		8'-8¾"	"	"	22.67	41.58	60.49	3334	5821	8326
		8'	144	20'-2"		8"	10"		9'-8¾"	20'-10⅝"	21'-5"	24.01	44.04	64.06	3553	6185	8853
		9'	162	20'-5"		9"	11"		10'-8¾"	21'-1⅝"	21'-8½"	26.24	48.11	69.99	3760	6587	9432
		10'	180	20'-8"		10"	12"		11'-8¾"	21'-4⅜"	21'-11¼"	28.69	52.62	76.55	4066	7083	10,151
		11'	198	20'-10"		11"	12"		12'-8¾"	21'-6⅞"	22'-1½"	30.91	56.68	82.45	4749	7933	10,776
	2 @ 10'	5'	100	21'-11"	10¾"	7"	9"	11½"	6'-10¼"	22'-8⅛"	23'-2¾"	23.09	42.35	61.61	3404	5835	8206
		6'	120	22'-1"		7½"	10"		7'-10¼"	22'-10⅜"	23'-4⅜"	24.57	45.06	65.55	3496	6044	8531
		7'	140	22'-1"		7½"	10"		8'-10¼"	"	"	25.54	46.84	68.14	3615	6274	8863
		8'	160	22'-2"		8"	10"		9'-10¼"	22'-11⅜"	23'-5¾"	26.87	49.28	71.68	3896	6641	9394
		9'	180	22'-5"		9"	11"		10'-10¼"	23'-2⅛"	23'-9"	29.12	53.40	77.68	4095	7047	9978
		10'	200	22'-8"		10"	12"		11'-10¼"	23'-5⅜"	24'-0"	31.59	57.93	84.27	4354	7545	10,714
		11'	220	22'-10"		11"	12"		12'-10¼"	23'-7⅜"	24'-2"	33.80	61.98	90.17	4560	7924	11,253
		12'	240	23'-0"		12"	12"		13'-10¼"	23'-9⅝"	24'-4½"	36.17	66.33	96.49	4779	8531	12,211
	2 @ 11'	6'	132	24'-2"	11¾"	8"	10"	12½"	8'-0¼"	25'-0¼"	25'-6⅜"	28.43	52.15	75.86	4078	7251	10,216
		7'	154	24'-2"		8"	10"		9'-0¼"	"	"	29.43	53.97	78.51	4174	7424	10,469
		8'	176	24'-2"		8"	10"		10'-0¼"	"	"	30.43	55.81	81.19	4413	7841	11,071
		9'	198	24'-5"		9"	11"		11'-0¼"	25'-3⅜"	25'-9¾"	32.69	59.96	87.22	4627	8258	11,669
		10'	220	24'-8"		10"	12"		12'-0¼"	25'-6⅛"	26'-1"	35.19	64.53	93.88	4942	8834	12,539
		11'	242	24'-10"		11"	12"		13'-0¼"	25'-8⅛"	26'-3"	37.41	68.61	99.81	5154	9155	12,972
		12'	264	25'-0"		12"	12"		14'-0¼"	25'-10⅝"	26'-5"	39.78	72.96	106.13	5541	9854	13,980
	2 @ 12'	6'	144	26'-2"	12½"	8"	10"	13½"	8'-2"	27'-1"	27'-7½"	32.05	58.77	85.50	4640	8153	11,686
		7'	168	26'-2"		8"	10"		9'-2"	"	"	33.05	60.62	88.18	4712	8280	11,868
		8'	192	26'-2"		8"	10"		10'-2"	"	"	34.05	62.44	90.83	4978	8749	12,549
		9'	216	26'-5"		9"	11"		11'-2"	27'-4⅜"	27'-10⅜"	36.32	66.60	96.89	5197	9169	13,155
		10'	240	26'-8"		10"	12"		12'-2"	27'-7⅛"	28'-1¾"	38.84	71.23	103.61	5519	9692	13,911
		11'	264	26'-10"		11"	12"		13'-2"	27'-9⅜"	28'-3¾"	41.07	75.33	109.58	5732	10,083	14,982
		12'	288	27'-0"		12"	12"		14'-2"	27'-11⅜"	28'-6"	43.96	79.70	115.94	6125	10,791	15,507

* For remainder of quantities see Std. Wing and Barrel Drawings listed below.

BAR LIST FOR SECTION "A" ON 15° SKEW - ONE END ONLY.

SECTION & BAR GROUP	LENGTH OF SECTION	DEPTH OF COVER D	CLEAR SPAN S	CLEAR HEIGHT H	"a" bars, STRAIGHT, In Top and Bottom Slab of Barrel. SIZE	SPACING	NUMBER REQ'D 2:1	3:1	4:1	LENGTH	"a1" bars, STRAIGHT, In Top and Bottom Slab of Barrel. (Two of each Length) SIZE	SPACING	NO. REQ'D	LENGTH MAX.	MIN.
SECTION "A" & BAR GROUP "A"	2:1 = 12'-5" 3:1 = 22'-9¼" 4:1 = 33'-1½"	0'-0" TO 10'-0" MAXIMUM	2 @ 9'	5'	#5	11"	23	45	69	19'-8"	#5	11"	8	16'-3"	6'-0"
				6'			23	45	69	19'-10"			8	16'-5"	6'-2"
				7'			23	45	69	19'-10"			8	16'-5"	"
				8'			23	45	69	19'-11"			8	16'-6"	6'-3"
				9'			23	45	69	20'-2"			8	16'-9"	6'-6"
				10'			23	45	69	20'-5"			8	17'-0"	6'-9"
				11'			23	45	69	20'-7"			8	17'-2"	6'-11"
			2 @ 10'	5'	#5	12"	21	41	61	21'-8"	#5	12"	8	17'-11"	6'-8"
				6'			21	41	61	21'-10"			8	18'-1"	6'-10"
				7'			21	41	61	21'-10"			8	18'-1"	"
				8'			21	41	61	21'-11"			8	18'-2"	6'-11"
				9'			21	41	61	22'-2"			8	18'-5"	7'-2"
				10'			21	41	61	22'-5"			8	18'-8"	7'-5"
				11'			21	41	61	22'-7"			8	18'-10"	7'-7"
				12'			21	41	61	22'-9"			8	19'-0"	7'-9"
			2 @ 11'	6'	#5	12"	19	41	61	23'-11"	#5	12"	10	20'-2"	5'-2"
				7'			19	41	61	23'-11"			10	20'-2"	"
				8'			19	41	61	23'-11"			10	20'-2"	"
				9'			19	41	61	24'-2"			10	20'-5"	5'-5"
				10'			19	41	61	24'-5"			10	20'-8"	5'-8"
				11'			19	41	61	24'-7"			10	20'-10"	5'-10"
				12'			19	41	61	24'-9"			10	21'-0"	6'-0"
			2 @ 12'	6'	#5	11"	21	43	67	25'-11"	#5	11"	12	22'-6"	5'-5"
				7'			21	43	67	25'-11"			12	22'-6"	"
				8'			21	43	67	25'-11"			12	22'-6"	"
				9'			21	43	67	26'-2"			12	22'-9"	5'-8"
				10'			21	43	67	26'-5"			12	23'-0"	5'-11"
				11'			21	43	67	26'-7"			12	23'-2"	6'-1"
				12'			21	43	67	26'-9"			12	23'-4"	6'-3"

S	H	"b" bars, BENT - See Diagrams below. In Bottom of Top Slab bent up over Division Wall - hooked. Alternate with "a" and "c" bars. SIZE	SPACING	NUMBER REQ'D 2:1	3:1	4:1	LENGTH	X	Y	Z	"b1" bars, BENT - See Diagrams below. In Bottom of Top Slab - some bent up over Division Wall - one end hooked. Alt. with "a1" and "c1" or "c" bars SIZE	SPACING	NO. REQ'D	LENGTH MAX.	MIN.	L MAX.	MIN.
2 @ 9'	5'	#6	11"	10	22	33	21'-2"	0'-6½"	4'-2"	7'-2"	#6	11"	5	18'-11"	4'-10"	17'-11"	4'-3"
	6'			10	22	33	21'-4"	"	4'-3"	7'-2½"			5	19'-1"	5'-0"	18'-1"	4'-5"
	7'			10	22	33	21'-4"	"	"	7'-2½"			5	19'-1"	"	"	"
	8'			10	22	33	21'-5"	"	"	7'-3"			5	19'-2"	5'-1"	18'-2"	4'-6"
	9'			10	22	33	21'-8"	"	4'-4"	7'-4"			5	19'-5"	5'-4"	18'-5"	4'-9"
	10'			10	22	33	21'-11"	"	4'-5"	7'-5"			5	19'-8"	5'-7"	18'-8"	5'-0"
	11'			10	22	33	22'-1"	0'-6⅝"	4'-5"	7'-6"			5	19'-10"	5'-9"	18'-10"	5'-2"
2 @ 10'	5'	#6	12"	9	20	30	23'-2"	0'-7½"	4'-6½"	7'-11"	#6	12"	5	20'-10"	5'-4"	19'-9"	4'-9"
	6'			9	20	30	23'-4"	"	4'-7½"	7'-11½"			5	21'-0"	5'-6"	19'-11"	4'-11"
	7'			9	20	30	23'-4"	"	"	"			5	21'-0"	"	"	"
	8'			9	20	30	23'-5"	"	"	8'-0"			5	21'-1"	5'-7"	20'-0"	5'-0"
	9'			9	20	30	23'-8"	"	4'-8½"	8'-1"			5	21'-4"	5'-10"	20'-3"	5'-3"
	10'			9	20	30	23'-11"	"	4'-9½"	8'-2"			5	21'-7"	6'-1"	20'-6"	5'-6"
	11'			9	20	30	24'-1"	"	4'-9½"	8'-3"			5	21'-9"	6'-3"	20'-8"	5'-8"
	12'			9	20	30	24'-3"	0'-7½"	4'-9½"	8'-4"			5	21'-11"	6'-5"	20'-10"	5'-10"
2 @ 11'	6'	#7	12"	9	20	30	25'-8"	0'-8"	5'-0"	8'-9"	#7	12"	6	23'-2"	3'-11"	22'-0"	3'-3"
	7'			9	20	30	25'-8"	"	"	"			6	23'-2"	"	"	"
	8'			9	20	30	25'-8"	"	"	"			6	23'-2"	"	"	"
	9'			9	20	30	25'-11"	"	5'-1"	8'-10"			6	23'-5"	4'-2"	22'-3"	3'-6"
	10'			9	20	30	26'-2"	"	5'-2"	8'-11"			6	23'-8"	4'-5"	22'-6"	3'-9"
	11'			9	20	30	26'-4"	"	5'-2"	9'-0"			6	23'-10"	4'-7"	22'-8"	3'-11"
	12'			9	20	30	26'-6"	0'-8"	5'-2"	9'-1"			6	24'-0"	4'-9"	22'-10"	4'-1"
2 @ 12'	6'	#7	11"	9	21	32	27'-8"	0'-8⅝"	5'-4½"	9'-6"	#7	11"	7	25'-5"	4'-4"	24'-2"	3'-8"
	7'			9	21	32	27'-8"	"	"	"			7	25'-5"	"	"	"
	8'			9	21	32	27'-8"	"	"	"			7	25'-5"	"	"	"
	9'			9	21	32	27'-11"	"	5'-5½"	9'-7"			7	25'-8"	4'-7"	24'-5"	3'-11"
	10'			9	21	32	28'-2"	"	5'-6½"	9'-8"			7	25'-11"	4'-10"	24'-8"	4'-2"
	11'			9	21	32	28'-4"	"	5'-6½"	9'-9"			7	26'-1"	5'-0"	24'-10"	4'-4"
	12'			9	21	32	28'-6"	0'-8⅝"	5'-6½"	9'-10"			7	26'-3"	5'-2"	25'-0"	4'-6"

S	H	"b2" bars, BENT - See Diagrams below. In Top of Bottom Slab bent down under Division Wall - hooked. Alternate with "a" and "c" bars. SIZE	SPACING	NUMBER REQ'D 2:1	3:1	4:1	LENGTH	X	Y	Z	"b3" bars, BENT - See Diagrams below. In Top of Bottom Slab - some bent down under Division Wall - one end hooked. Alt. with "a1" and "c" or "c1" bars. SIZE	SPACING	NO. REQ'D	LENGTH MAX.	MIN.	L MAX.	MIN.
2 @ 9'	5'	#6	11"	11	23	34	21'-3"	0'-7¼"	4'-0½"	7'-2"	#6	11"	5	19'-0"	4'-10"	17'-11"	4'-3"
	6'			11	23	34	21'-5"	"	4'-1½"	7'-2½"			5	19'-2"	5'-0"	18'-1"	4'-5"
	7'			11	23	34	21'-5"	"	"	7'-2½"			5	"	"	"	"
	8'			11	23	34	21'-6"	"	"	7'-3"			5	19'-3"	5'-1"	18'-2"	4'-6"
	9'			11	23	34	21'-9"	"	4'-2½"	7'-4"			5	19'-6"	5'-4"	18'-5"	4'-9"
	10'			11	23	34	22'-0"	"	4'-3½"	7'-5"			5	19'-9"	5'-7"	18'-8"	5'-0"
	11'			11	23	34	22'-2"	0'-7¼"	4'-3½"	7'-6"			5	19'-11"	5'-9"	18'-10"	5'-2"
2 @ 10'	5'	#6	12"	10	21	31	23'-3"	0'-8"	4'-5"	7'-11"	#6	12"	5	20'-10"	5'-4"	19'-9"	4'-9"
	6'			10	21	31	23'-5"	"	4'-6"	7'-11½"			5	21'-0"	5'-6"	19'-11"	4'-11"
	7'			10	21	31	"	"	"	"			5	"	"	"	"
	8'			10	21	31	23'-6"	"	"	8'-0"			5	21'-1"	5'-7"	20'-0"	5'-0"
	9'			10	21	31	23'-9"	"	4'-7"	8'-1"			5	21'-4"	5'-10"	20'-3"	5'-3"
	10'			10	21	31	24'-0"	"	4'-8"	8'-2"			5	21'-7"	6'-1"	20'-6"	5'-6"
	11'			10	21	31	24'-2"	"	4'-8"	8'-3"			5	21'-9"	6'-3"	20'-8"	5'-8"
	12'			10	21	31	24'-4"	0'-8"	4'-8"	8'-4"			5	21'-11"	6'-5"	20'-10"	5'-10"
2 @ 11'	6'	#7	12"	10	21	31	25'-9"	0'-8¾"	4'-10½"	8'-9"	#7	12"	6	23'-3"	3'-11"	22'-0"	3'-3"
	7'			10	21	31	"	"	"	"			6	"	"	"	"
	8'			10	21	31	"	"	"	"			6	"	"	"	"
	9'			10	21	31	26'-0"	"	4'-11½"	8'-10"			6	23'-6"	4'-2"	22'-3"	3'-6"
	10'			10	21	31	26'-3"	"	5'-0½"	8'-11"			6	23'-9"	4'-5"	22'-6"	3'-9"
	11'			10	21	31	26'-5"	"	5'-0½"	9'-0"			6	23'-11"	4'-7"	22'-8"	3'-11"
	12'			10	21	31	26'-7"	0'-8¾"	5'-0½"	9'-1"			6	24'-1"	4'-9"	22'-10"	4'-1"
2 @ 12'	6'	#7	11"	10	22	33	27'-9"	0'-9¾"	5'-2½"	9'-6"	#7	11"	7	25'-6"	4'-4"	24'-2"	3'-8"
	7'			10	22	33	"	"	"	"			7	"	"	"	"
	8'			10	22	33	"	"	"	"			7	"	"	"	"
	9'			10	22	33	28'-0"	"	5'-3½"	9'-7"			7	25'-9"	4'-7"	24'-5"	3'-11"
	10'			10	22	33	28'-3"	"	5'-4½"	9'-8"			7	26'-0"	4'-10"	24'-8"	4'-2"
	11'			10	22	33	28'-5"	"	5'-4½"	9'-9"			7	26'-2"	5'-0"	24'-10"	4'-4"
	12'			10	22	33	28'-7"	0'-9¾"	5'-4½"	9'-10"			7	26'-4"	5'-2"	25'-0"	4'-6"

S	H	"c" bars, STRAIGHT, In Top and Bottom Slab of Barrel. Alternate with "b" and "b2" bars. SIZE	SPACING	NUMBER REQ'D 2:1	3:1	4:1	LENGTH	"c1" bars, STRAIGHT, In Top and Bottom Slab of Barrel. Alt. with "b1" & "b3" bars (Two of each Length) SIZE	SPACING	NO. REQ'D	LENGTH MAX.	MIN.
2 @ 9'	5'	#7	11"	25	47	71	9'-9"	#7	11"	4	7'-11"	4'-6"
	6'			25	47	71	9'-10"			4	8'-0"	4'-7"
	7'			25	47	71	"			4	"	"
	8'			25	47	71	"			4	8'-1"	4'-8"
	9'			25	47	71	9'-11"			4	8'-3"	4'-10"
	10'			25	47	71	10'-0"			4	8'-5"	5'-0"
	11'			25	47	71	"			4	8'-6"	5'-1"
2 @ 10'	5'	#8	12"	23	43	63	10'-9"	#8	12"	4	8'-9"	5'-0"
	6'			23	43	63	10'-10"			4	8'-10"	5'-1"
	7'			23	43	63	"			4	"	"
	8'			23	43	63	"			4	8'-11"	5'-2"
	9'			23	43	63	10'-11"			4	9'-1"	5'-4"
	10'			23	43	63	11'-0"			4	9'-3"	5'-6"
	11'			23	43	63	"			4	9'-4"	5'-7"
	12'			23	43	63	"			4	9'-5"	5'-8"
2 @ 11'	6'	#8	12"	21	43	63	11'-10"	#8	12"	4	10'-5"	6'-8"
	7'			21	43	63	"			4	"	"
	8'			21	43	63	"			4	"	"
	9'			21	43	63	11'-11"			4	10'-7"	6'-10"
	10'			21	43	63	12'-0"			4	10'-9"	7'-0"
	11'			21	43	63	"			4	10'-10"	7'-1"
	12'			21	43	63	"			4	10'-11"	7'-2"
2 @ 12'	6'	#8	11"	23	45	69	12'-10"	#8	11"	6	12'-7"	5'-9"
	7'			23	45	69	"			6	"	"
	8'			23	45	69	"			6	"	"
	9'			23	45	69	12'-11"			6	12'-9"	5'-11"
	10'			23	45	69	13'-0"			6	12'-11"	6'-1"
	11'			25	47	71	"			4	9'-7"	6'-2"
	12'			25	47	71	"			4	9'-8"	6'-3"

S	H	"d" bars, STRAIGHT, Longitudinal in Top Slab of Barrel. SIZE	SPACING	NO. REQ'D	LENGTH	"d1" bars, STRAIGHT, Longitudinal in Sidewalls and Division Wall. SIZE	SPACING	NO. REQ'D	LENGTH	"e" bars, STRAIGHT, Longitudinal in Bottom Slab of Barrel. SIZE	SPACING	NO. REQ'D	LENGTH
2 @ 9'	5'	#4	12"	25	Lengths Vary - Ave. Lengths: 2:1 = 14'-2", 3:1 = 24'-6", 4:1 = 34'-10"	#4	12"	20	Lengths Vary - Ave. Lengths: 2:1 = 14'-2", 3:1 = 24'-6", 4:1 = 34'-10"	#4	12"	25	Lengths Vary - Ave. Length; 2:1 = 15'-2", 3:1 = 25'-6", 4:1 = 35'-10"
	6'			25				24				25	
	7'			25				28				25	
	8'			25				32				25	
	9'			25				36				25	
	10'			25				40				25	
	11'			25				44				25	
2 @ 10'	5'	#4	12"	27		#4	12"	20		#4	12"	27	
	6'			27				24				27	
	7'			27				28				27	
	8'			27				32				27	
	9'			27				36				27	
	10'			27				40				27	
	11'			27				44				27	
	12'			27				48				27	
2 @ 11'	6'	#4	12"	29		#4	12"	24		#4	12"	29	
	7'			29				28				29	
	8'			29				32				29	
	9'			29				36				29	
	10'			29				40				29	
	11'			29				44				29	
	12'			29				48				29	
2 @ 12'	6'	#4	12"	31		#4	12"	24		#4	12"	31	
	7'			31				28				31	
	8'			31				32				31	
	9'			31				36				31	
	10'			31				40				31	
	11'			31				44				31	
	12'			31				48				31	

S	H	"f" bars, STRAIGHT, Verticals in Sidewalls and Division Wall. SIZE	SPACING	NUMBER REQ'D 2:1	3:1	4:1	LENGTH	"k1" bars, STRAIGHT, In Bottom of Headwall. SIZE	NO. REQ'D	LENGTH	"k2" bars, STRAIGHT, In Top of Headwall and Apron. (2 Each) SIZE	NO. REQ'D	LENGTH
2 @ 9'	5'	#4	12"	52	92	134	6'-5"	#6	3	20'-4"	#6	4	20'-11"
	6'			52	92	134	7'-5"		3	20'-6"		4	21'-1"
	7'		10"	60	110	160	8'-5"		3	"		4	"
	8'	#5	12"	52	92	134	9'-5"		3	20'-7"		4	21'-2"
	9'		10"	60	110	160	10'-5"		3	20'-10"		4	21'-5"
	10'	#6	12"	52	92	134	11'-5"		3	21'-1"		4	21'-8"
	11'		11"	56	100	146	12'-5"		3	21'-3"		4	21'-10"
2 @ 10'	5'	#4	12"	52	92	134	6'-7"	#6	3	22'-5"	#6	4	22'-11"
	6'			52	92	134	7'-7"		3	22'-7"		4	23'-1"
	7'		10"	60	110	160	8'-7"		3	"		4	"
	8'	#5	12"	52	92	134	9'-7"		3	22'-8"		4	23'-2"
	9'		10"	60	110	160	10'-7"		3	22'-11"		4	23'-6"
	10'	#6	12"	52	92	134	11'-7"		3	23'-2"		4	23'-9"
	11'		11"	56	100	146	12'-7"		3	23'-4"		4	23'-11"
	12'		10"	60	110	160	13'-7"		3	23'-6"		4	24'-1"
2 @ 11'	6'	#4	12"	52	92	134	7'-9"	#6	3	24'-9"	#6	4	25'-3"
	7'		11"	56	100	146	8'-9"		3	"		4	"
	8'	#5	12"	52	92	134	9'-9"		3	"		4	"
	9'		10"	60	110	160	10'-9"		3	25'-0"		4	25'-6"
	10'	#6	12"	52	92	134	11'-9"		3	25'-3"		4	25'-10"
	11'		11"	56	100	146	12'-9"		3	25'-5"		4	26'-0"
	12'		9"	68	122	178	13'-9"		3	25'-7"		4	26'-2"
2 @ 12'	6'	#4	12"	52	92	134	7'-11"	#6	3	26'-10"	#6	4	27'-4"
	7'			52	92	134	8'-11"		3	"		4	"
	8'	#5	12"	52	92	134	9'-11"		3	"		4	"
	9'		10"	60	110	160	10'-11"		3	27'-1"		4	27'-7"
	10'	#6	12"	52	92	134	11'-11"		3	27'-4"		4	27'-10"
	11'		11"	56	100	146	12'-11"		3	27'-6"		4	28'-0"
	12'		9"	68	122	178	13'-11"		3	27'-8"		4	28'-3"

◤ These bars are in the skewed portion of barrel only. The length of "a1" and "c1" bars and overall length L of "b1" and "b3" bars vary by 3'-9" for 12" spacing and 3'-5" for 11" spacing.

BAR SIZE	PIN DIAM.	K	ADD FOR 2 HOOKS	BENDING DIAGRAM FOR BARS "b" AND "b2"
#5	2½"	4¼"	0'-11½"	
#6	3"	5"	1'-2"	
#7	3½"	5¾"	1'-4"	

BAR SIZE	PIN DIAM.	K	ADD FOR 1 HOOK	BENDING DIAGRAM FOR BARS "b1" AND "b3"
#5	2½"	4¼"	0'-5¾"	
#6	3"	5"	0'-7"	
#7	3½"	5¾"	0'-8"	

SPAN	SIZE	SPACING	NO. REQ'D	LENGTH	X	Dowel bars "r" in One Headwall.
9'	#4	12" ±	21	3'-1"	1'-6½"	
10'	#4	12" ±	23	3'-2"	1'-7"	
11'	#4	12" ±	26	3'-4"	1'-8"	
12'	#4	12" ±	28	3'-6"	1'-9"	

NOTE:- Dimensions are to centers of bars. (b, b1, b2 & b3). The X, Y & Z values for "b1" bars are same as for "b" bars and for "b3" bars same as for "b2" bars.

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.
CONSTRUCTION JOINTS:- Construction joints between wingwalls, sidewalls, division wall 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-X152-1 or W-X152-2, W-X153-1 or W-X153-2, and W-X154-1 or W-X154-2. Also W-X15.
For Barrels of 10' and 12' Spans, See Drawing No. R-200X-X2.
For " " 9' and 11' Spans, " " No. R-200X-X3.

CLASS S CONCRETE

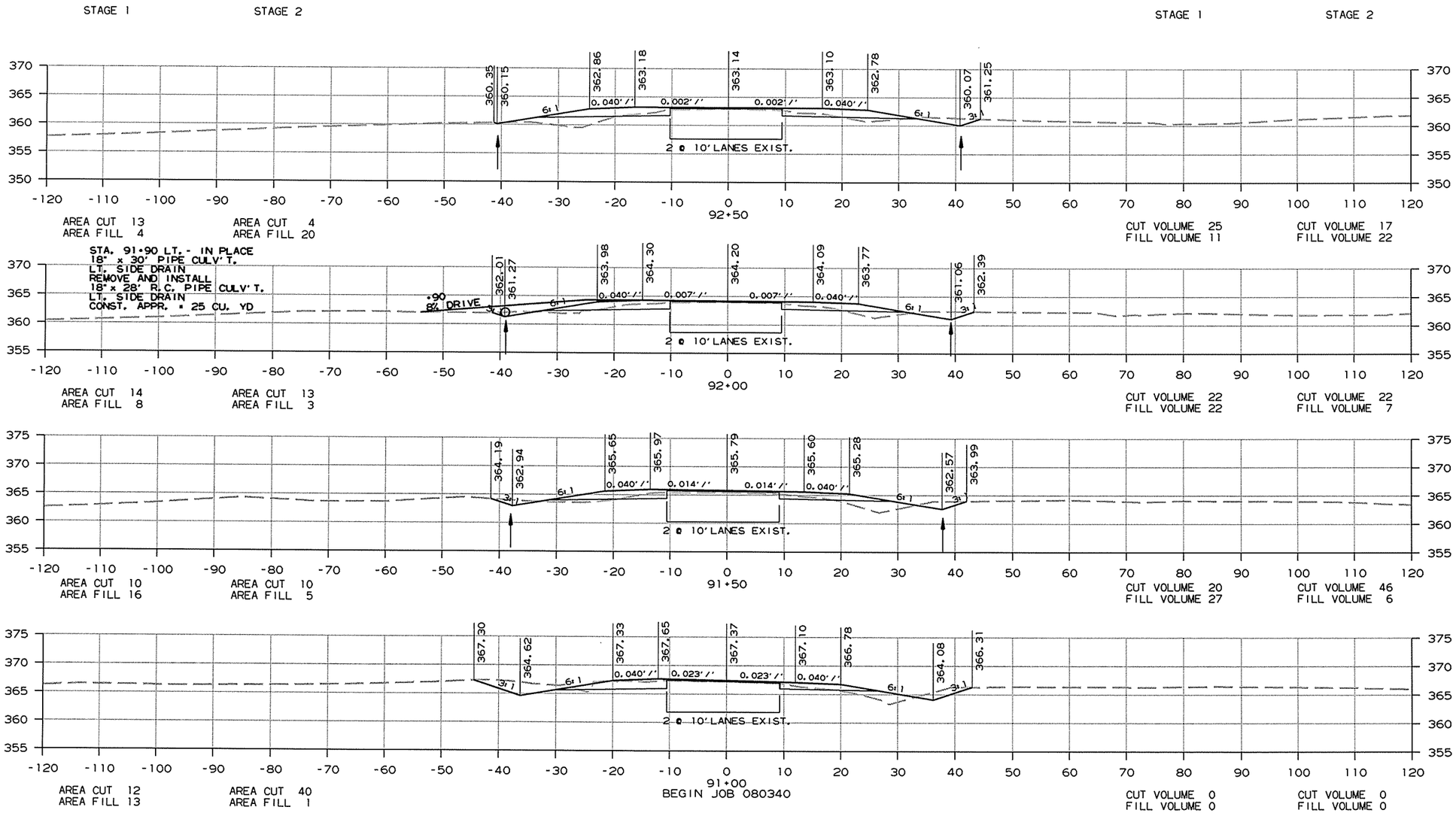
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF STANDARD BARREL SECTIONS
FOR
REINFORCED CONCRETE BOX CULVERTS
15° SKEW - SECTIONS "A" ONLY
9', 10', 11' AND 12' SPANS 2:1, 3:1 OR 4:1 SLOPES
DOUBLES OVER 5'-0" COVER
STANDARD DRAWING No. R-215X-2

Designed by:- W.C.H. 1-22-63 6-29-62
Drawn by:- W.C.H. 10-30-63
Quantities by:- W.C.H. 12-6-63
Checked by:- R.H.S. 5-29-63 7-20-62
Checked by:-
Checked by:-

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.		080340	153	187

(2) CROSS SECTIONS



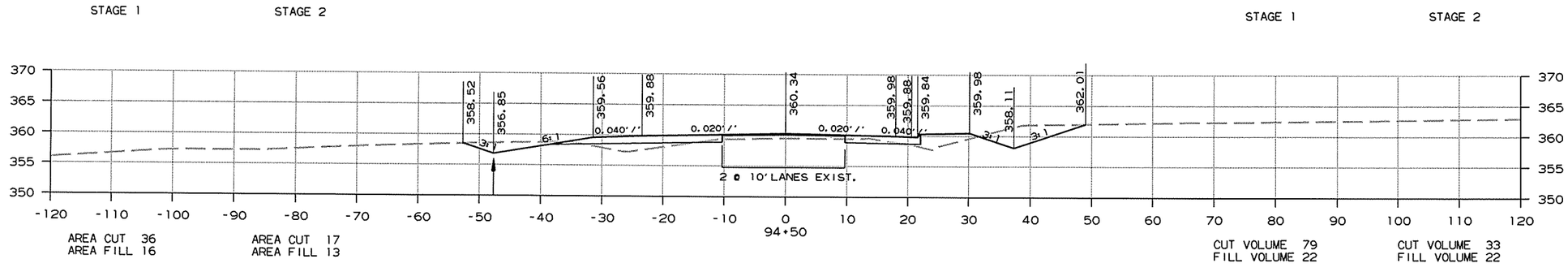
CROSS SECTION STA. 91+00 TO STA. 92+50

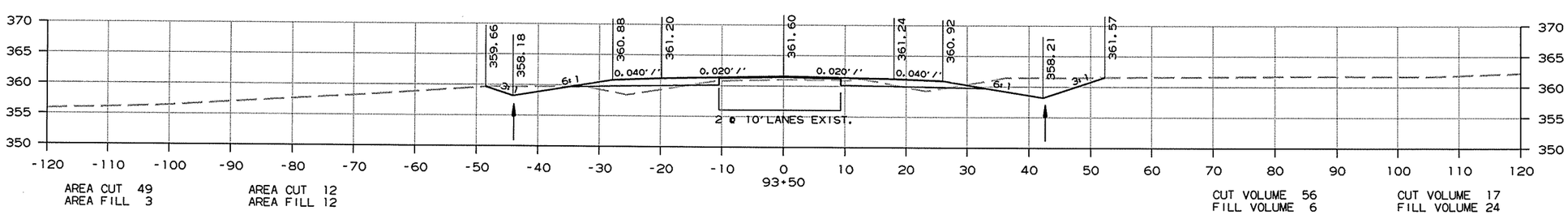
4/11/2013

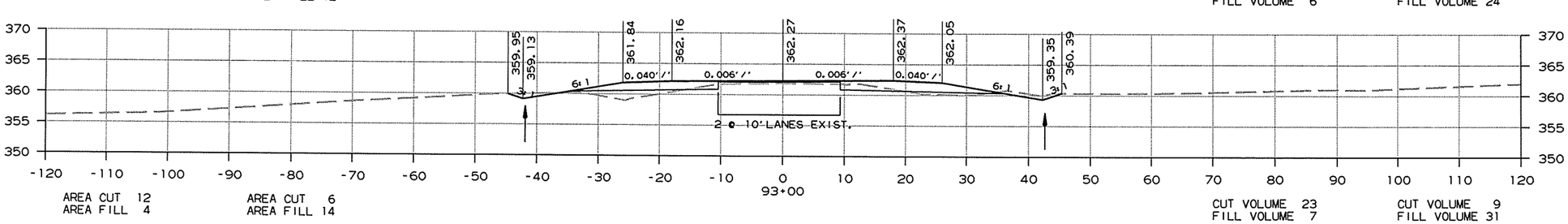
R080340.DGN

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.		080340	154	187

(2) CROSS SECTIONS







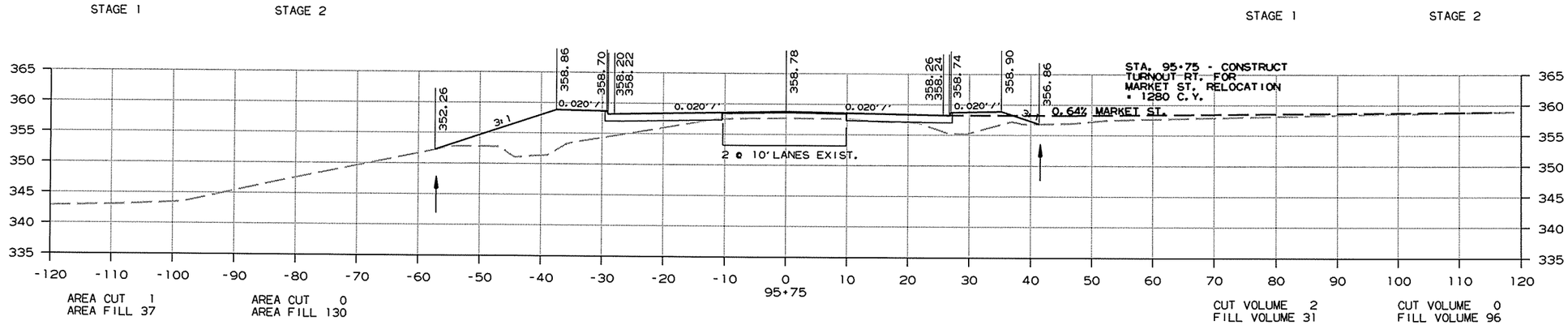
CROSS SECTION STA. 93+00 TO STA. 94+50

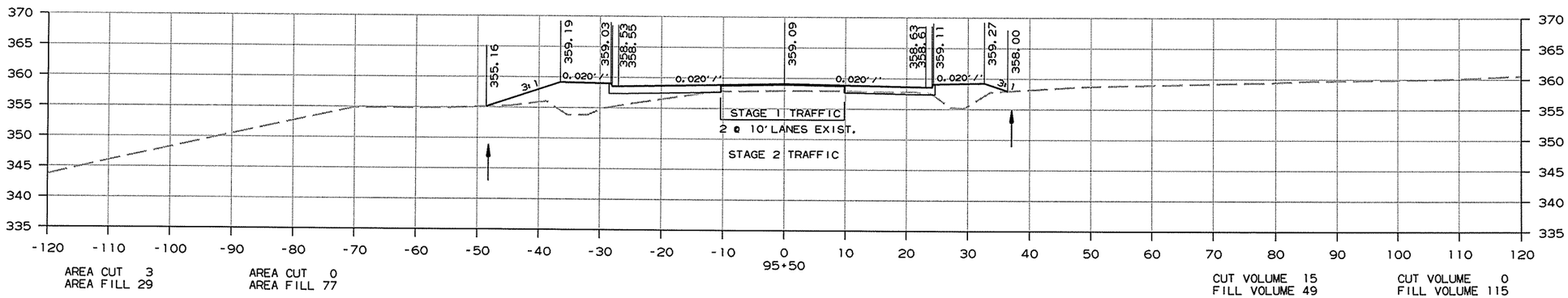
4/11/2013

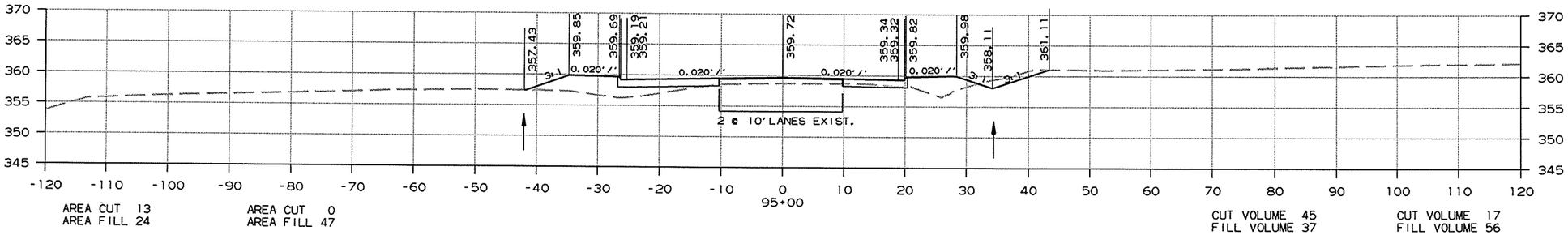
R080340.DGN

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.		080340	155	187

(2) CROSS SECTIONS







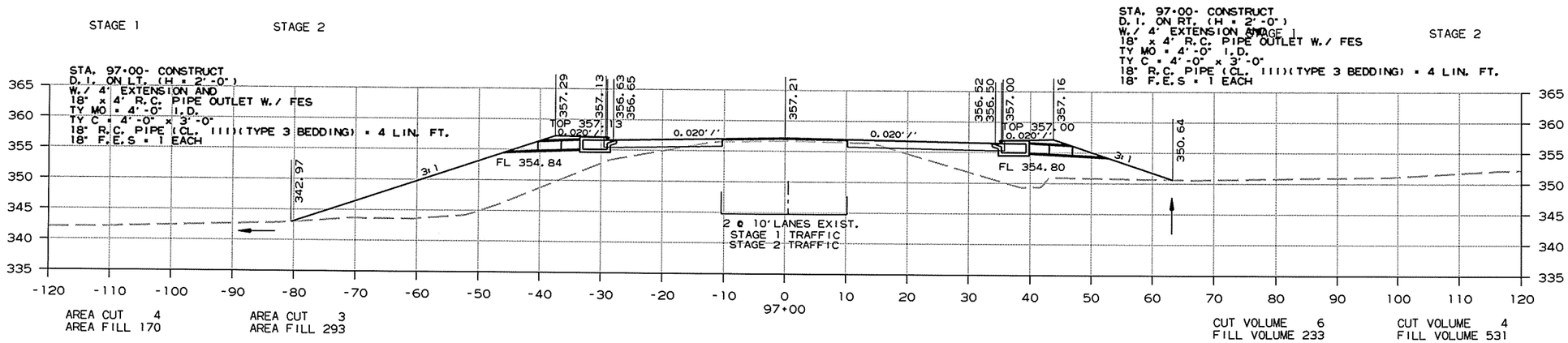
CROSS SECTION STA. 95+00 TO STA. 95+75

4/11/2013

R080340.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.		080340	156	187

(2) CROSS SECTIONS



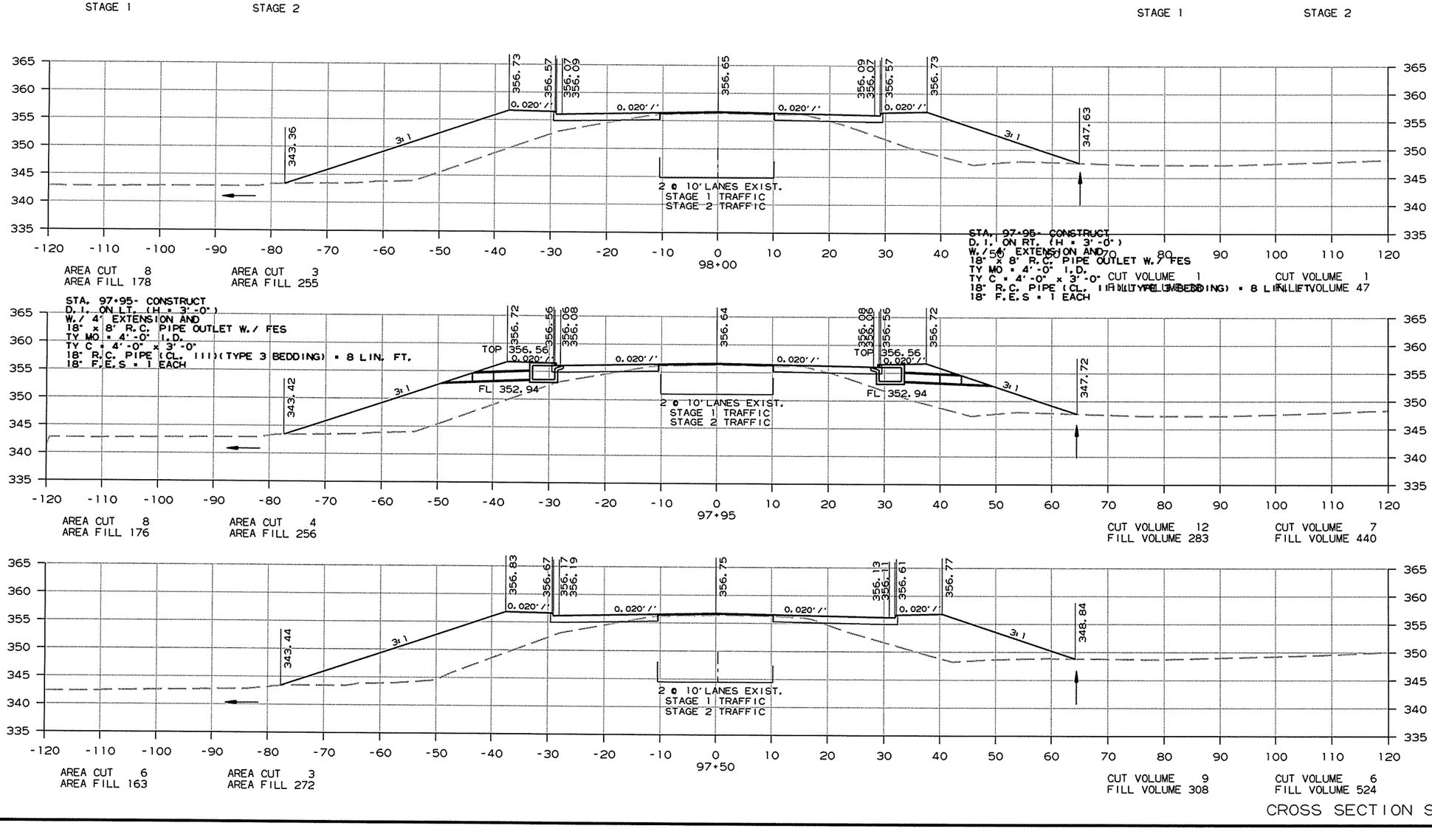
CROSS SECTION STA. 96+00 TO STA. 97+00

4/11/2013

R080340.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.		080340	157	187

(2) CROSS SECTIONS



STA. 97+95- CONSTRUCT
D.I. ON RT. (H = 3'-0")
W./ 4' EXTENSION AND
18" x 8' R.C. PIPE OUTLET W./ FES
TY MO = 4'-0" I.D.
TY C = 4'-0" x 3'-0" CUT VOLUME 1 CUT VOLUME 1
18" R.C. PIPE (CL. III)(TYPE 3 BEDDING) = 8 LIN. FT. FILL VOLUME 47
18" F.E.S = 1 EACH

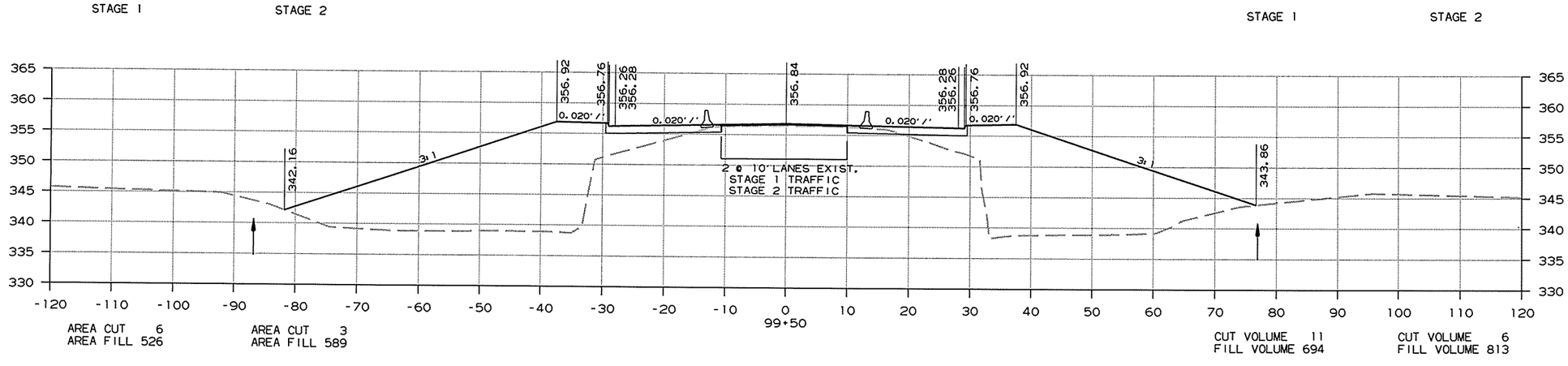
CROSS SECTION STA. 97+50 TO STA. 98+00

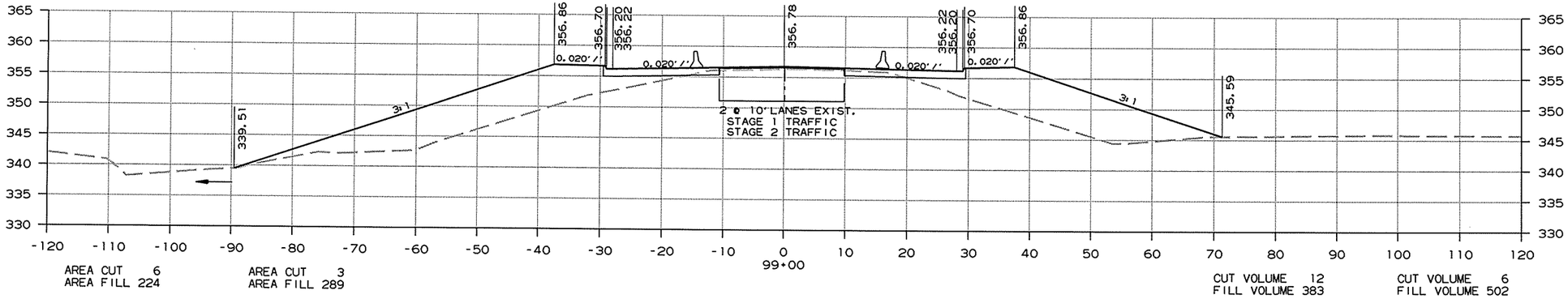
4/11/2013

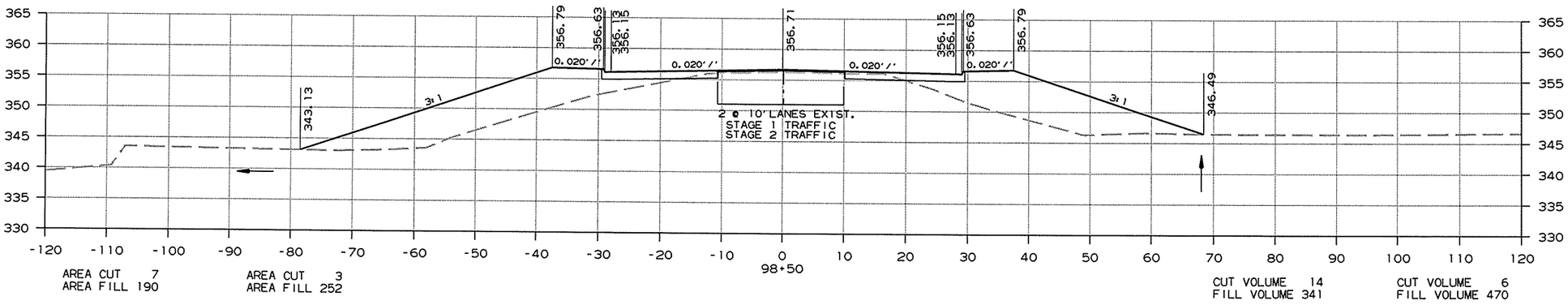
R080340.DGN

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.		080340	158	187

(2) CROSS SECTIONS







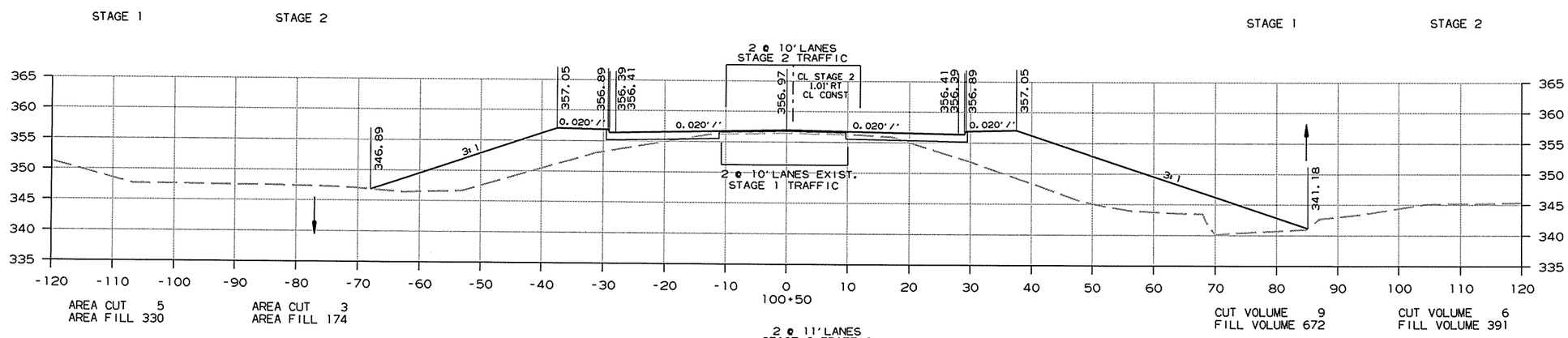
CROSS SECTION STA. 98+50 TO STA. 99+50

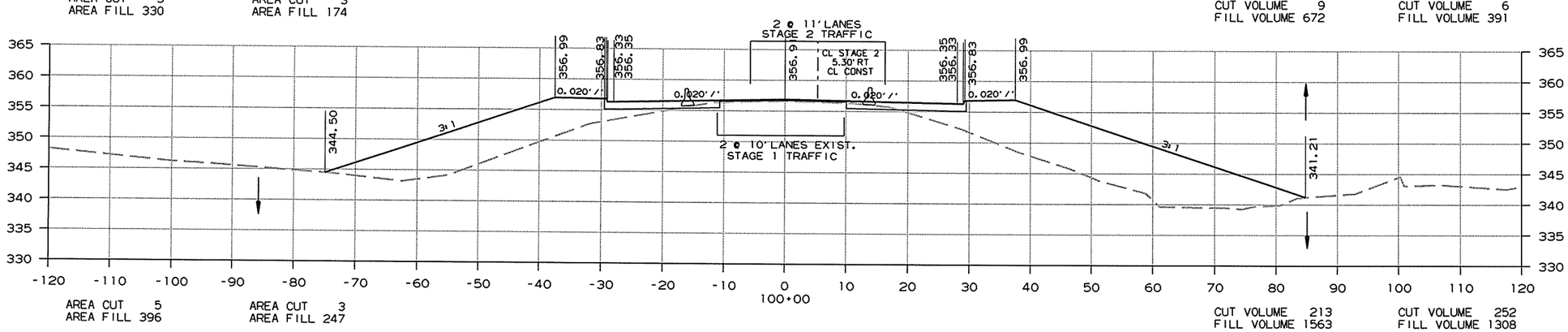
4/11/2013

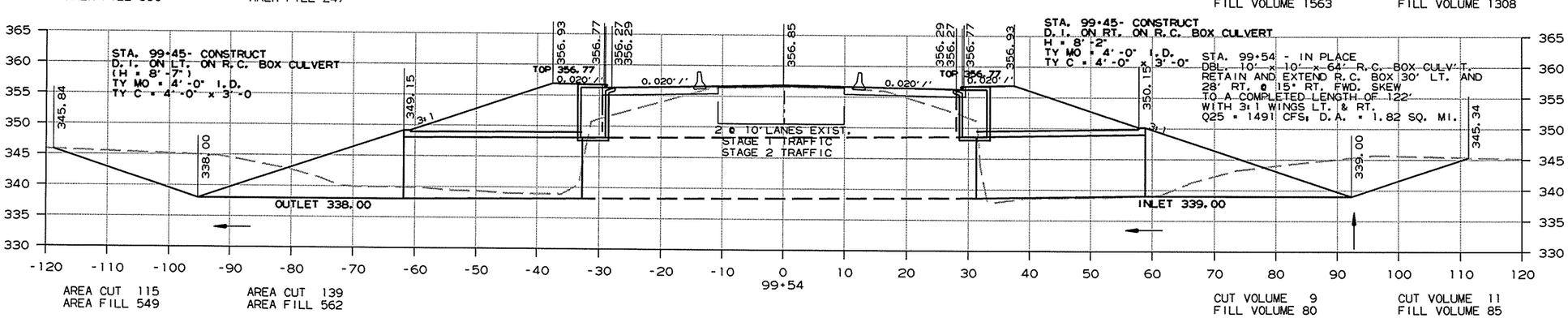
R080340.DGN

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.		080340	159	187

(2) CROSS SECTIONS







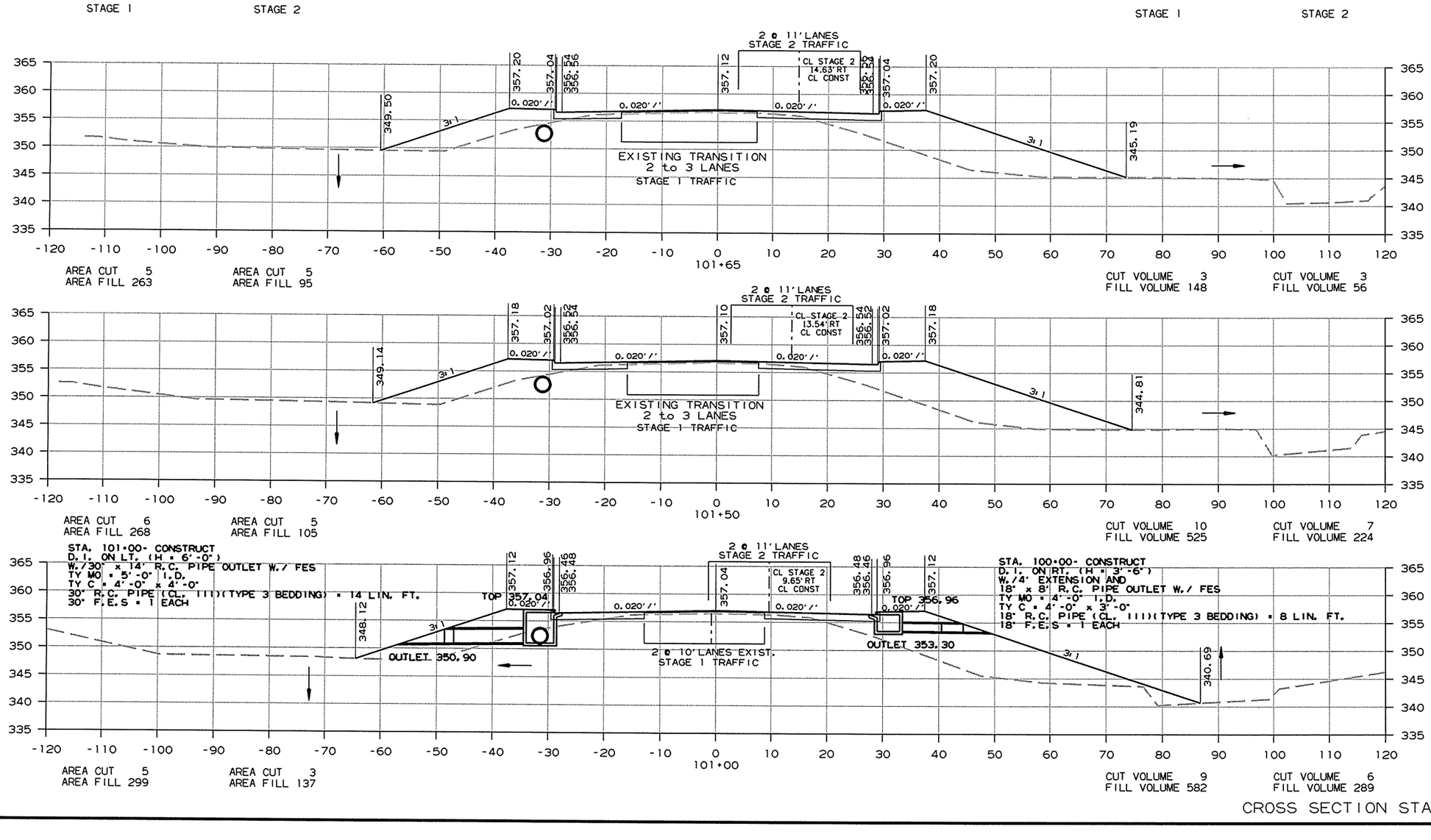
CROSS SECTION STA. 99+54 TO STA. 100+50

4/11/2013

R080340.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.		080340	160	187

(2) CROSS SECTIONS



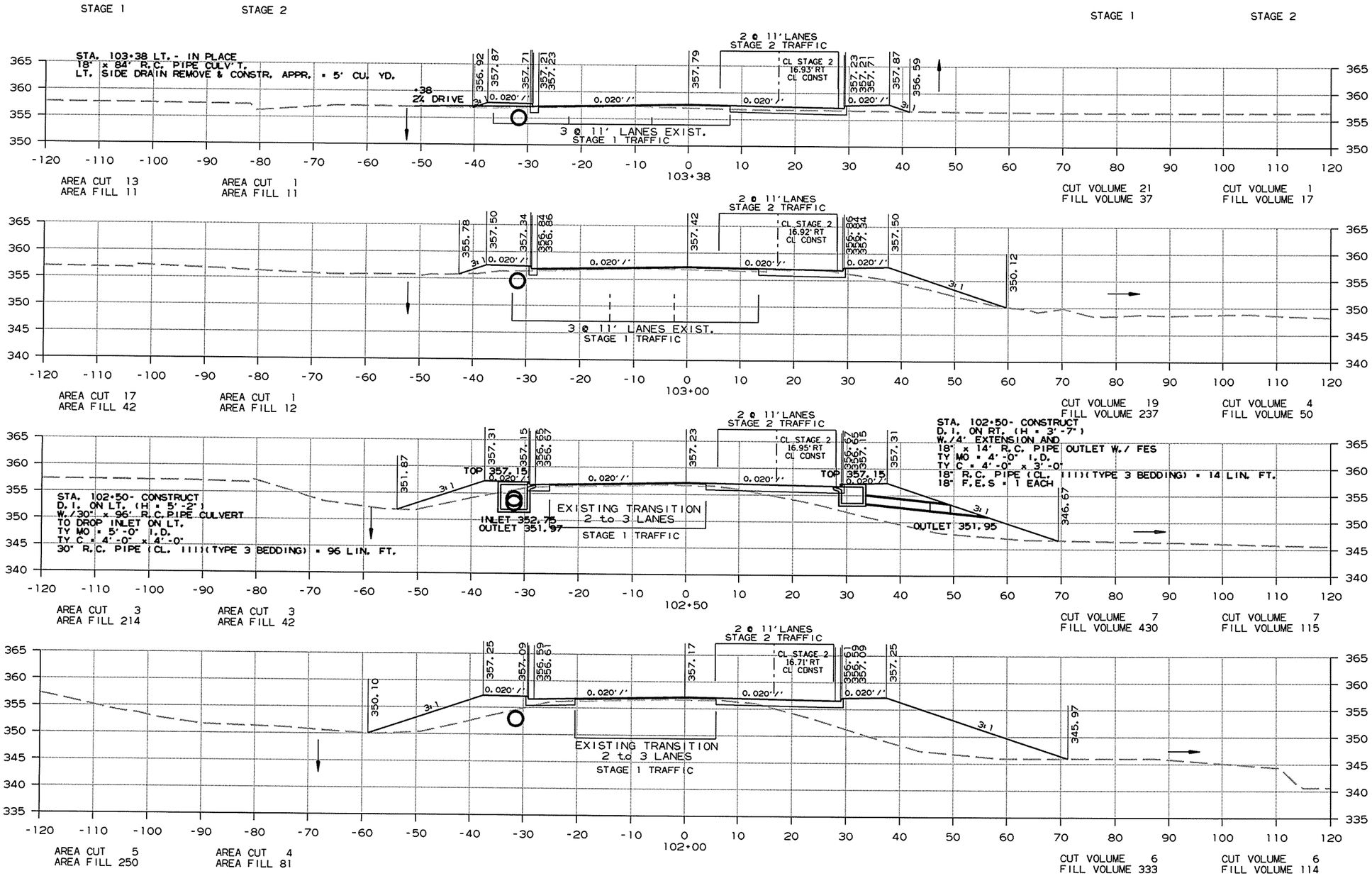
CROSS SECTION STA. 101+00 TO STA. 101+65

4/11/2013

R080340.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.		080340	161	187

(2) CROSS SECTIONS



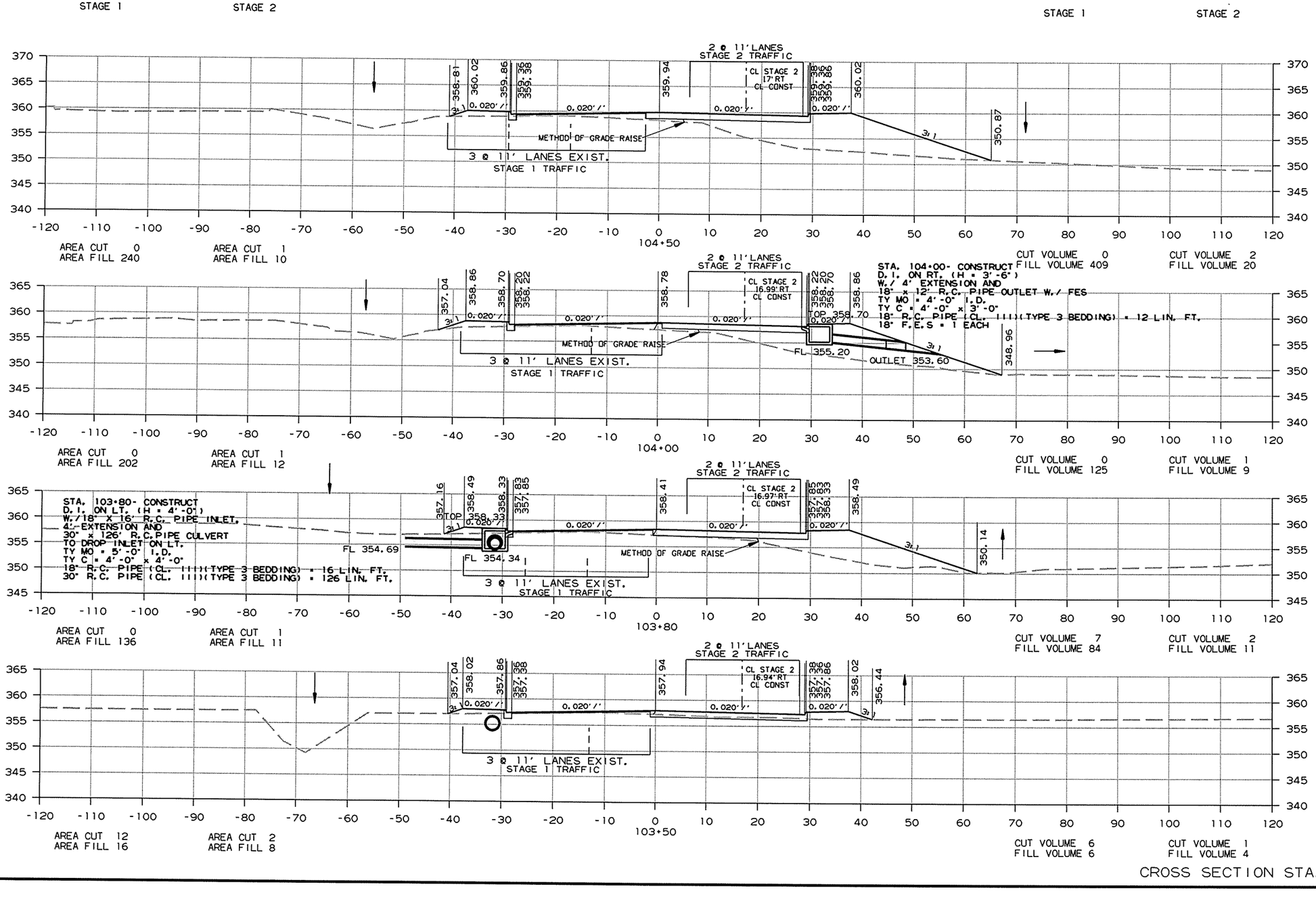
CROSS SECTION STA. 102+00 TO STA. 103+38

4/11/2013

R080340.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.		080340	162	187

(2) CROSS SECTIONS



CROSS SECTION STA. 103+50 TO STA. 104+50

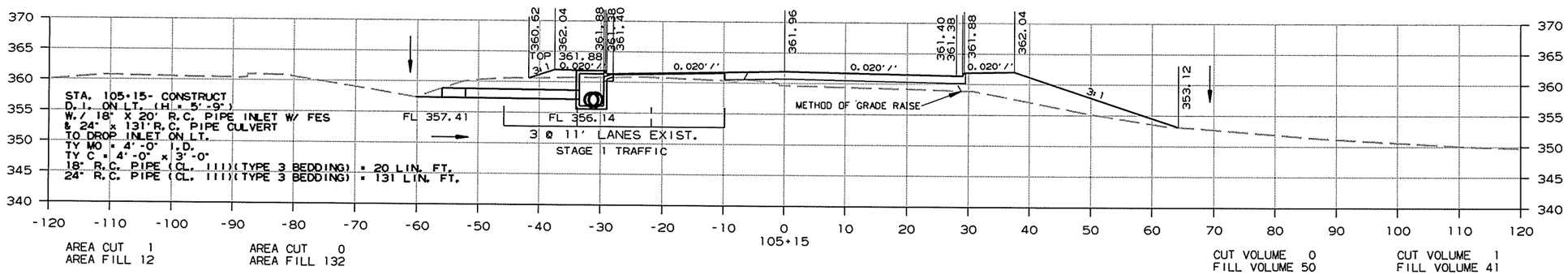
4/11/2013

R080340.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.		080340	163	187

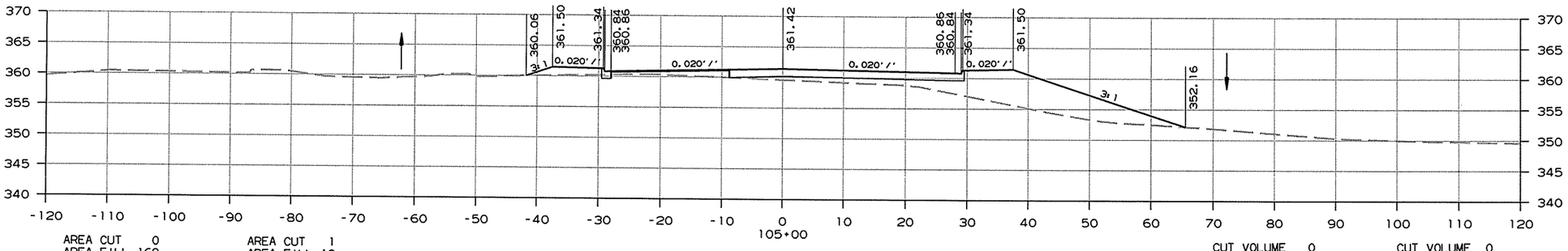
(2) CROSS SECTIONS

STAGE 1 STAGE 2

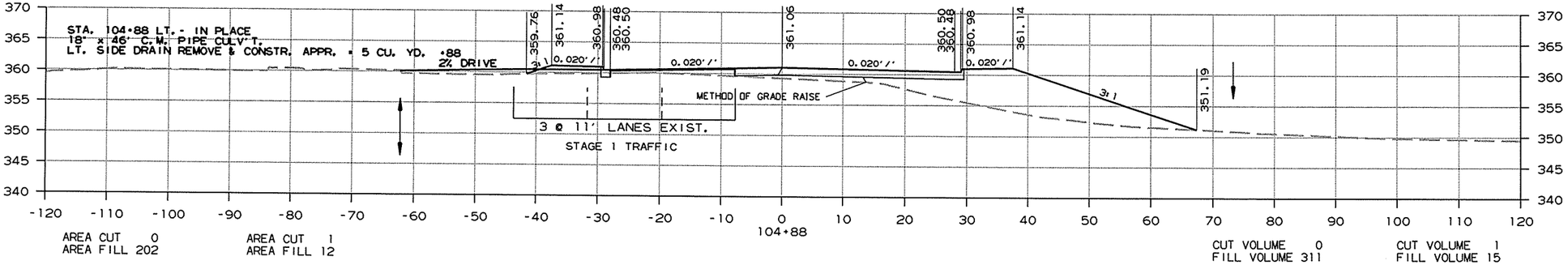


AREA CUT 1 AREA FILL 12 | AREA CUT 0 AREA FILL 132 | CUT VOLUME 0 FILL VOLUME 50 | CUT VOLUME 1 FILL VOLUME 41

STAGE 1 STAGE 2



AREA CUT 0 AREA FILL 169 | AREA CUT 1 AREA FILL 13 | CUT VOLUME 0 FILL VOLUME 82 | CUT VOLUME 0 FILL VOLUME 6



AREA CUT 0 AREA FILL 202 | AREA CUT 1 AREA FILL 12 | CUT VOLUME 0 FILL VOLUME 311 | CUT VOLUME 1 FILL VOLUME 15

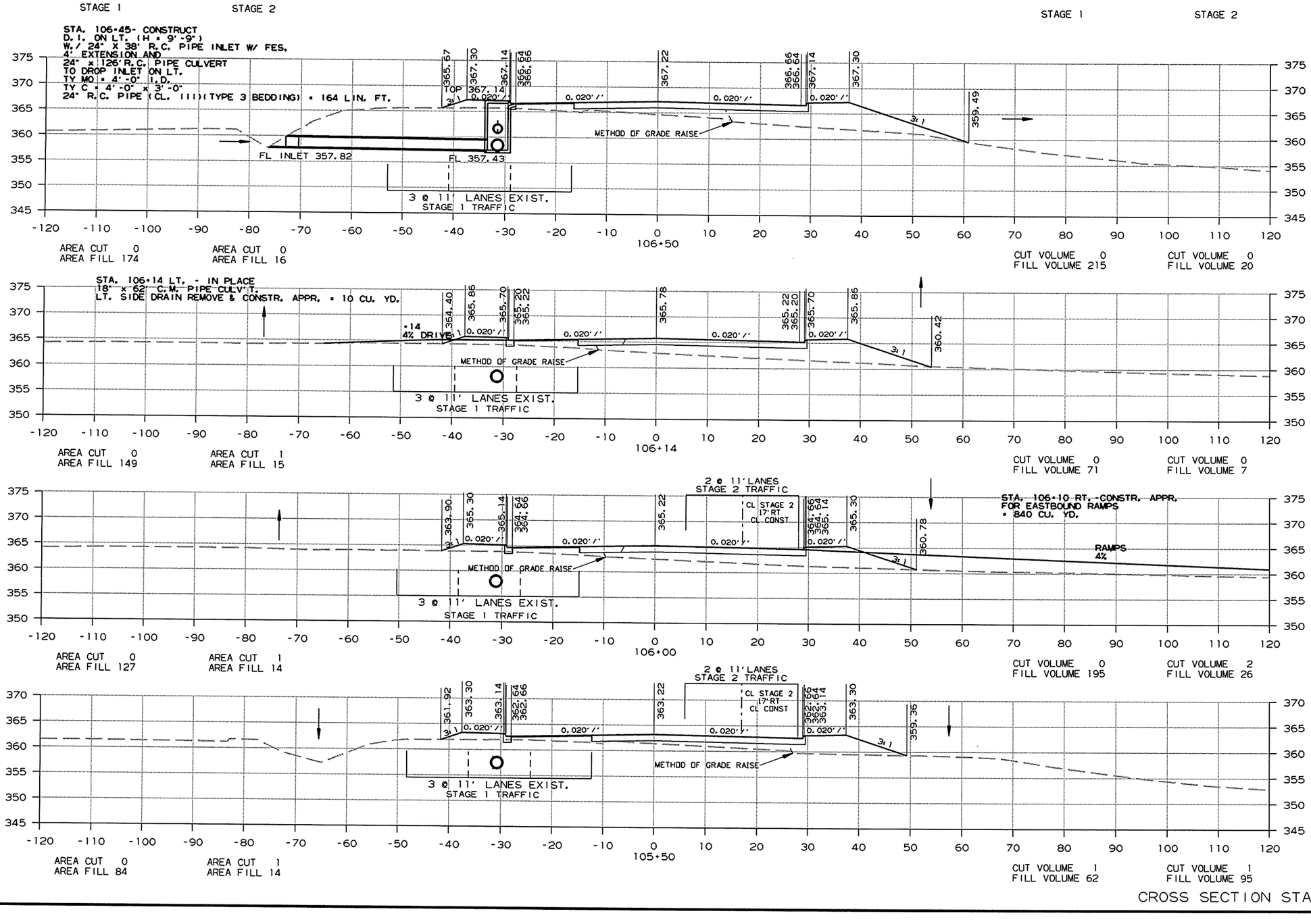
CROSS SECTION STA. 104+88 TO STA. 105+15

4/11/2013

R080340.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.		080340	164	187

(2) CROSS SECTIONS



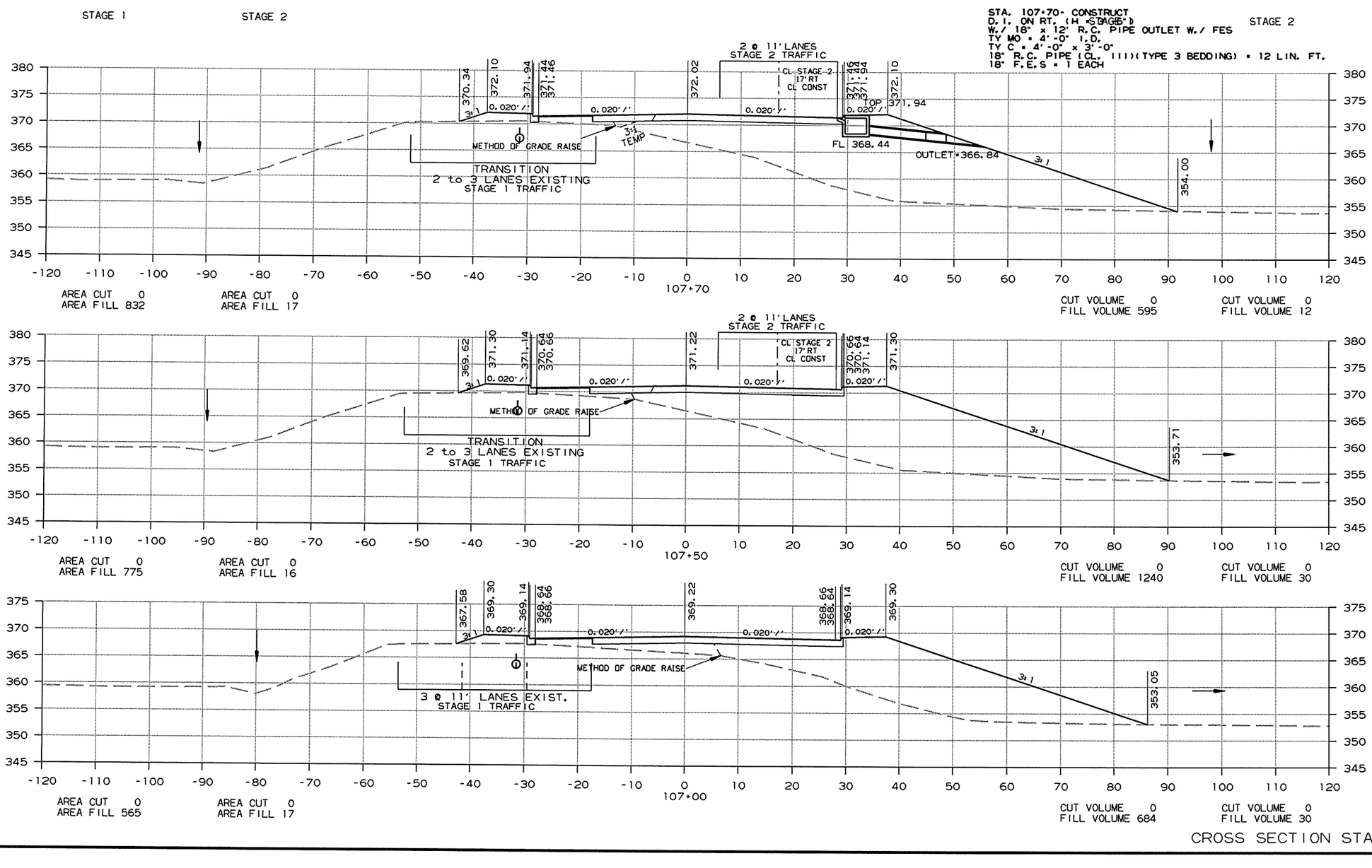
CROSS SECTION STA. 105+50 TO STA. 106+50

4/11/2013

R080340.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.		080340	165	187

(2) CROSS SECTIONS



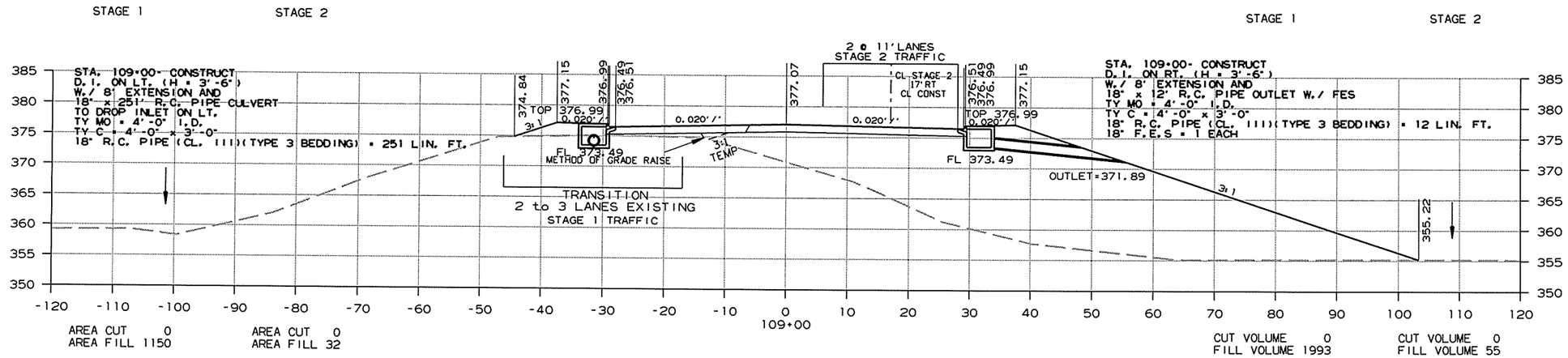
CROSS SECTION STA. 107+00 TO STA. 107+70

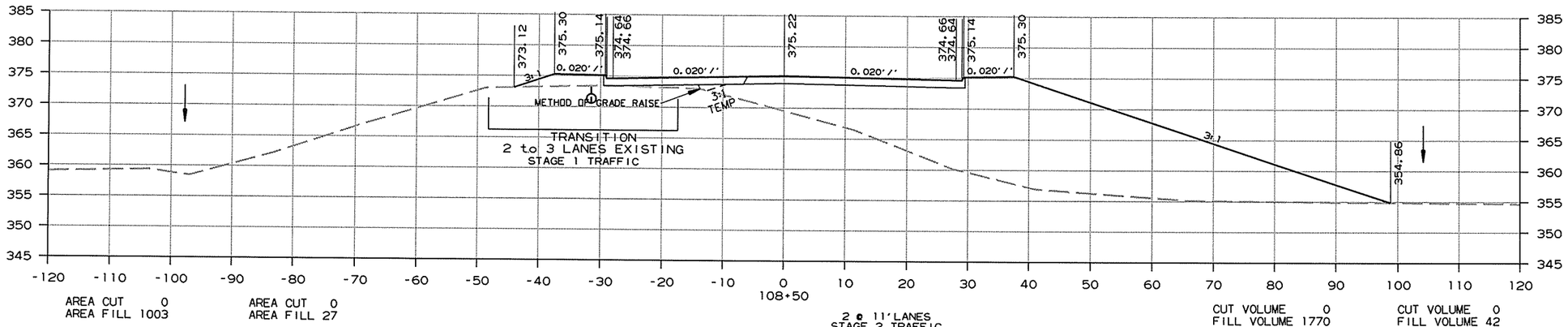
4/11/2013

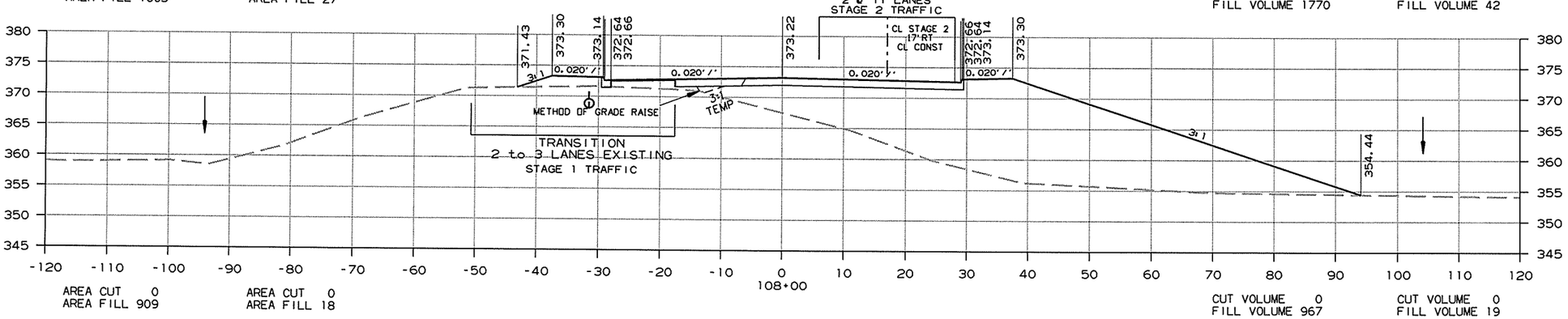
R080340.DGN

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.		080340	166	187

(2) CROSS SECTIONS







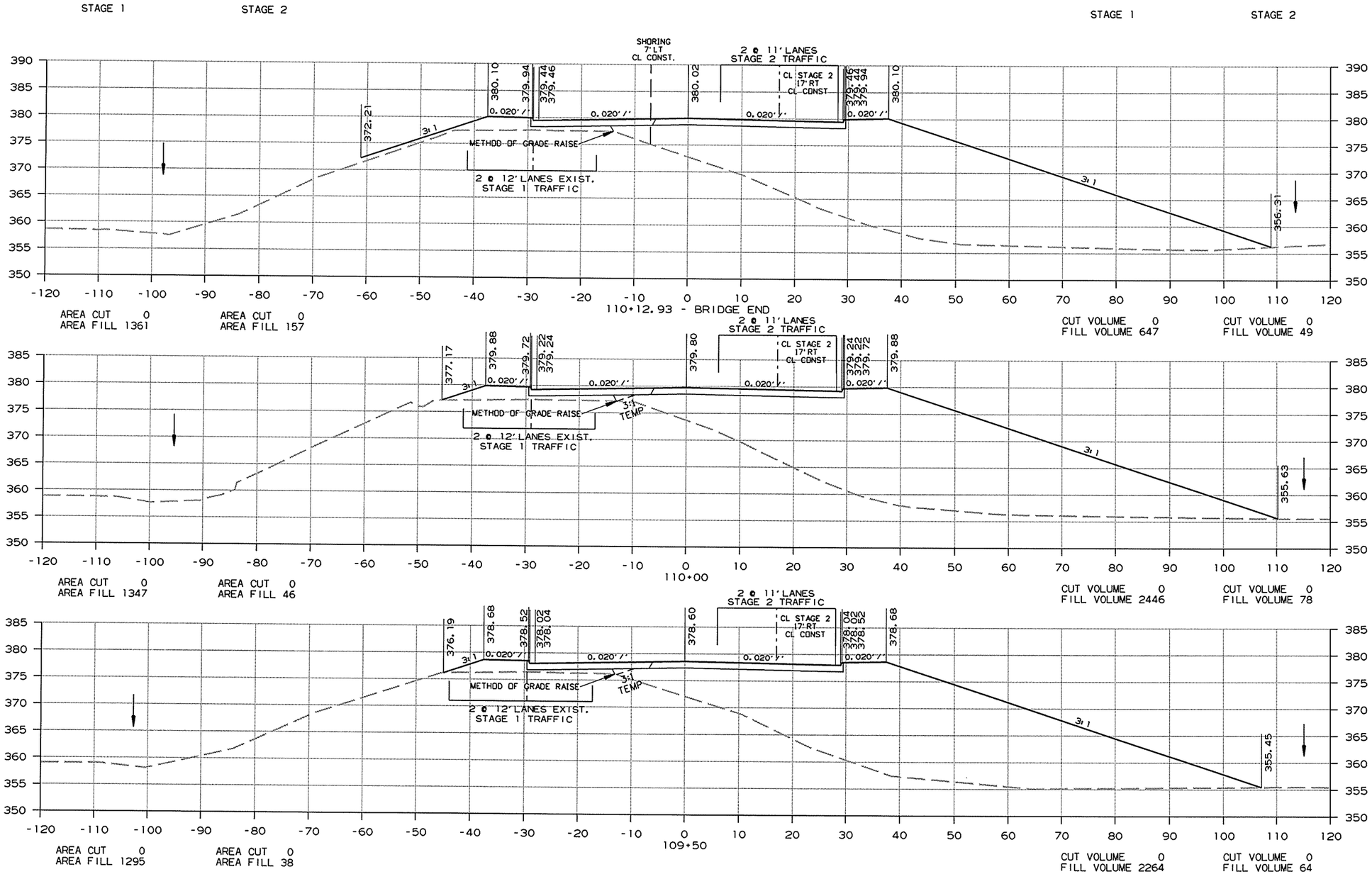
CROSS SECTION STA. 108+00 TO STA. 109+00

4/11/2013

R080340.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.		080340	167	187

(2) CROSS SECTIONS



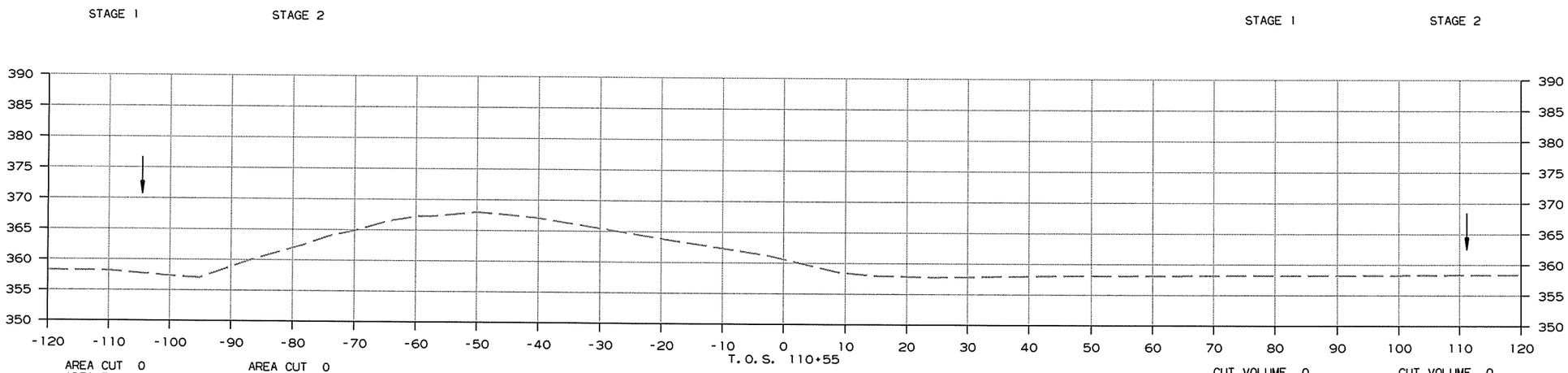
CROSS SECTION STA. 109+50 TO STA. 110+13

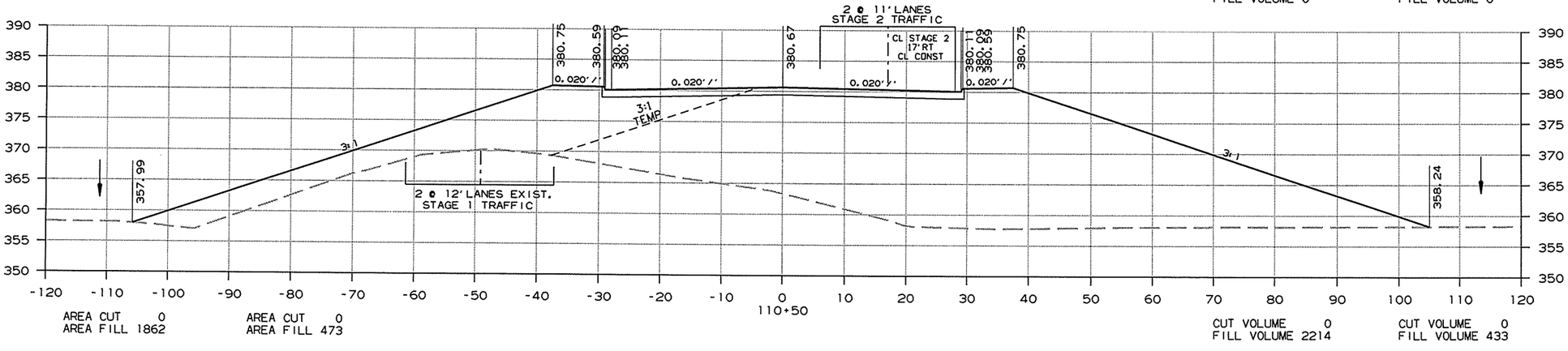
4/11/2013

R080340.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.		080340	168	187

(2) CROSS SECTIONS





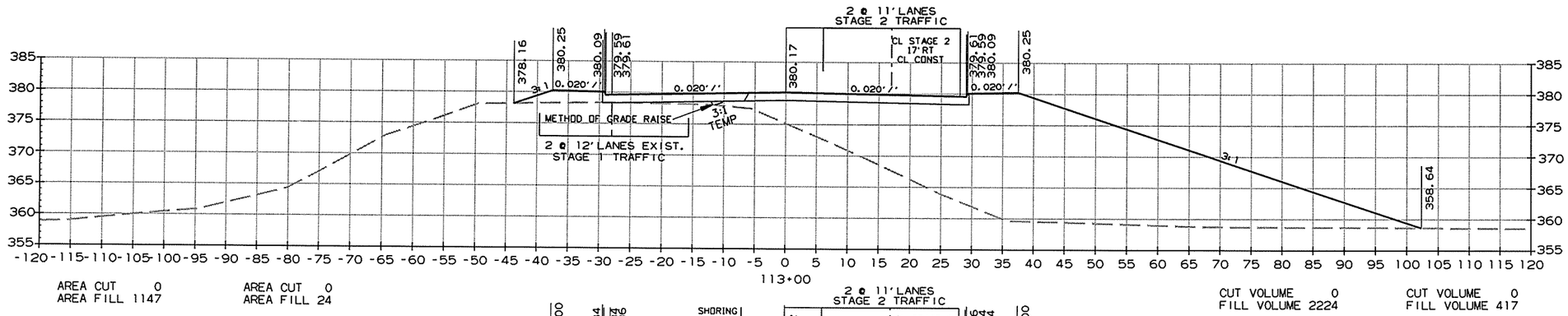
CROSS SECTION STA. 110+50 TO STA. 110+55

4/11/2013

R080340.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.		080340	169	187

(2) CROSS SECTIONS

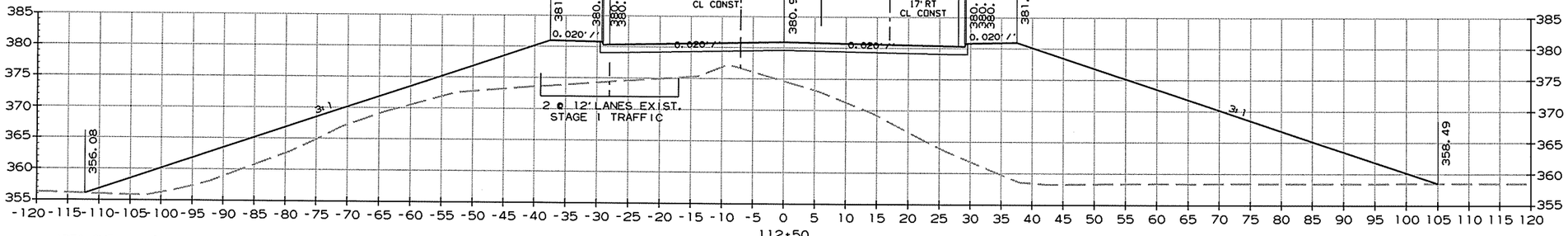


AREA CUT 0
AREA FILL 1147

AREA CUT 0
AREA FILL 24

CUT VOLUME 0
FILL VOLUME 2224

CUT VOLUME 0
FILL VOLUME 417

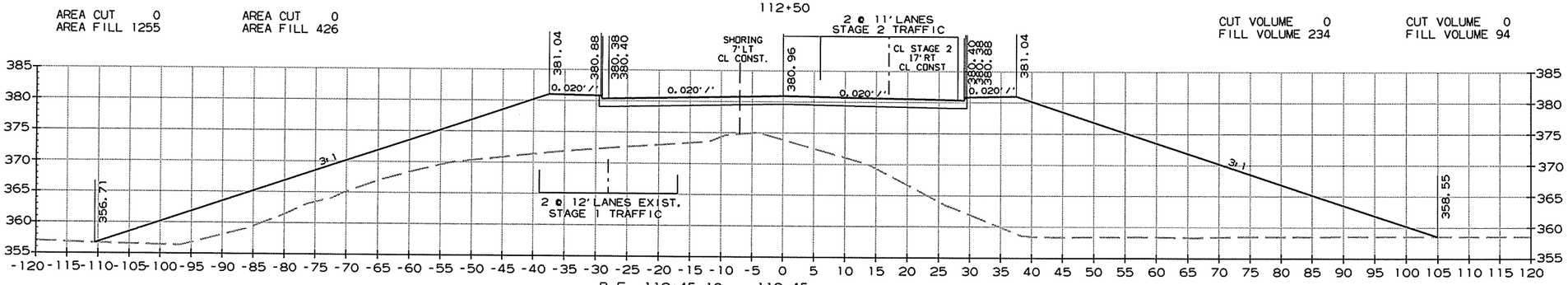


AREA CUT 0
AREA FILL 1255

AREA CUT 0
AREA FILL 426

CUT VOLUME 0
FILL VOLUME 234

CUT VOLUME 0
FILL VOLUME 94

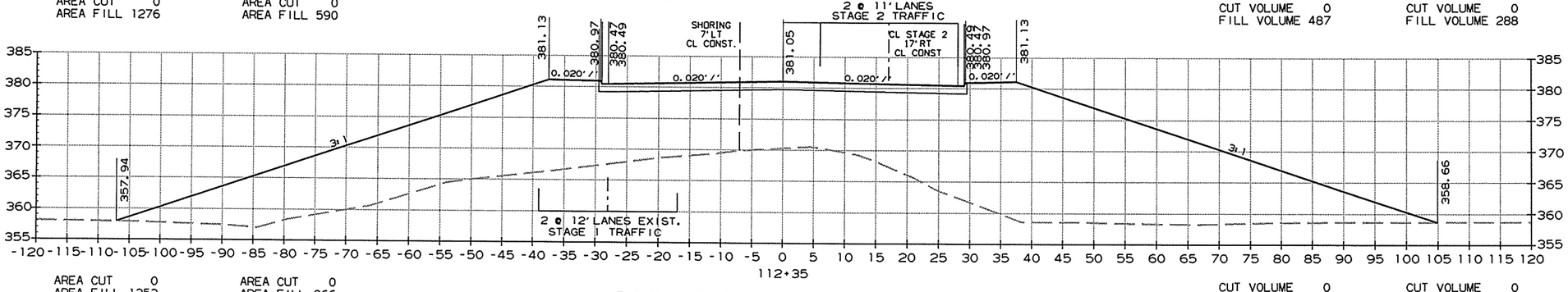


AREA CUT 0
AREA FILL 1276

AREA CUT 0
AREA FILL 590

CUT VOLUME 0
FILL VOLUME 487

CUT VOLUME 0
FILL VOLUME 288



AREA CUT 0
AREA FILL 1353

AREA CUT 0
AREA FILL 966

CUT VOLUME 0
FILL VOLUME 777

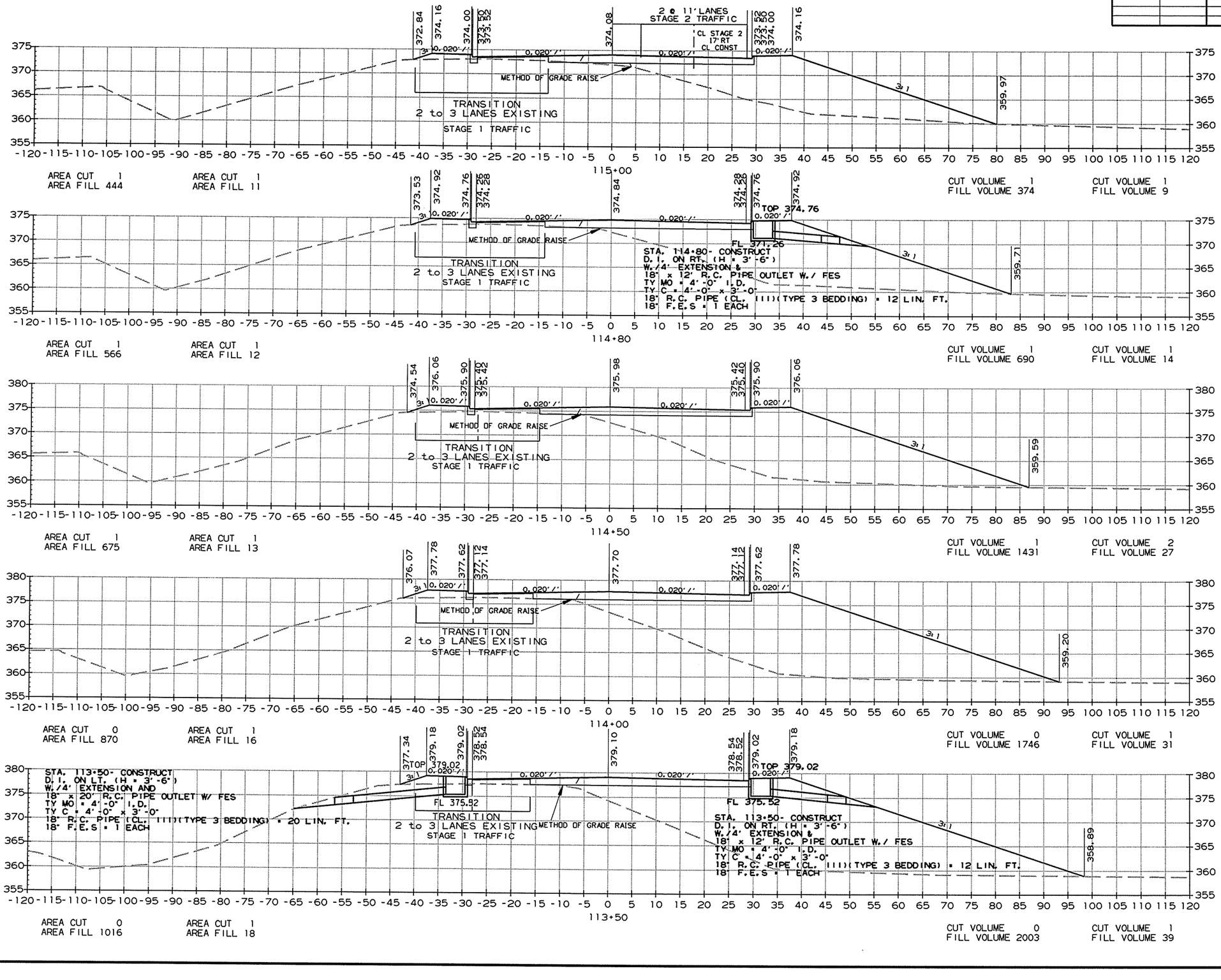
CUT VOLUME 0
FILL VOLUME 555

STA. 112+35 TO STA. 113+00

r080340.dgn cross sections 5/17/12

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.		080340	170	187

(2) CROSS SECTIONS

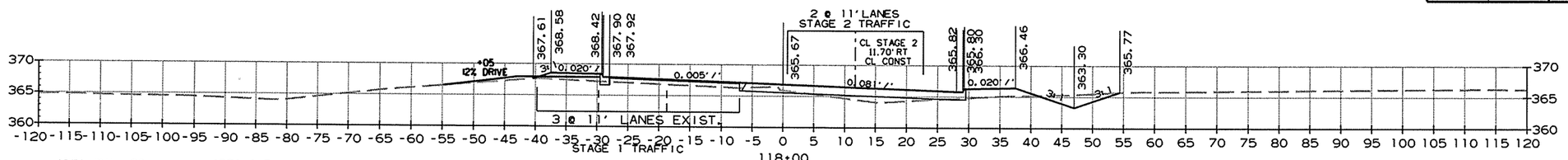


r080340.dgn cross sections 5/17/12

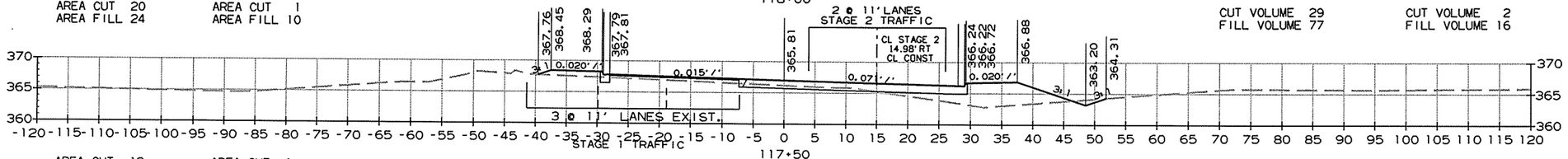
STA. 113+50 TO STA. 115+00

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.		080340	171	187

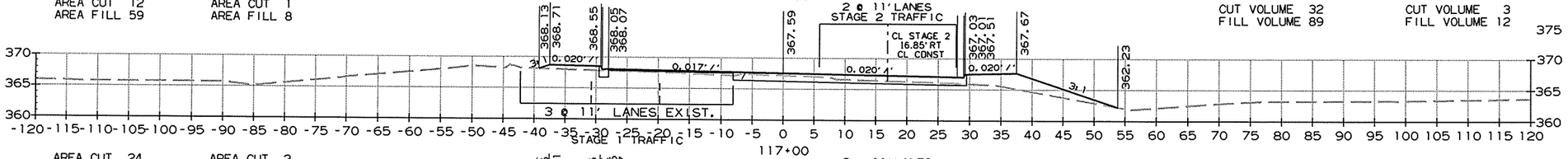
(2) CROSS SECTIONS



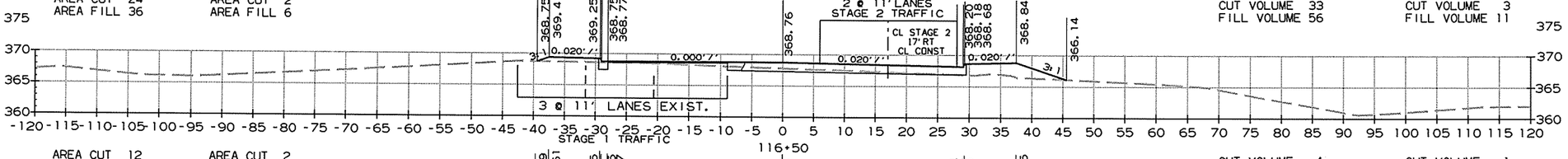
AREA CUT 20 AREA CUT 1 CUT VOLUME 29 CUT VOLUME 2
AREA FILL 24 AREA FILL 10 FILL VOLUME 77 FILL VOLUME 16



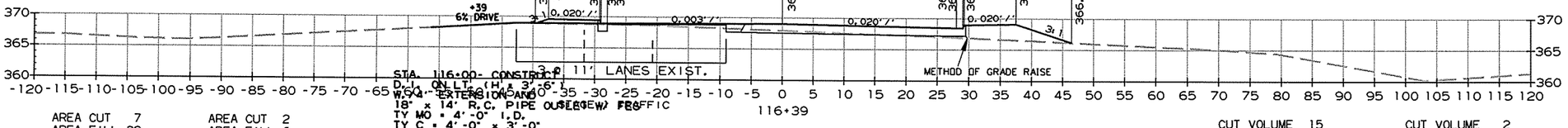
AREA CUT 12 AREA CUT 1 CUT VOLUME 32 CUT VOLUME 3
AREA FILL 59 AREA FILL 8 FILL VOLUME 89 FILL VOLUME 12



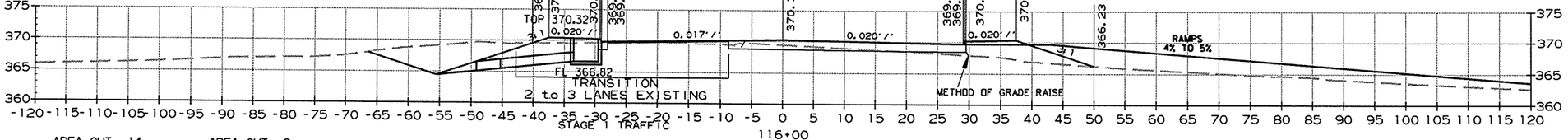
AREA CUT 24 AREA CUT 2 CUT VOLUME 33 CUT VOLUME 3
AREA FILL 36 AREA FILL 6 FILL VOLUME 56 FILL VOLUME 11



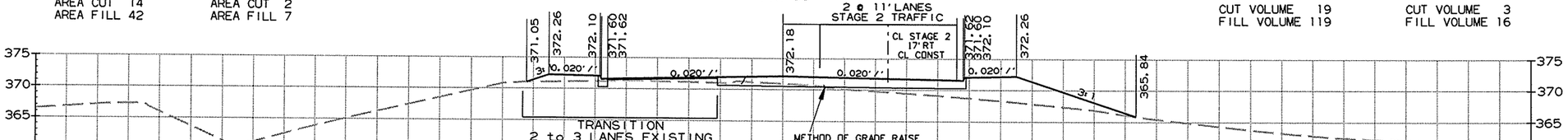
AREA CUT 12 AREA CUT 2 CUT VOLUME 4 CUT VOLUME 1
AREA FILL 24 AREA FILL 6 FILL VOLUME 11 FILL VOLUME 3



AREA CUT 7 AREA CUT 2 CUT VOLUME 15 CUT VOLUME 2
AREA FILL 32 AREA FILL 6 FILL VOLUME 53 FILL VOLUME 10



AREA CUT 14 AREA CUT 2 CUT VOLUME 19 CUT VOLUME 3
AREA FILL 42 AREA FILL 7 FILL VOLUME 119 FILL VOLUME 16



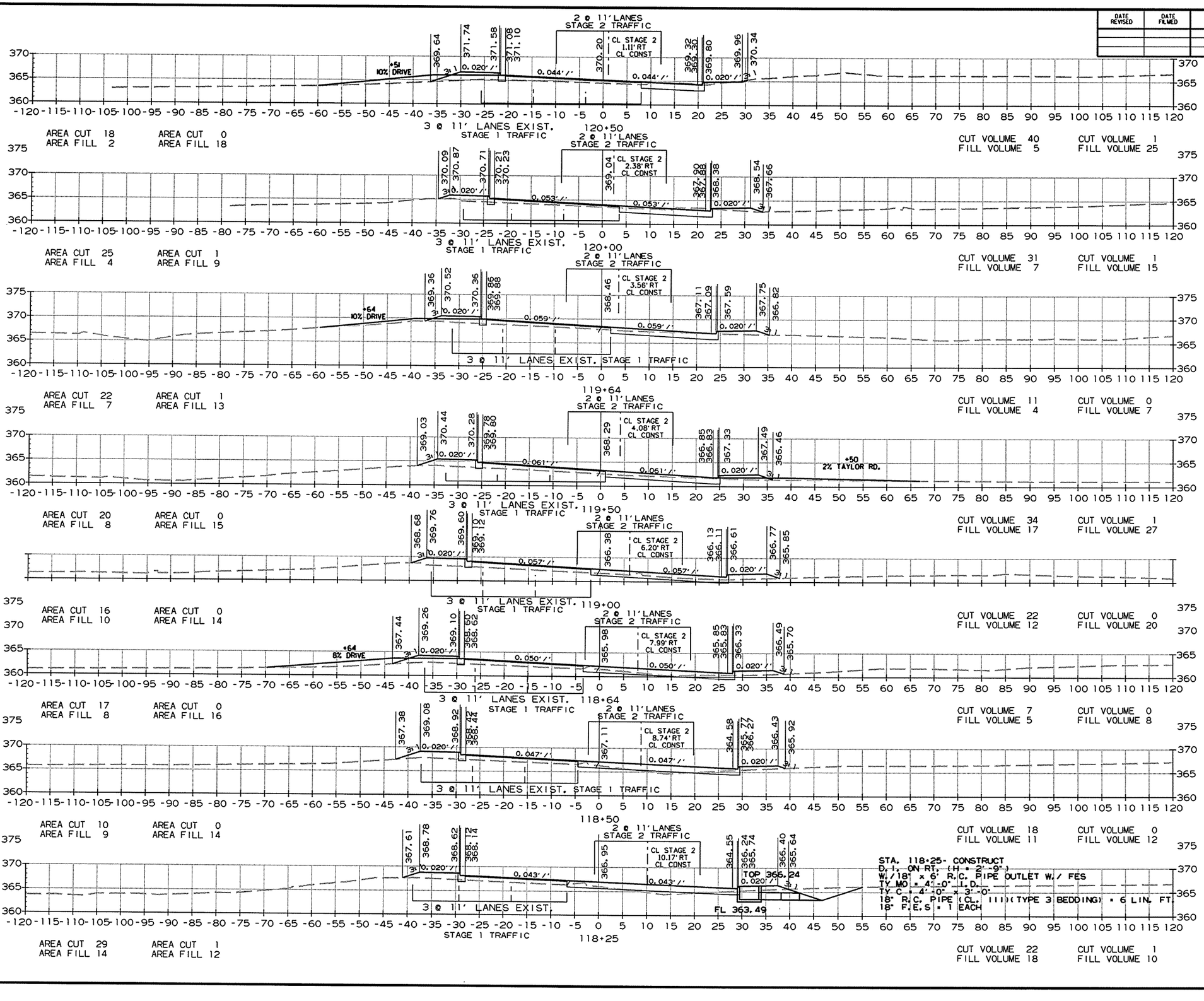
AREA CUT 7 AREA CUT 1 CUT VOLUME 7 CUT VOLUME 2
AREA FILL 87 AREA FILL 10 FILL VOLUME 491 FILL VOLUME 20

STA. 115+50 TO STA. 118+00

r080340.dgn cross sections 5/17/12

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.		080340	172	187

(2) CROSS SECTIONS

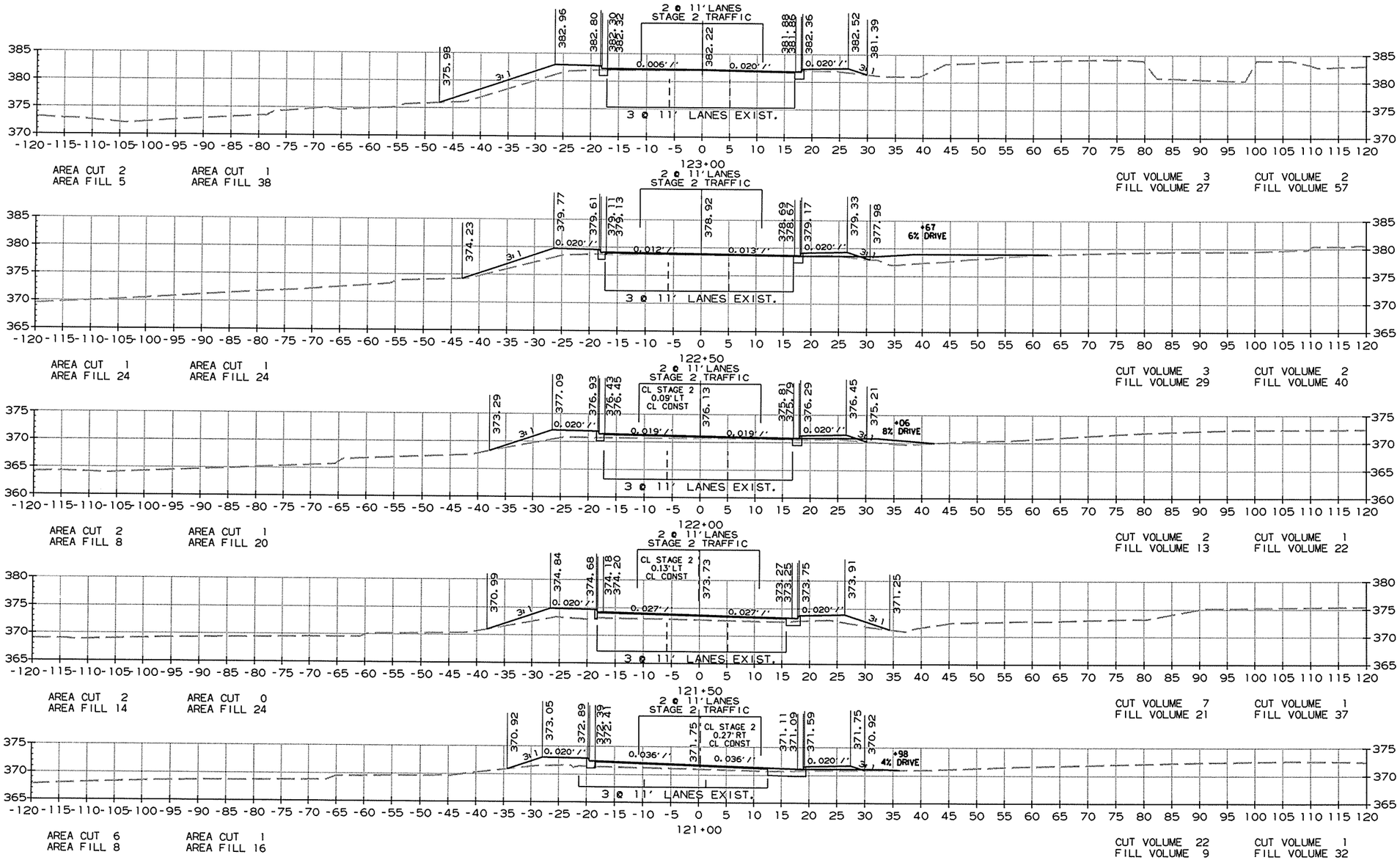


r080340.dgn cross sections 5/17/12

STA. 118+25 TO STA. 120+50

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.		080340	173	187

(2) CROSS SECTIONS

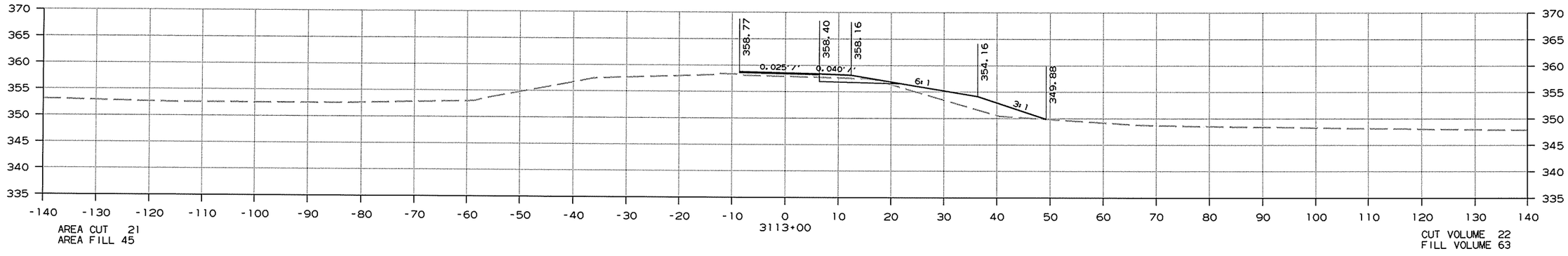


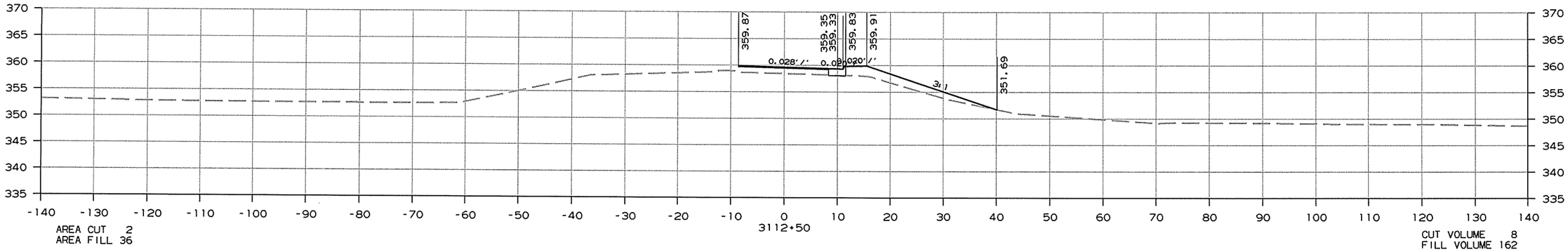
STA. 121+00 TO STA. 123+00

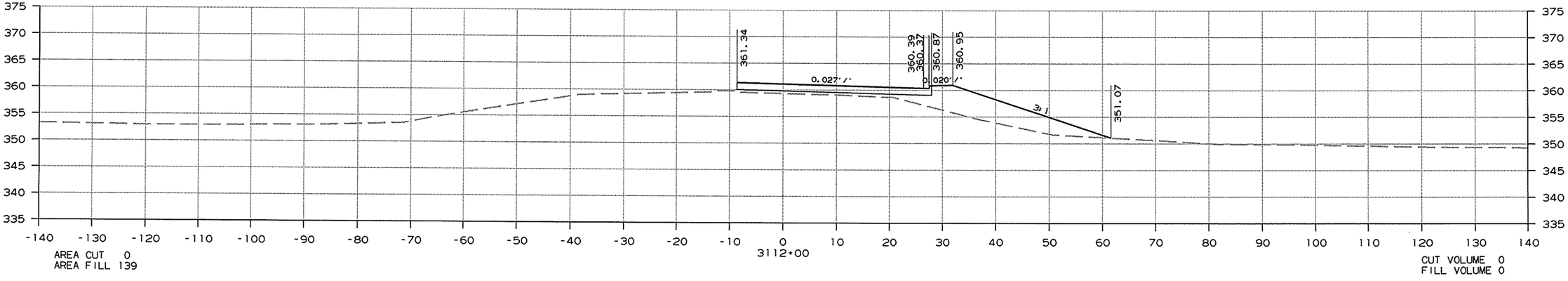
r080340.dgn cross sections 5/17/12

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.		080340	174	187

(2) CROSS SECTIONS - EASTBOUND ENTRANCE







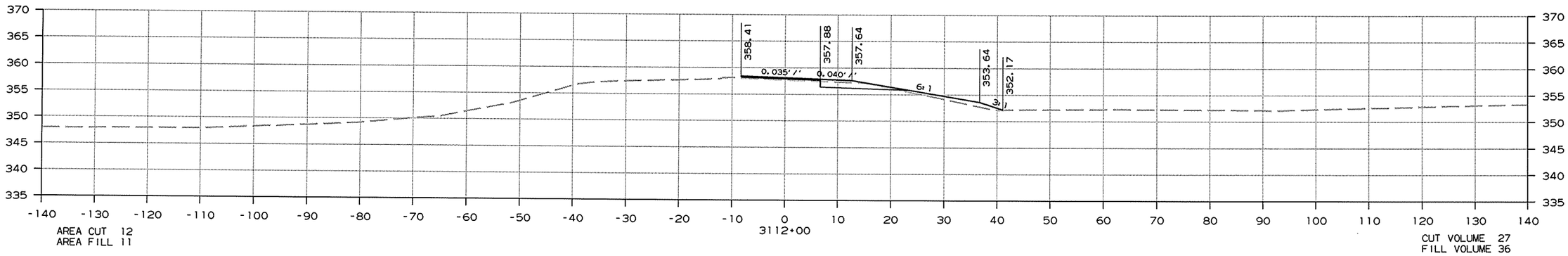
CROSS SECTION STA. 3112+00 TO STA. 3113+00

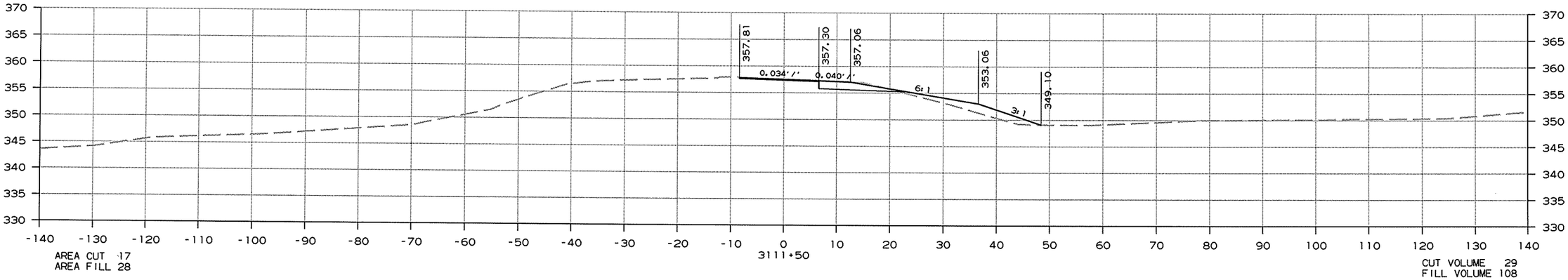
11/8/2011

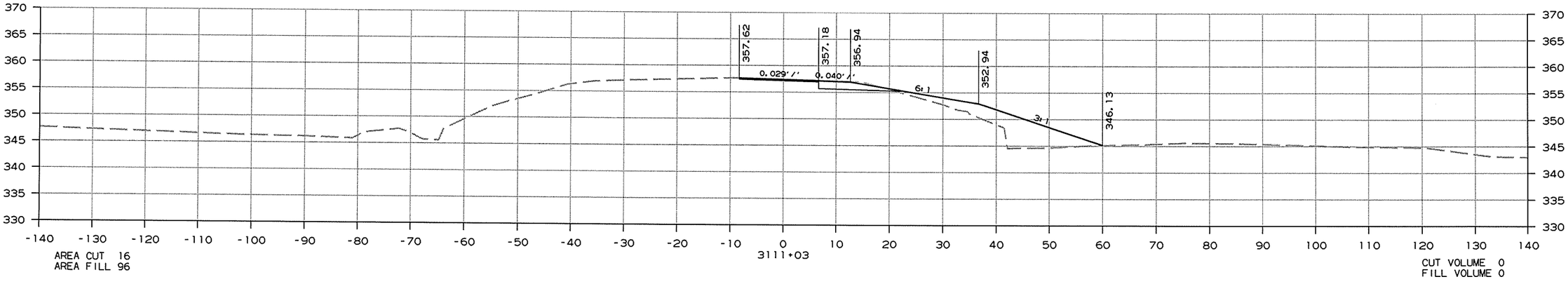
ZBORDER.CEL

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.		080340	175	187

(2) CROSS SECTIONS - EASTBOUND EXIT RAMP







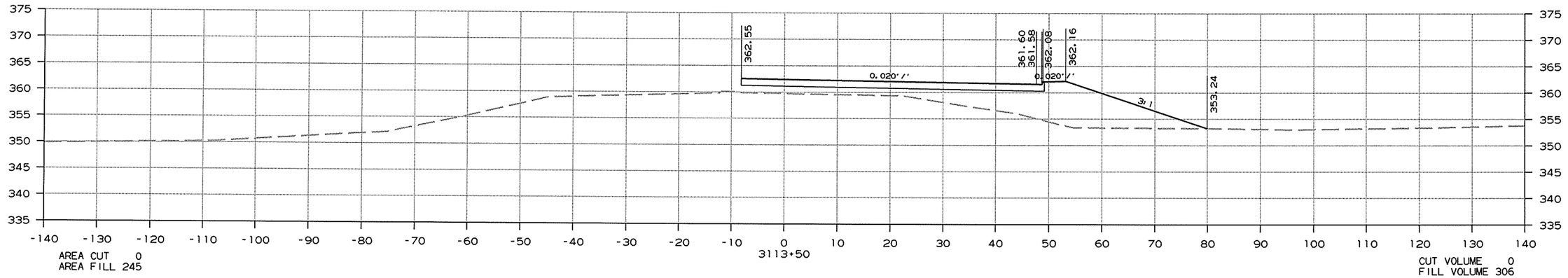
CROSS SECTION STA. 3111+03 TO STA. 3112+00

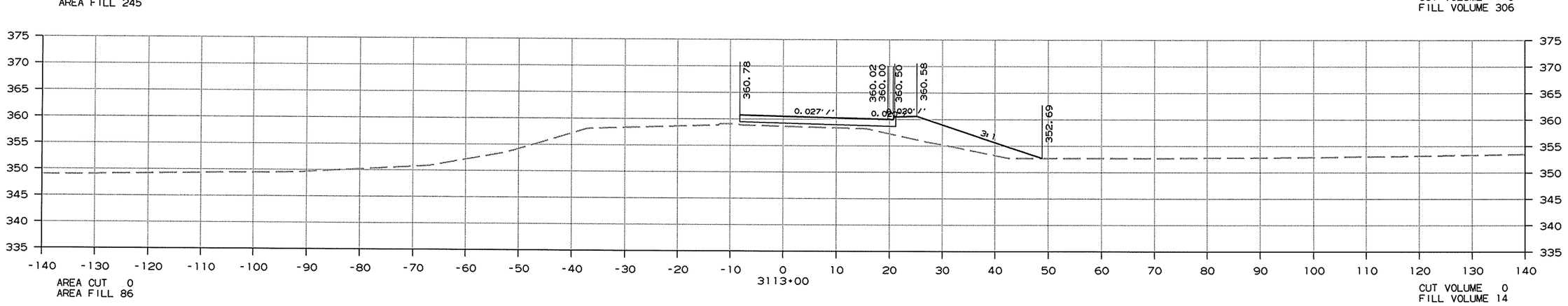
10/17/2013

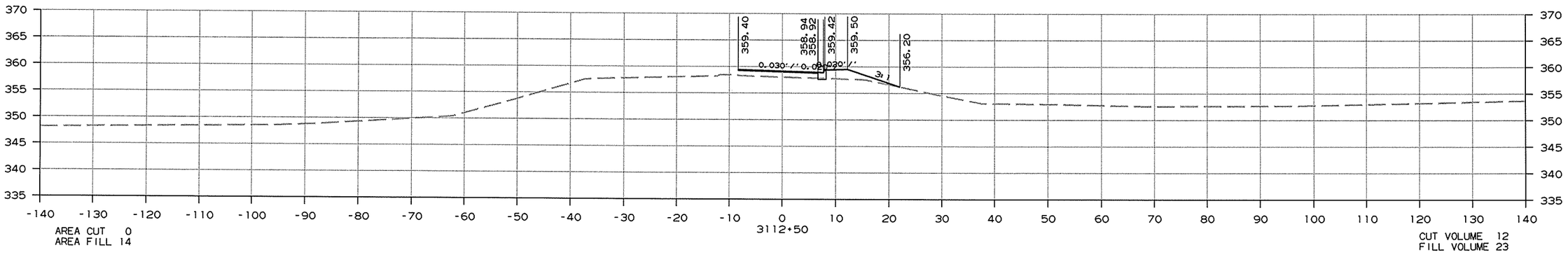
R080340.DGN

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.		080340	176	187

(2) CROSS SECTIONS - EASTBOUND EXIT RAMP







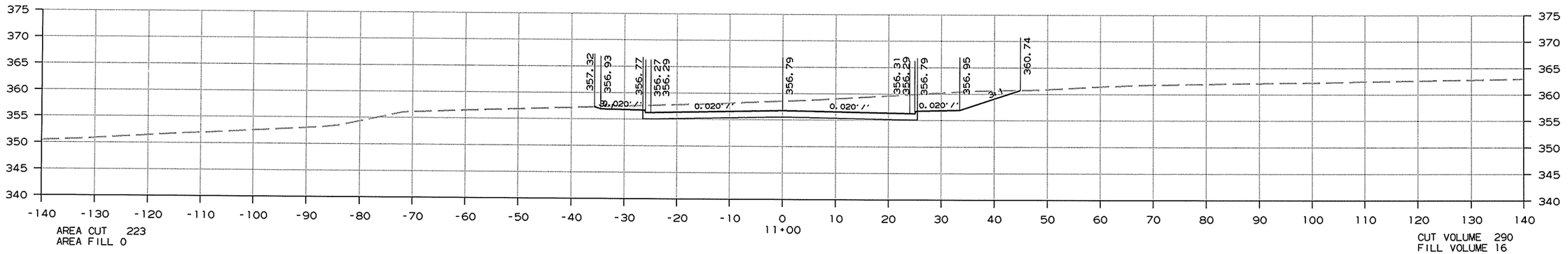
CROSS SECTION STA. 3112+50 TO STA. 3113+50

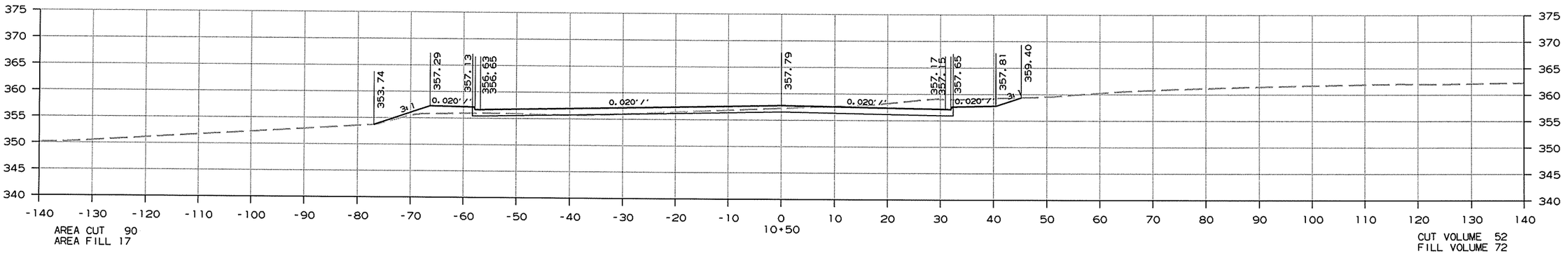
10/17/2013

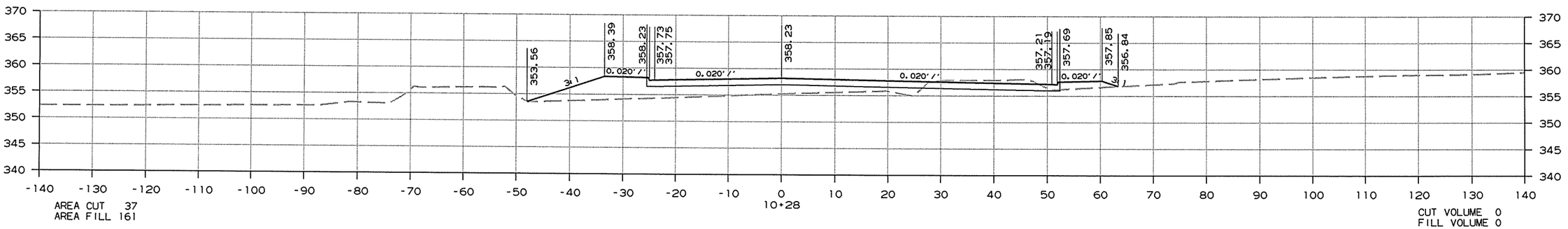
R080340.DGN

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.		080340	177	187

(2) CROSS SECTION - MARKET STREET







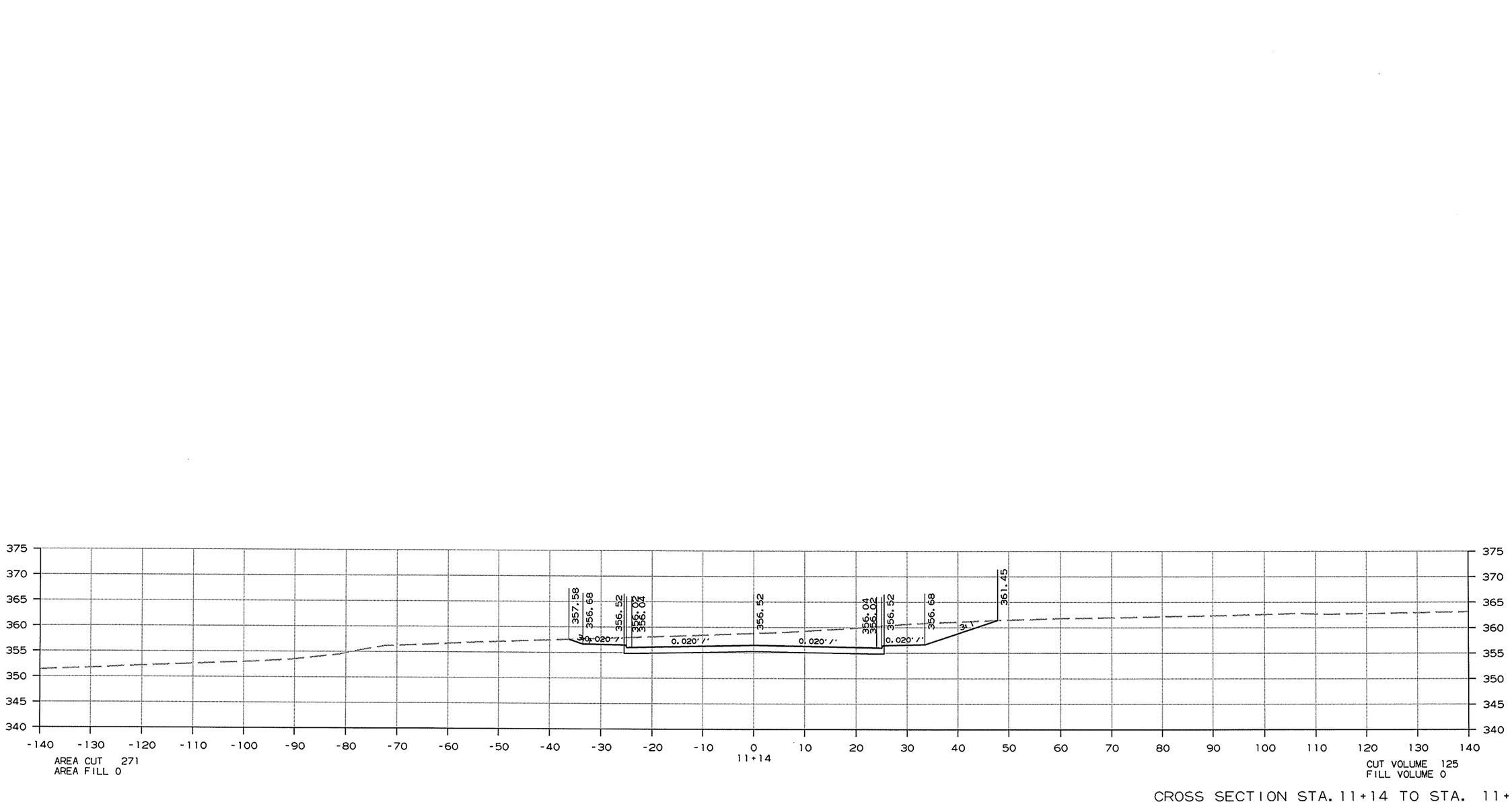
CROSS SECTION STA. 10+28 TO STA. 11+00

11/8/2011

ZBORDER.CEL

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.		080340	178	187

(2) CROSS SECTION - MARKET STREET



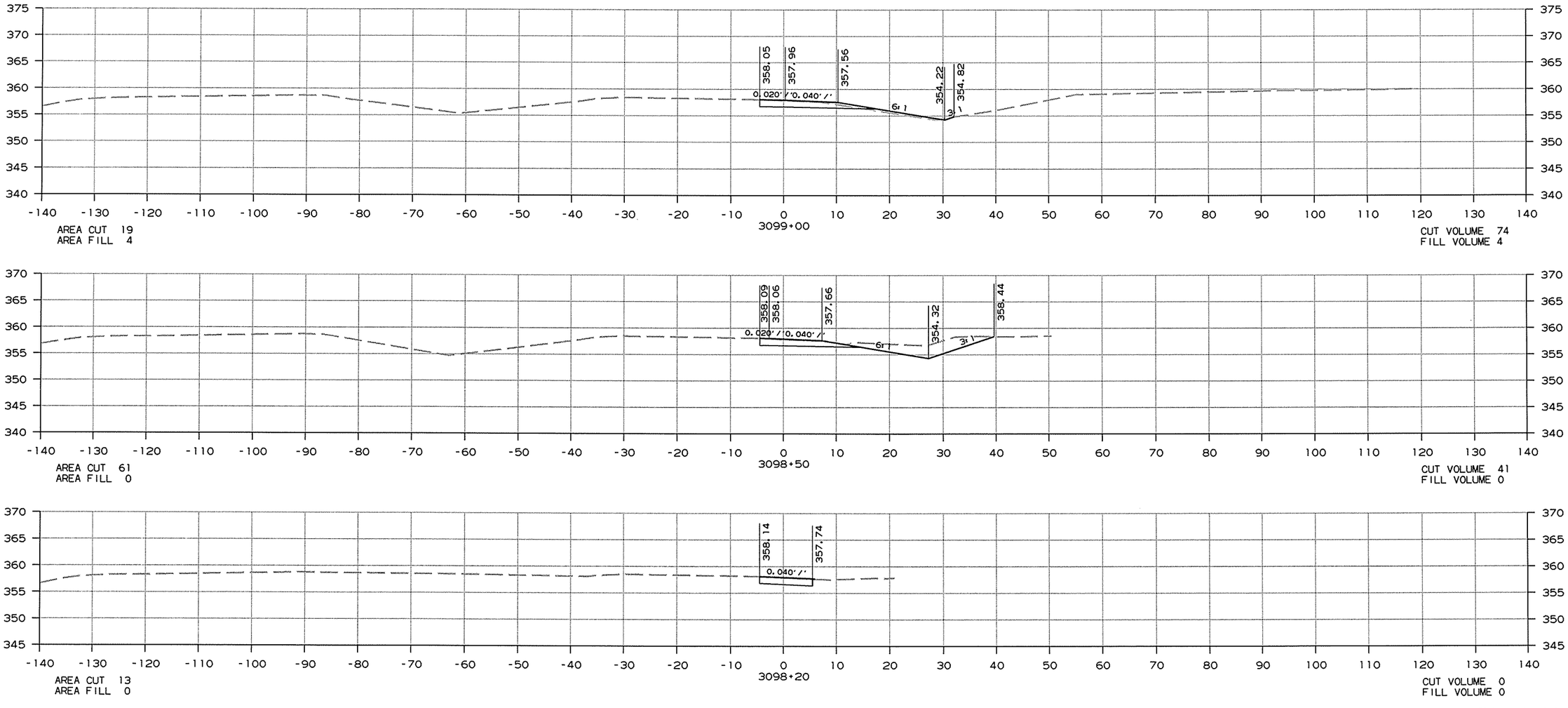
CROSS SECTION STA. 11+14 TO STA. 11+14

11/8/2011

ZBDRDER.CEL

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.		080340	179	187

(2) CROSS SECTIONS - EASTBOUND EXIT RAMP



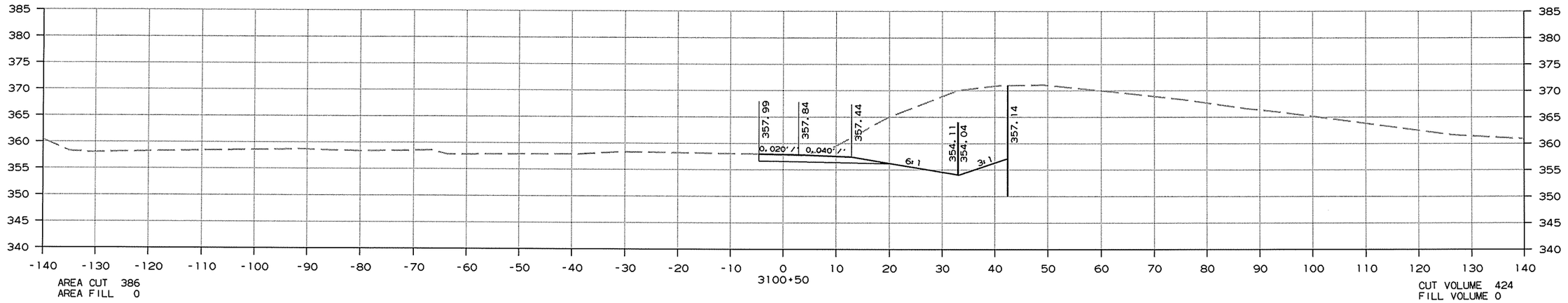
CROSS SECTION STA. 3098+20 TO STA. 3099+00

10/17/2013

R080340.DGN

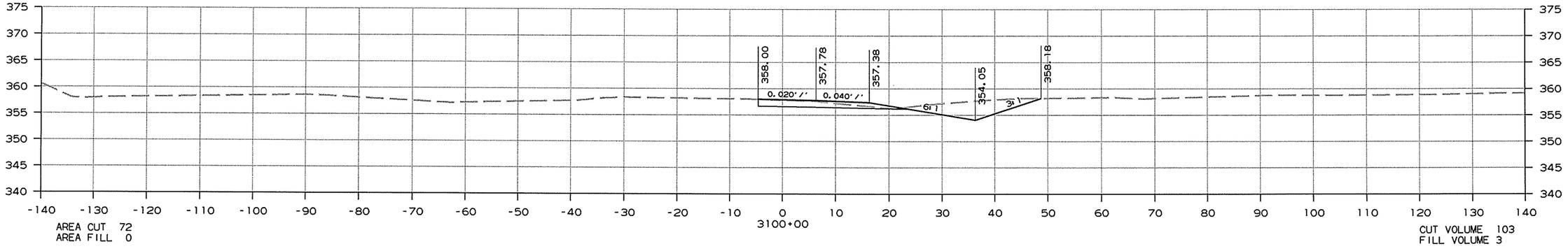
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		080340	180	187

(2) CROSS SECTIONS - EASTBOUND EXIT RAMP



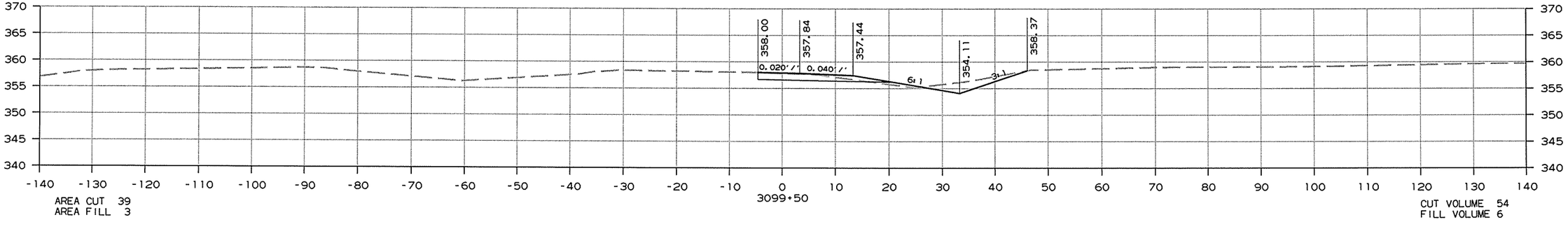
AREA CUT 386
AREA FILL 0

CUT VOLUME 424
FILL VOLUME 0



AREA CUT 72
AREA FILL 0

CUT VOLUME 103
FILL VOLUME 3



AREA CUT 39
AREA FILL 3

CUT VOLUME 54
FILL VOLUME 6

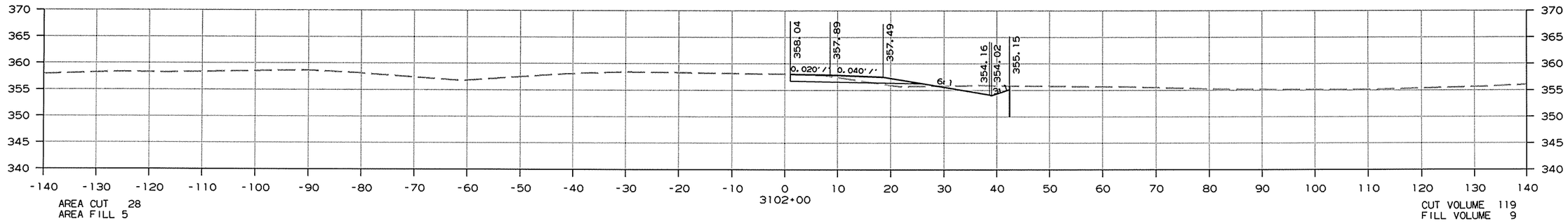
CROSS SECTION STA. 3099+50 TO STA. 3100+50

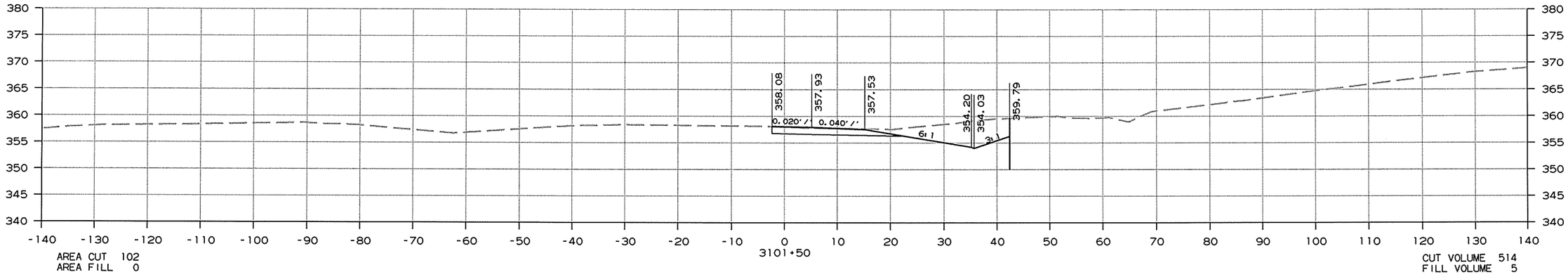
10/17/2013

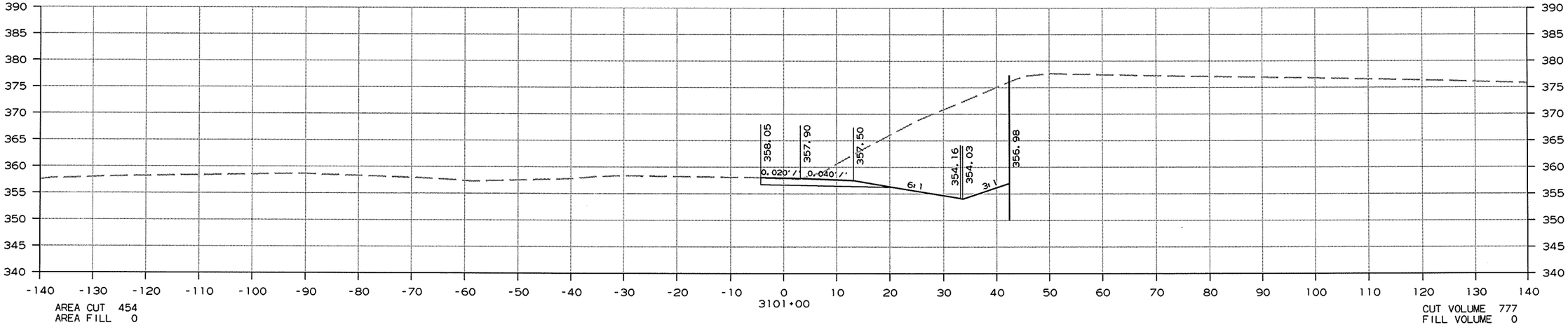
R080340.DGN

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.		080340	181	187

(2) CROSS SECTIONS - EASTBOUND EXIT RAMP







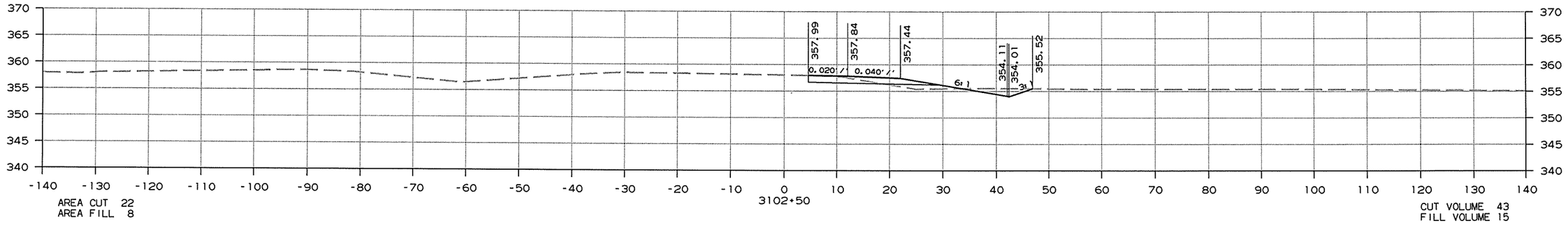
CROSS SECTION STA. 3101+00 TO STA. 3102+00

10/17/2013

R080340.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.		080340	182	187

(2) CROSS SECTIONS - EASTBOUND EXIT RAMP



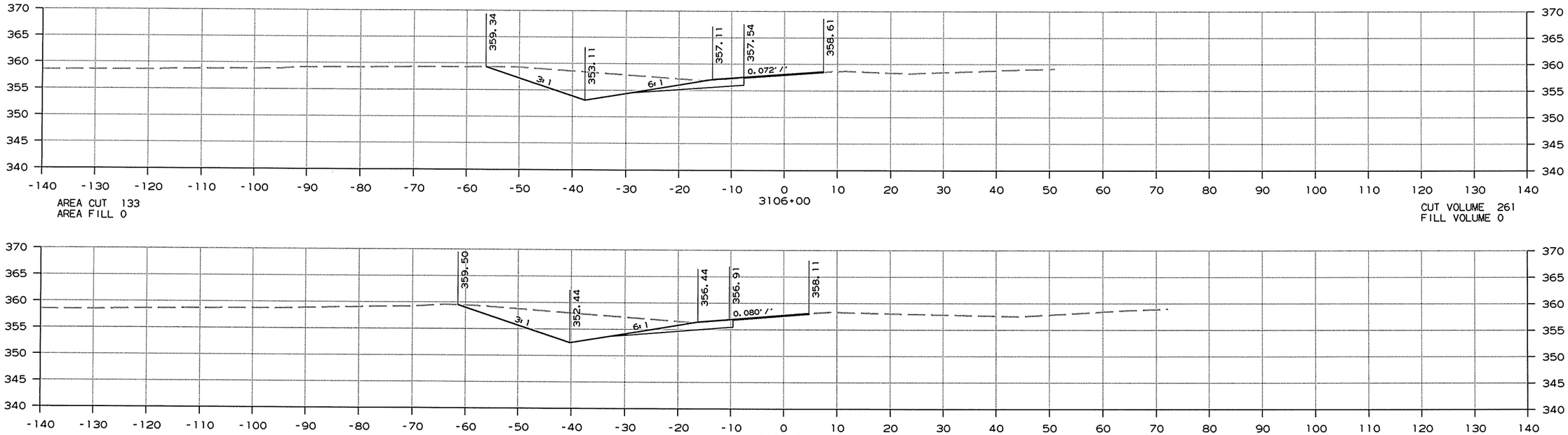
CROSS SECTION STA. 3102+50 TO STA. 3102+62

10/17/2013

R080340.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.		080340	183	187

(2) CROSS SECTIONS WESTBOUND ENTRANCE



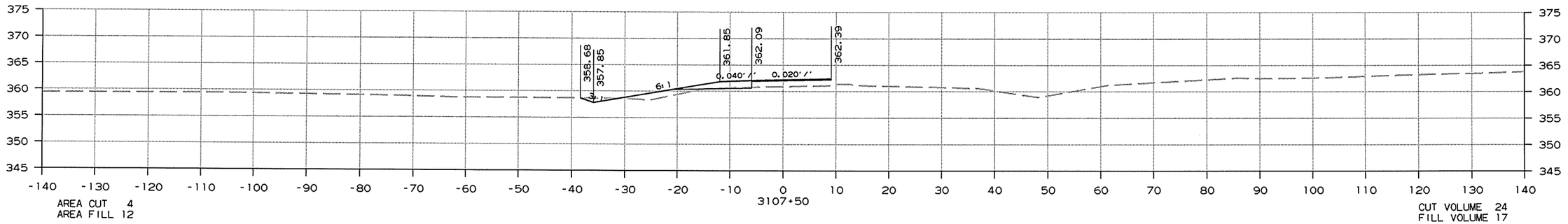
CROSS SECTION STA. 3105+48 TO STA. 3106+00

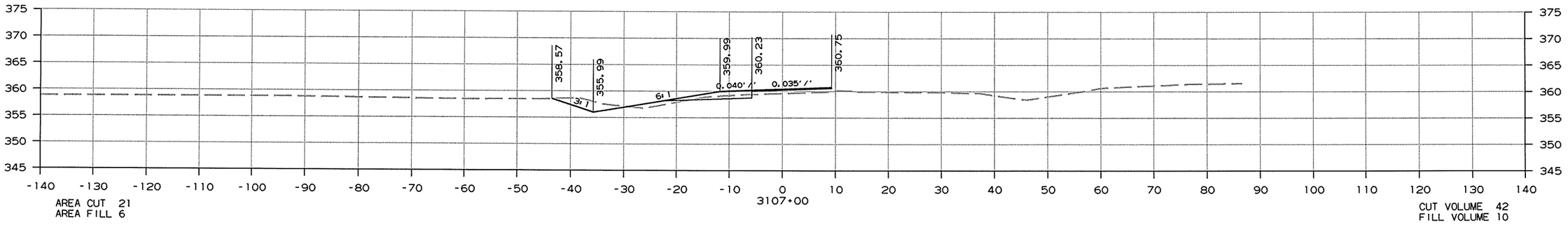
10/17/2013

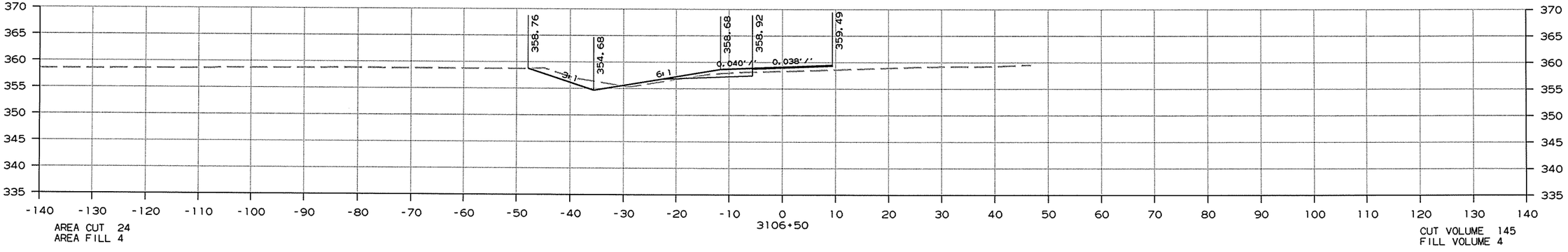
R080340.DGN

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.		080340	184	187

(2) CROSS SECTIONS WESTBOUND ENTRANCE







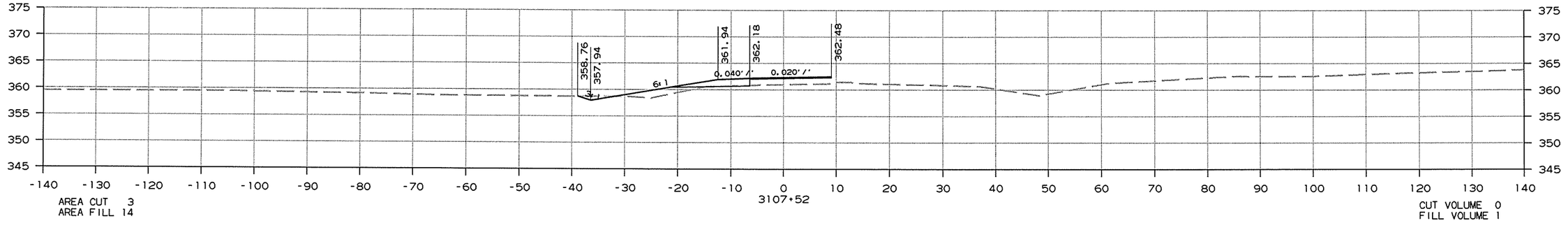
CROSS SECTION STA. 3106+50 TO STA. 3107+50

10/17/2013

R080340.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.		080340	185	187

(2) CROSS SECTIONS WESTBOUND ENTRANCE



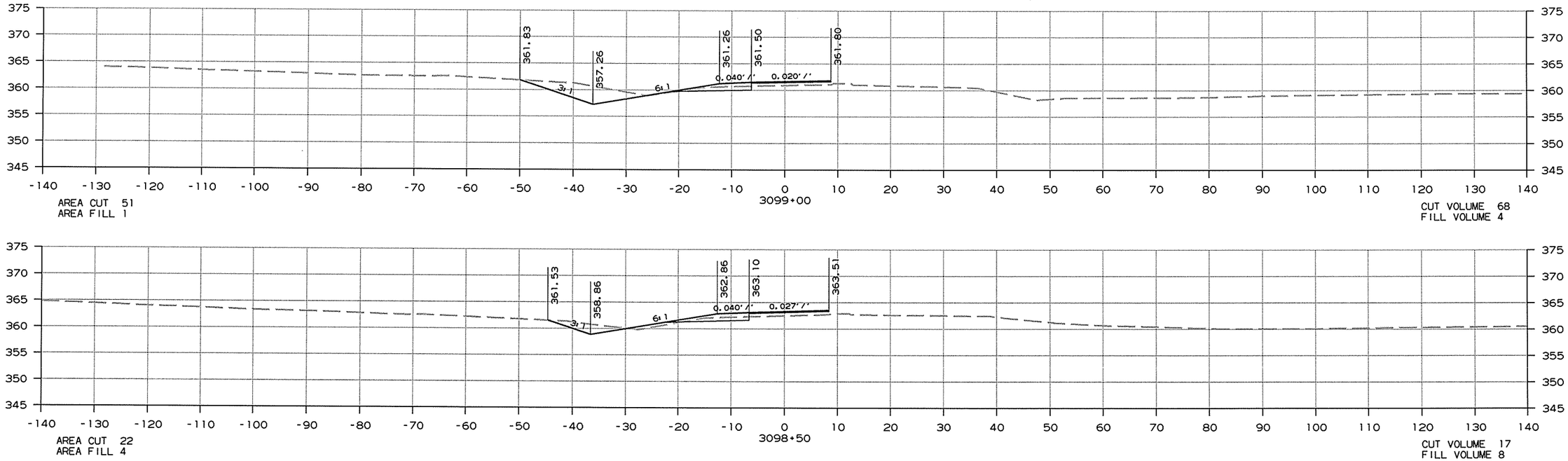
CROSS SECTION STA. 3107+52 TO STA. 3107+52

10/17/2013

R080340.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.		080340	186	187

(2) CROSS SECTION - WESTBOUND EXIT



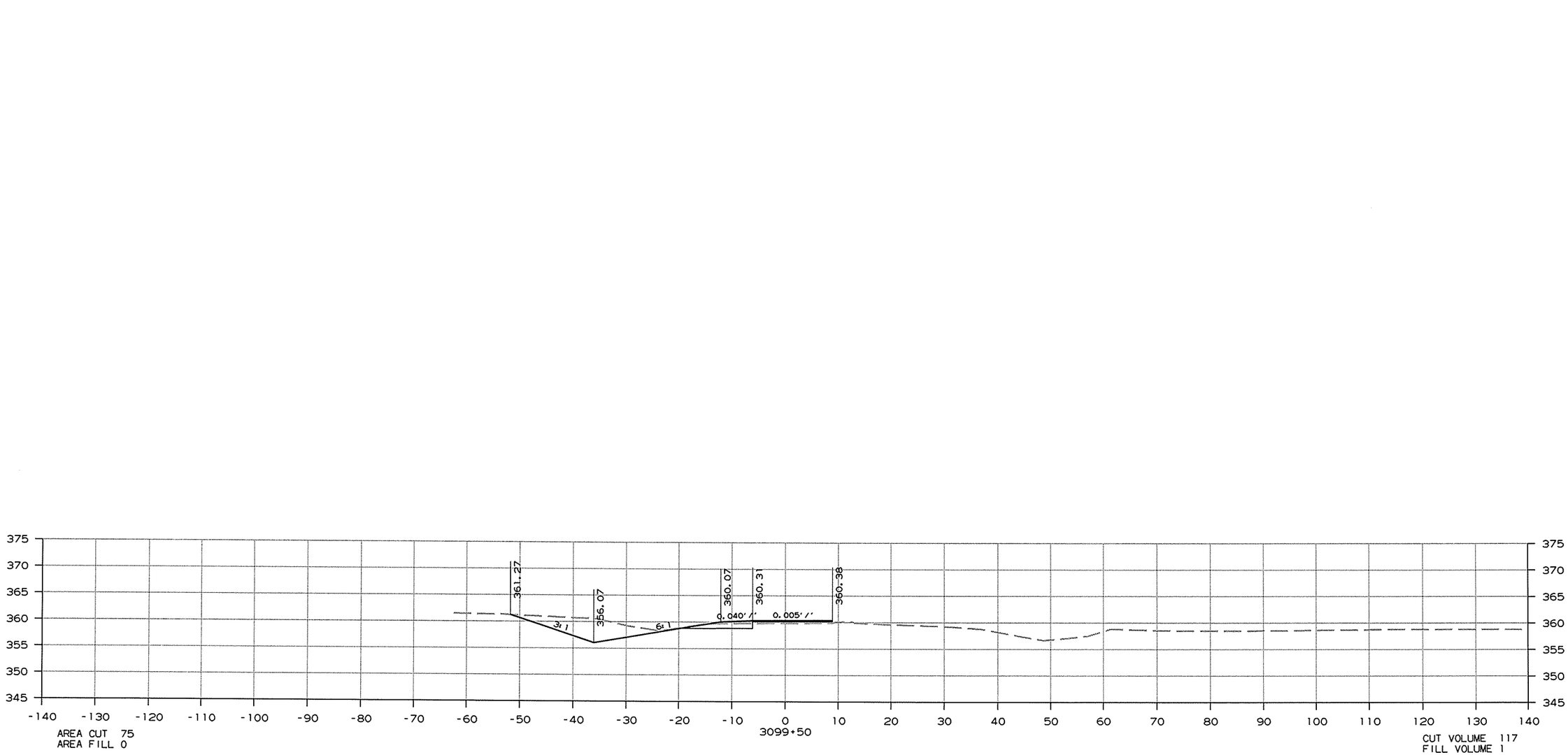
CROSS SECTION STA. 3098+21 TO STA. 3099+00

10/17/2013

R080340.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.		080340	187	187

(2) CROSS SECTION - WESTBOUND EXIT



CROSS SECTION STA. 3099+50 TO STA. 3099+50

10/17/2013

R080340.DGN