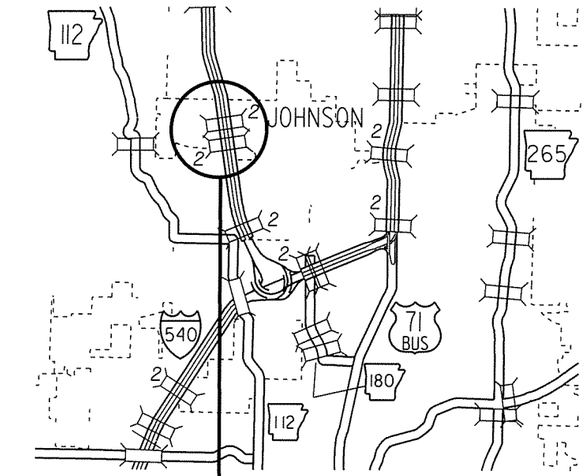


PROJECT LOCATION

VICINITY MAP

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	1	97
(2) JOHNSON MILL BLVD. INTCHNG. IMPVTS. (S)				

"A FULLY CONTROLLED ACCESS FACILITY"

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

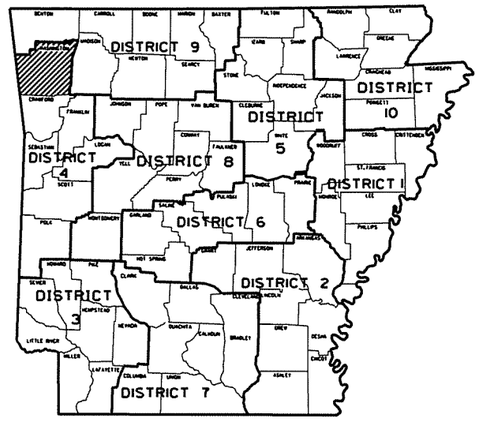
CONSTRUCTION PLANS FOR STATE HIGHWAY

JOHNSON MILL BLVD. INTCHNG. IMPVTS. (S)

WASHINGTON COUNTY

ROUTE 540 SECTION 4

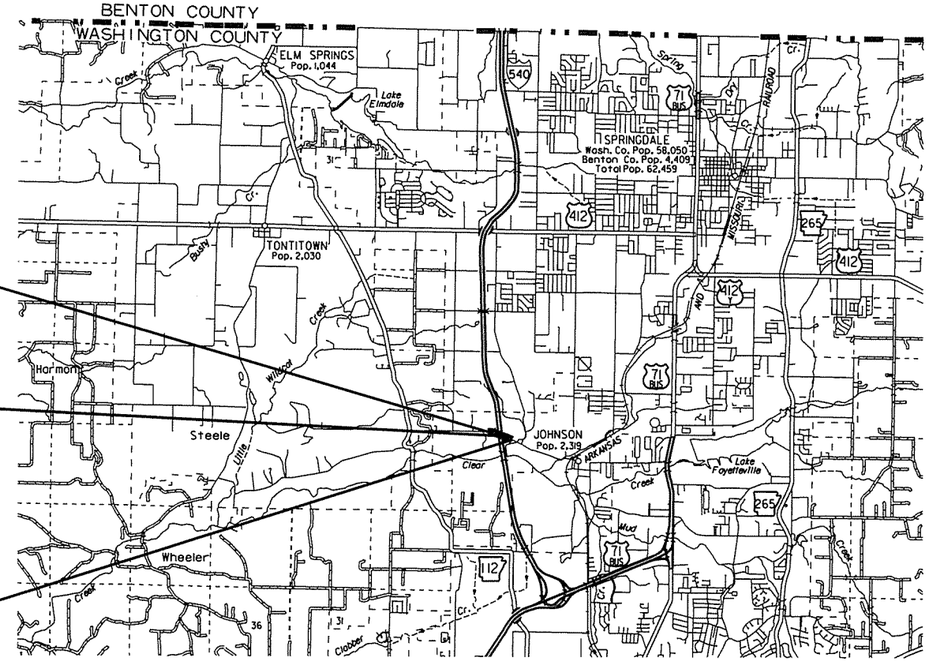
JOB BB0412



ARK. HWY. DIST. NO. 4

FED. AID PROJ. BIM-ACIMD-B540(208)

"NOT TO SCALE"



STA. 3+75.00
BEGIN JOB BB0412

STA. 9+99.86 ℄ CONST. JOHNSON MILL BLVD. =
STA. 139+54.91 ℄ I-540 L.M. = 68.95

STA. 18+41.23
END JOB BB0412

• DESIGN TRAFFIC DATA •

DESIGN YEAR	2033
2013 ADT	13,000
2033 ADT	18,000
2033 DHV	1980
DIRECTIONAL DISTRIBUTION	0.60
TRUCKS	3%
DESIGN SPEED	35 MPH

N

CERTIFICATE OF AUTHORIZATION
CRAFTON, TULL & ASSOCIATES, INC.
No. 109
ARKANSAS ENGINEER

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9620
HUBERT BURNS
10/3/13

BEGINNING OF PROJECT
LAT. = N 36°08'21"
LONG. = W 94°11'05"

MID-POINT OF PROJECT
LAT. = N 36°08'19"
LONG. = W 94°10'58"

END OF PROJECT
LAT. = N 36°08'16"
LONG. = W 94°10'50"

GROSS LENGTH OF PROJECT		1466.23	FEET	OR	0.278	MILES
NET	" " ROADWAY	1466.23	"	"	0.278	"
NET	" " BRIDGES	0.00	"	"	0.000	"
NET	" " PROJECT	1466.23	"	"	0.278	"

P.E. BB0412
NON-PART.

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Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	2	97
				(2)	INDEX OF SHEETS			

INDEX OF SHEETS

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS

9/04/13

USER: jd5103
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INDEX OF SHEETS

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	3	97

(2) GOVERNING SPECIFICATIONS & GENERAL NOTES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 9620
HUBERT BURNS
11/6/13

GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, POWER, TELEPHONE AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U.S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE BID PRICE FOR THE VARIOUS BID ITEMS.
5. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
6. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
7. 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.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.
9. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
10. THE CONTRACTOR SHALL CONTACT ALL FIBER OPTIC COMPANIES INVOLVED ON THIS PROJECT AT LEAST 5 WORKING DAYS BEFORE CONSTRUCTION, INCLUDING REMOVING AND INSTALLING ANY FENCING, AND TAKE EVERY PRECAUTION NECESSARY TO AVOID CONFLICT WITH THE FIBER OPTIC CABLES. THE CONTRACTOR SHALL TELEPHONE ARKANSAS ONE-CALL SYSTEM AT 800-482-8998 TO DETERMINE THE LOCATION OF THE BURIED FIBER OPTIC CABLES.

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
718-2	REFLECTORIZED PAINT PAVEMENT MARKINGS
719-2	THERMOPLASTIC PAVEMENT MARKING MATERIAL
JOB BB0412	ANTENNA SUPPORT
JOB BB0412	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB BB0412	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB BB0412	CABINET DRAWER ASSEMBLY
JOB BB0412	CLOSED LOOP TRAFFIC SYSTEM
JOB BB0412	COMMUNICATIONS CABLE - FIBER
JOB BB0412	CONCRETE PULL BOX
JOB BB0412	COORDINATION OF WORK
JOB BB0412	EDGE CARD VIDEO PROCESSOR
JOB BB0412	ELECTRICAL CONDUCTORS FOR LUMINAIRES
JOB BB0412	ELECTRICAL CONDUCTORS-IN-CONDUIT
JOB BB0412	FLEXIBLE BEGINNING OF WORK
JOB BB0412	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB BB0412	HIGH PERFORMANCE PAVEMENT MARKING
JOB BB0412	INTERNET BIDDING
JOB BB0412	LED TRAFFIC SIGNAL HEAD
JOB BB0412	LUMINAIRE ASSEMBLY (CUTOFF TYPE)
JOB BB0412	PLASTIC PIPE
JOB BB0412	SERVICE POINT ASSEMBLY (TRAFFIC CONTROL DEVICES)
JOB BB0412	STORM WATER POLLUTION PREVENTION PLAN
JOB BB0412	STREET NAME SIGN (MAST ARM MOUNTED)
JOB BB0412	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB BB0412	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)
JOB BB0412	UTILITY ADJUSTMENTS
JOB BB0412	VIDEO DETECTOR (COLOR)
JOB BB0412	WARM MIX ASPHALT

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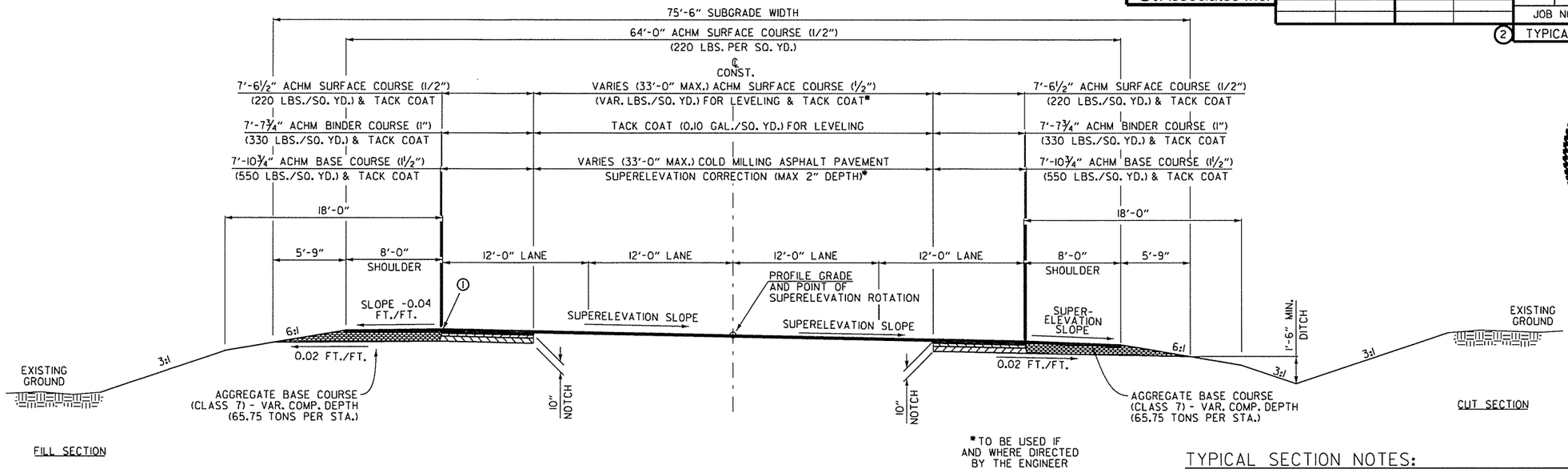
Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	4	97

(2) TYPICAL SECTIONS OF IMPROVEMENT



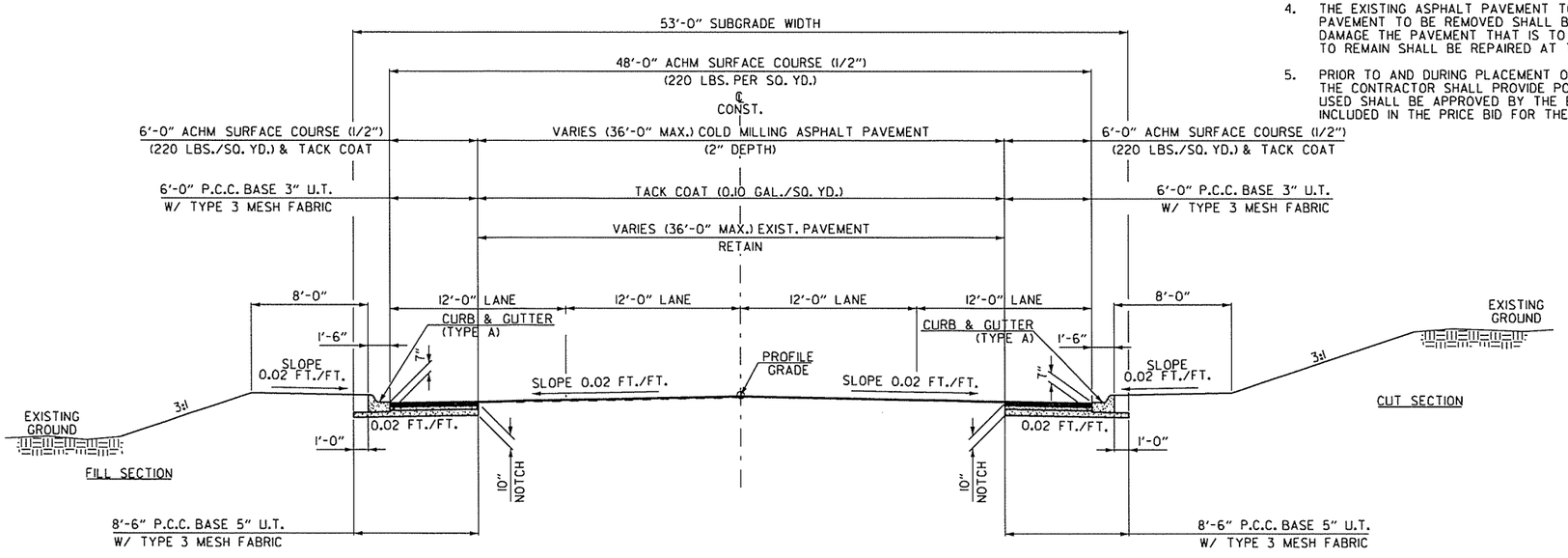
*TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER

ⓘ ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATION TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN THE PAVEMENT SLOPE AND THE SHOULDER SLOPE SHALL NOT EXCEED 8.00%.

NOTE:
TRANSITION FROM EXISTING LANE WIDTHS TO #1 TYPICAL
ON RT. FROM STA. 3+75.00 TO STA. 5+00.00 &
ON LT. FROM STA. 3+75.00 TO STA. 5+89.70.
FROM STA. 6+46.45 TO STA. 7+41.57 MATCH RAMP 3 ON LT.
FROM STA. 6+23.28 TO STA. 7+52.64 MATCH RAMP 4 ON RT.

#1 TYPICAL SECTION OF IMPROVEMENT
FOUR LANES - JOHNSON MILL BLVD.
NOTCH & WIDENING
OPEN SHOULDER

STA. 5+89.70 TO STA. 6+46.45 LT.
STA. 5+00.00 TO STA. 6+23.28 RT.



NOTE:
FROM STA. 12+80.90 TO STA. 14+37.40 MATCH RAMP 2 ON LT.
FROM STA. 13+34.44 TO STA. 14+37.40 MATCH RAMP 1 ON RT.

#2 TYPICAL SECTION OF IMPROVEMENT
FOUR LANES - JOHNSON MILL BLVD.
NOTCH & WIDENING

STA. 7+41.57 TO STA. 12+80.90 LT.
STA. 7+52.64 TO STA. 13+34.44 RT.

TYPICAL SECTION NOTES:

1. 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.
2. ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY BUT PAYMENT WILL BE CONSIDERED INCLUDED IN THE VARIOUS PAY ITEMS.
3. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
4. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED SHALL BE SEPARATED BY 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 TO THE PAVEMENT THAT IS TO REMAIN SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
5. PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9/04/13

TYPICAL SECTIONS OF IMPROVEMENT

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Crafton, Tull & Associates Inc.

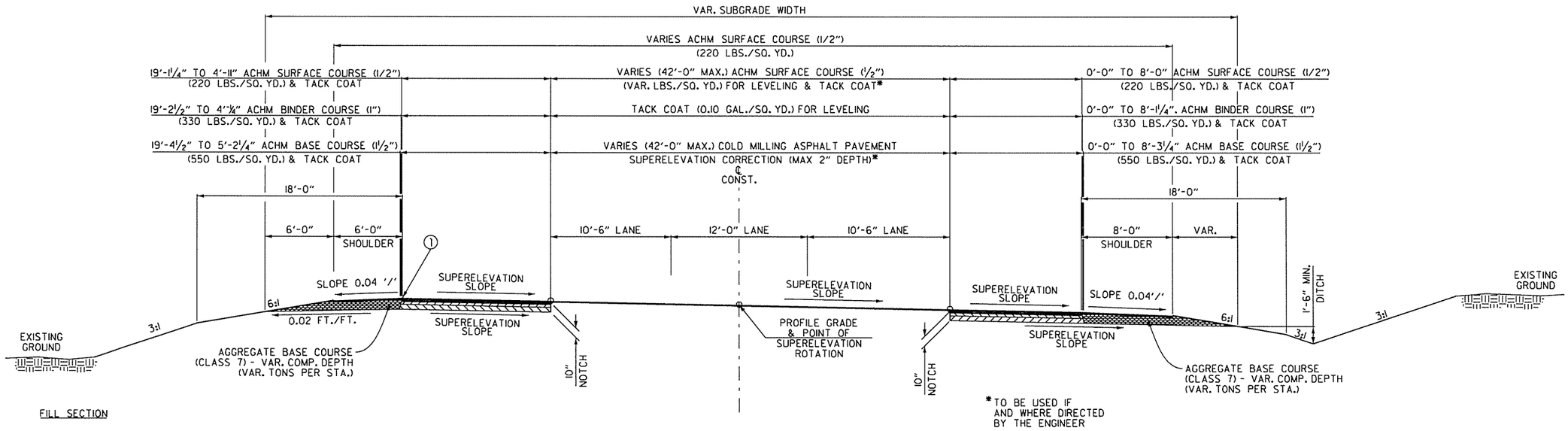
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	5	97

(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS

9/04/13



FILL SECTION

#3 TYPICAL SECTION OF IMPROVEMENT
TRANSITION TO THREE LANES - JOHNSON MILL BLVD.
NOTCH & WIDENING
OPEN SHOULDER

STA. 14+37.40 TO STA. 17+10.00

NOTE:
FROM STA. 16+84.43 TO STA. 18+41.23 ON LT.
TRANSITION TO EXIST. PAVEMENT

(1) ON ALL SUPERELEVATED CURVES AND THROUGH SUPERELEVATIONS TRANSITIONS, THE ALGEBRAIC DIFFERENCE BETWEEN THE PAVEMENT SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 8.00%.

TYPICAL SECTION NOTES:

1. 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.
2. ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY BUT PAYMENT WILL BE CONSIDERED INCLUDED IN THE VARIOUS PAY ITEMS.
3. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
4. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED SHALL BE SEPARATED BY 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 TO THE PAVEMENT THAT IS TO REMAIN SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
5. PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

TYPICAL SECTIONS OF IMPROVEMENT

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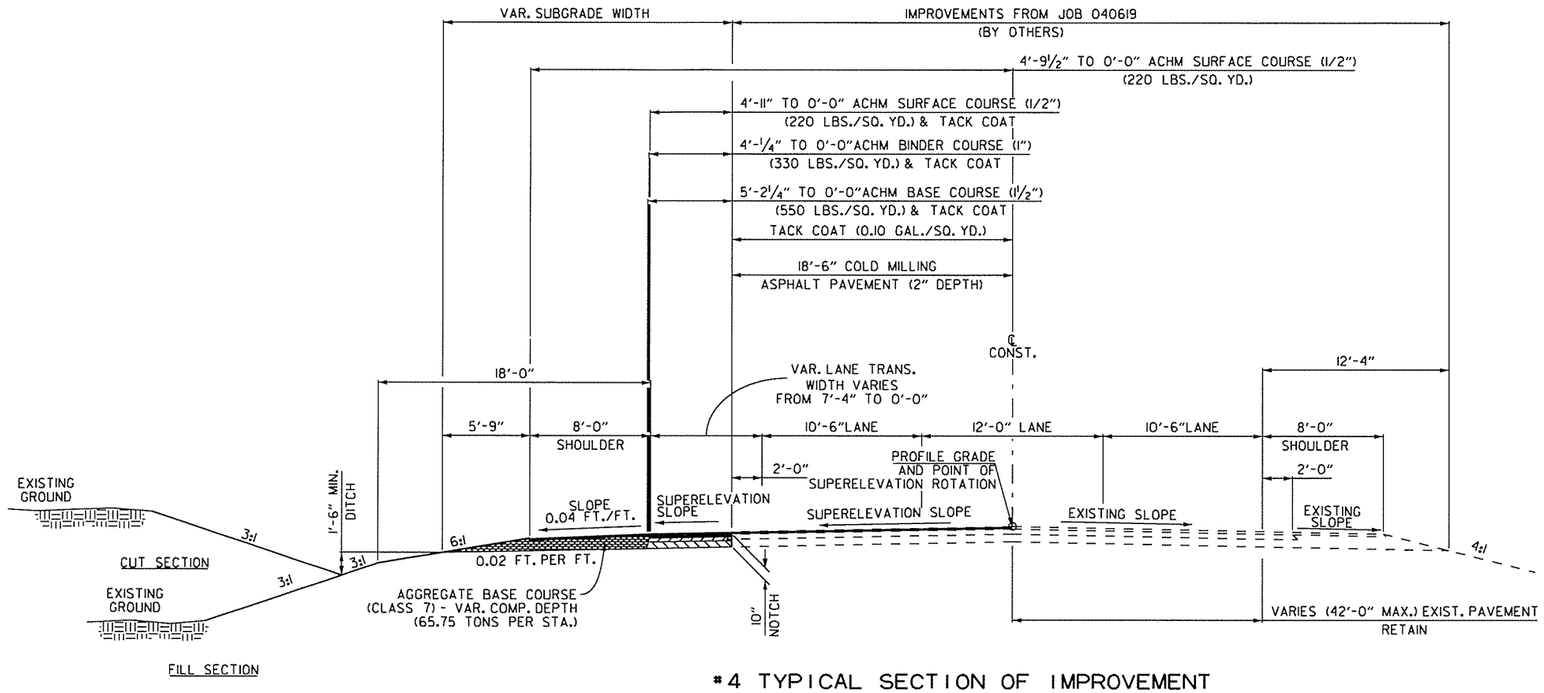
Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	6	97

(2) TYPICAL SECTIONS OF IMPROVEMENT

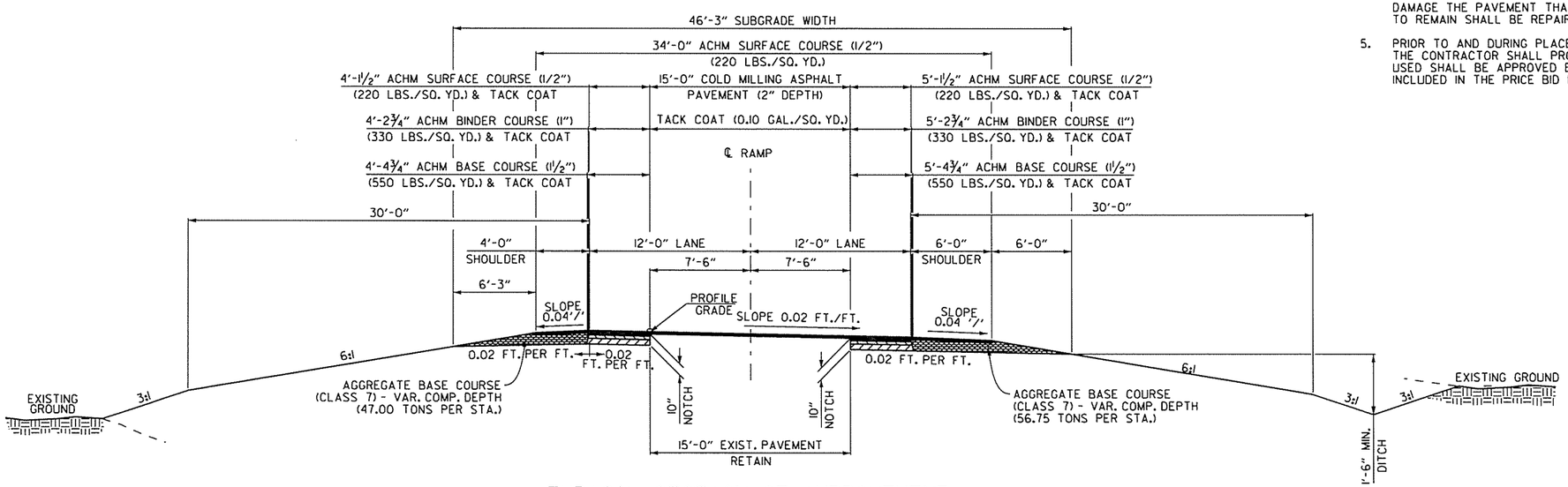
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS

9/04/13



#4 TYPICAL SECTION OF IMPROVEMENT
LEFT LANE TRANSITION - JOHNSON MILL BLVD.
NOTCH & WIDENING
OPEN SHOULDER

STA. 17+10.00 TO STA. 18+41.23



TYPICAL SECTION OF IMPROVEMENT
TWO LANES - RAMP
NOTCH & WIDENING

(SHOWN IN DIRECTION OF TRAFFIC)
RAMP 1 STA. 136+20.00 TO STA. 136+45

NOTE:
TRANSITION FROM EXISTING 15' WIDE RAMP TO TWO LANE RAMP FROM RAMP 1 STA. 134+95.00 TO STA. 136+20.00. TRANSITION FROM 136+45 TYPICAL TO 168' WIDE CONNECTION TO JOHNSON MILL BLVD.

TYPICAL SECTION NOTES:

1. 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.
2. ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY BUT PAYMENT WILL BE CONSIDERED INCLUDED IN THE VARIOUS PAY ITEMS.
3. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
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TYPICAL SECTIONS OF IMPROVEMENT

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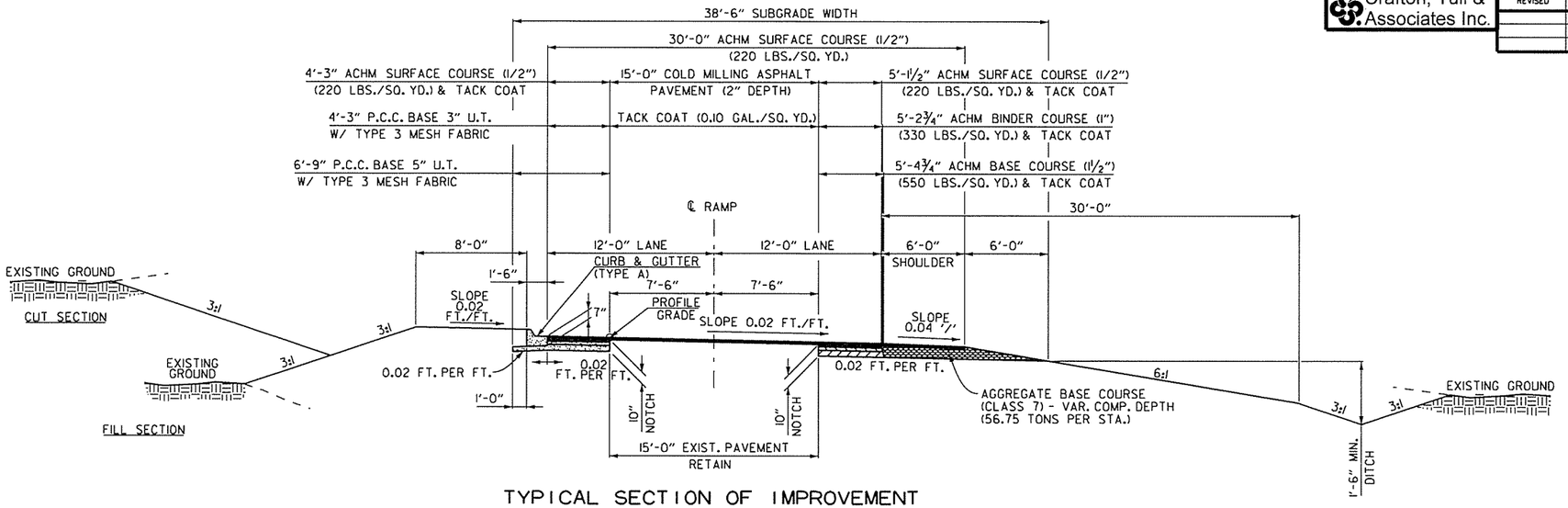
Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	7	97

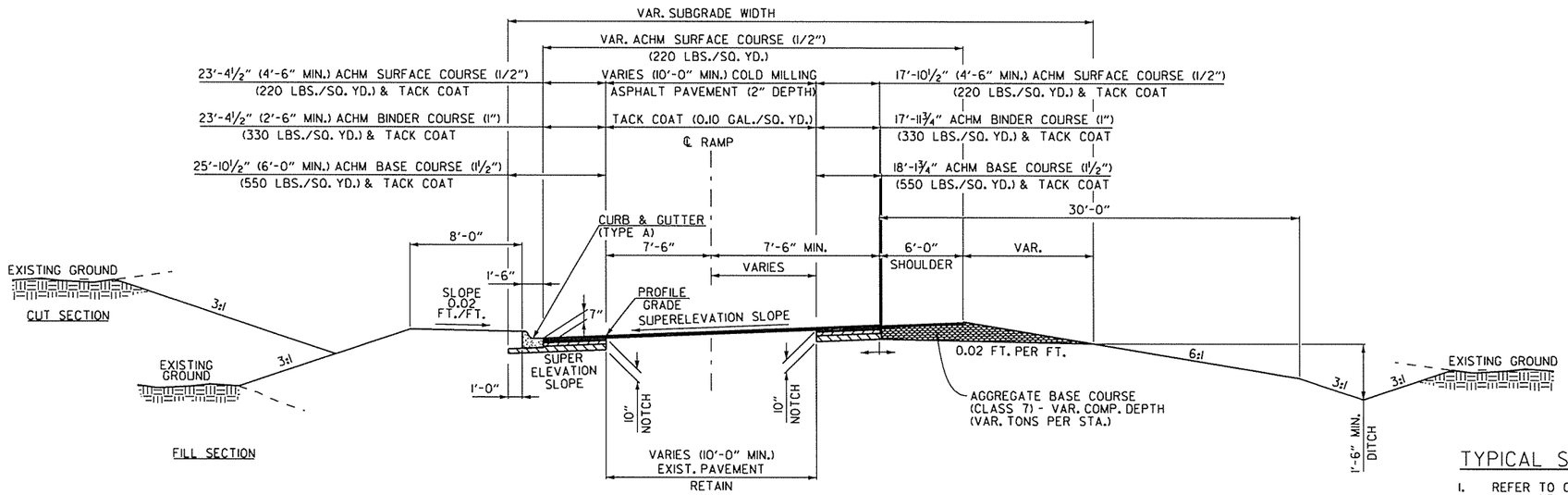
(2) TYPICAL SECTIONS OF IMPROVEMENT

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9/04/13



TYPICAL SECTION OF IMPROVEMENT
TWO LANES - RAMP
NOTCH & WIDENING

(SHOWN IN DIRECTION OF TRAFFIC)
RAMP 1 STA. 137+50.15 TO STA. 137+88.97



TYPICAL SECTION OF IMPROVEMENT
RAMP RETURN
SUPERELEVATION SECTION
NOTCH & WIDENING

(SHOWN IN DIRECTION OF TRAFFIC)
RAMP 2 STA. 138+10.00 TO STA. 138+24.90
RAMP 4 STA. 141+19.18 TO STA. 140+44.94

TYPICAL SECTION NOTES:

1. 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.
2. ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY BUT PAYMENT WILL BE CONSIDERED INCLUDED IN THE VARIOUS PAY ITEMS.
3. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
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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.

TYPICAL SECTIONS OF IMPROVEMENT

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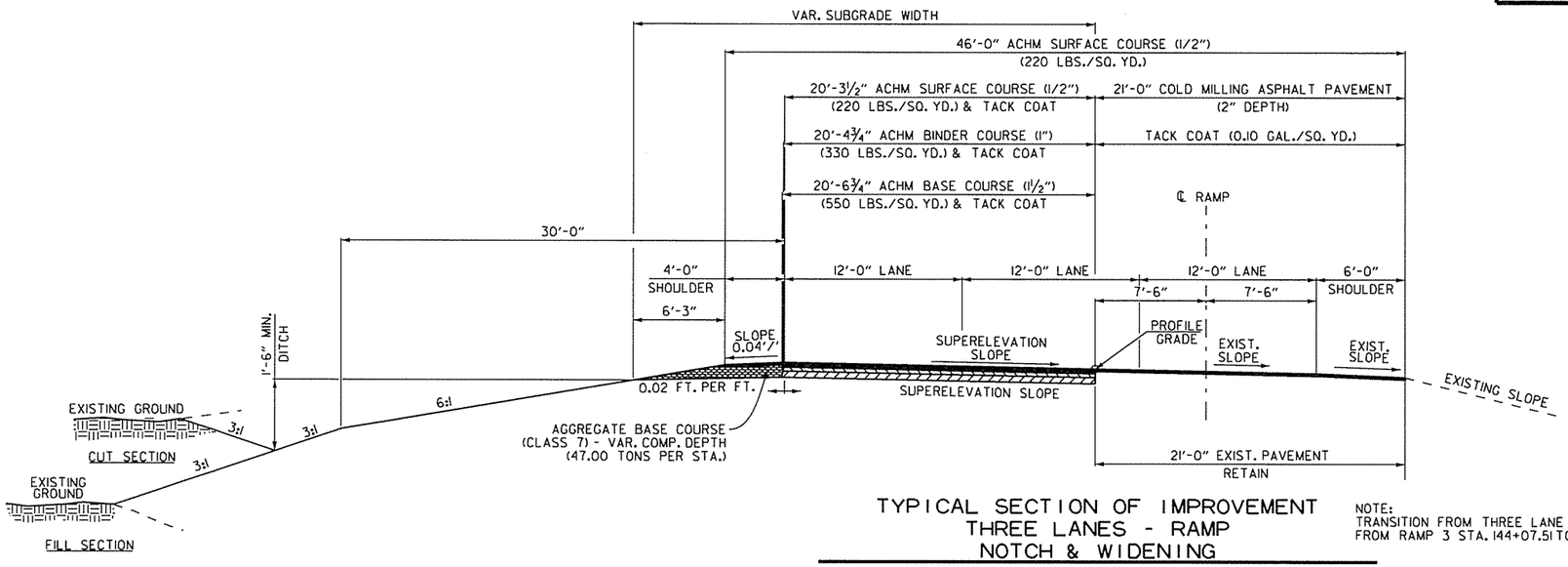
SCALE: 20:1
MODEL: TYPICAL SECTIONS OF IMPROVMENT

Crafton, Tull & Associates Inc.	DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
					6	ARK.			
					JOB NO.		BB0412	8	97

(2) TYPICAL SECTIONS OF IMPROVEMENT



TYPICAL SECTION OF IMPROVEMENT
THREE LANES - RAMP
NOTCH & WIDENING

(SHOWN IN DIRECTION OF TRAFFIC)
RAMP 3 STA. 144+07.51 TO STA. 141+50.94

NOTE:
TRANSITION FROM THREE LANE RAMP TO EXISTING 15' WIDE RAMP
FROM RAMP 3 STA. 144+07.51 TO STA. 146+87.51.

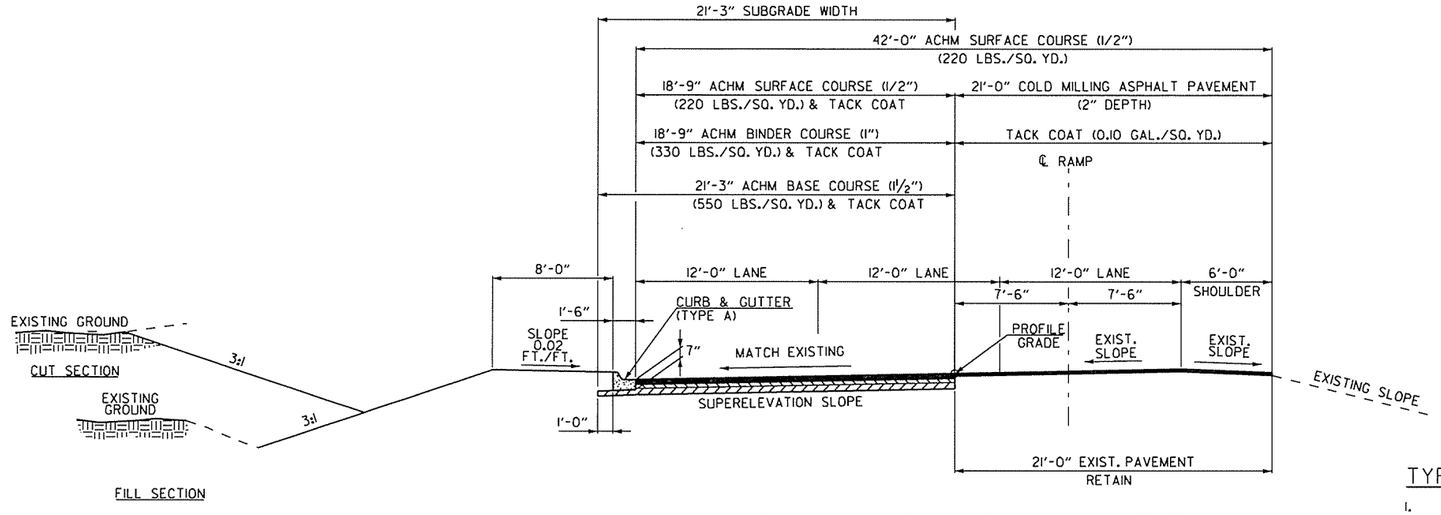
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS

9/04/13

TYPICAL SECTION NOTES:

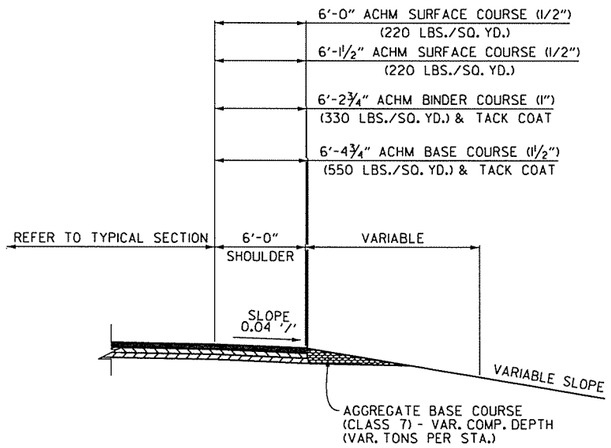
1. REFER TO CROSS SECTIONS FOR DEVIATIONS FROM THE NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
2. ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY BUT PAYMENT WILL BE CONSIDERED INCLUDED IN THE VARIOUS PAY ITEMS.
3. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
4. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED SHALL BE SEPARATED BY 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 TO THE PAVEMENT THAT IS TO REMAIN SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
5. PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

TYPICAL SECTIONS OF IMPROVEMENT



TYPICAL SECTION OF IMPROVEMENT
THREE LANES - RAMP
NOTCH & WIDENING

(SHOWN IN DIRECTION OF TRAFFIC)
RAMP 3 STA. 141+50.94 TO STA. 141+03.94



FULL DEPTH SHOULDER IMPROVEMENTS

(SHOWN IN DIRECTION OF TRAFFIC)
RAMP 1 STA. 136+44.59 TO STA. 137+42.84 RT.
RAMP 2 STA. 137+25.96 TO STA. 138+24.90 RT.
RAMP 4 STA. 141+35.72 TO STA. 140+44.94 RT.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS

9/04/13

TYPICAL SECTION NOTES:

1. 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.
2. ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY BUT PAYMENT WILL BE CONSIDERED INCLUDED IN THE VARIOUS PAY ITEMS.
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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.

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PLOTTED: 9/4/2013 10:20 SCALE: 20:1 MODEL: TYPICAL SECTIONS OF IMPROVMENT
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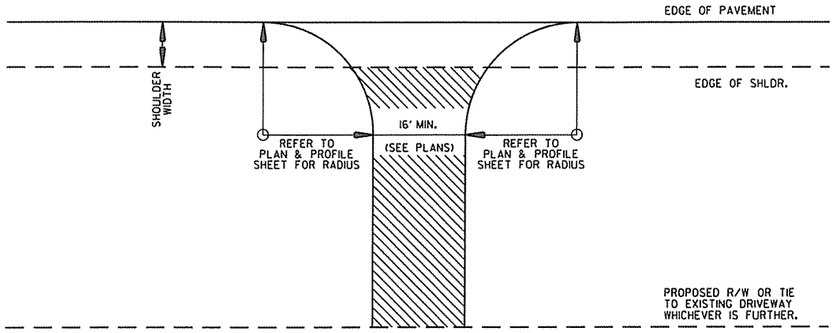
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	10	97

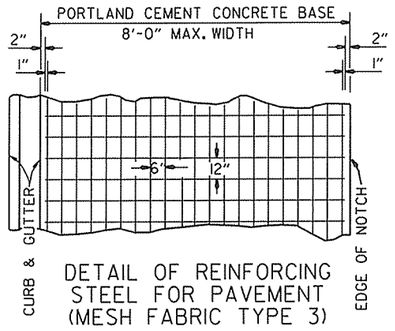
(2) SPECIAL DETAILS



DETAIL FOR DRIVEWAY TURNOUTS

(ARTERIALS)

ASPHALT CONCRETE HOT MIX SURFACE COURSE(1/2") (220 LBS. PER SQ. YD.) AND AGGREGATE BASE COURSE (CLASS 7) 6.5" COMP. DEPTH IF ASPHALT DRIVE EXISTING; OR 6" CONCRETE IF CONCRETE DRIVE EXISTING.



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 (3" U.T.) AND PORTLAND CEMENT CONCRETE BASE (5" U.T.)

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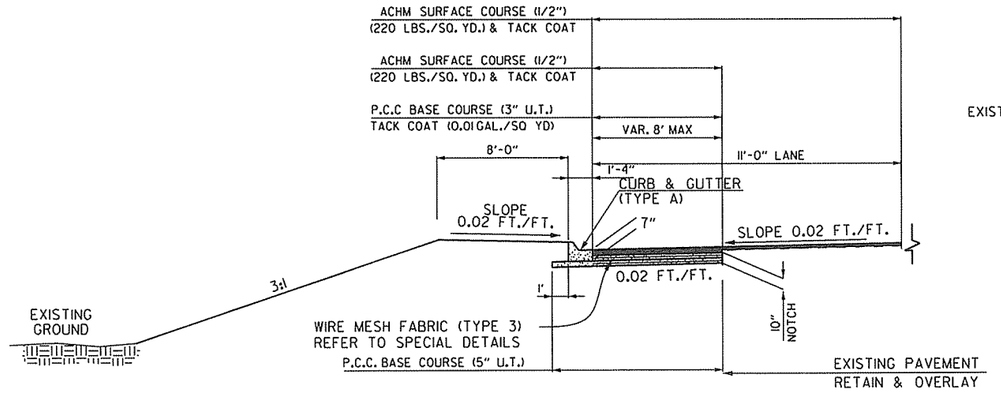
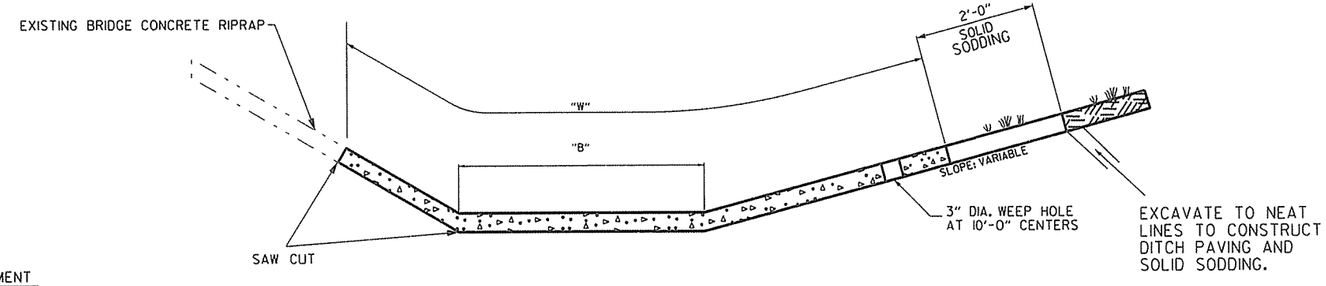
10-10-13



P.C.C. BASE WIDENING DETAIL

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



MODIFIED TYPE A
CONCRETE DITCH PAVING

SPECIAL DETAILS

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MODEL: SPECIAL DETAILS

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				6	ARK.			
				JOB NO.		BB0412	11	97

SPECIAL DETAILS

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9/04/13

STA. 6+99.96 ℄ CONST. JOHNSON MILL BLVD. =
STA. 140+81.10 ℄ CONST. RAMP 3
STA. 141+46.05 ℄ CONST. RAMP 4
Δ = 74°58'25"

P.C. 142+57.10
+41.11 -6.73'
+57.10 28.50'
RAMP 3
N07°17'33.9"E
R 110.5'
29'
R 2'
+57.51 -6.24'
+56.14 -2.65'
+50.91 28.50'
+85.80 -22.32'
+88.98 -30.49'
+45.69 -31.36'
R 2'
R 2'
+14.14 -5.97'
R 100'
+41.57 -24.00'
TYPE A CURB AND GUTTER
+49.87 -28.00'
+83.65 -28.00'
S67°40'51.0"E
S67°40'51.0"E
48'
JOHNSON MILL BLVD.
105°1'35"
R 100'
+23.28 24.00'
R 75'
+52.64 24.00'
N07°17'33.9"E
RAMP 4
+44.94 9.16'
+44.94 -6.21'
+17.96 60.21' RT
+17.96 70' RT.
+11.54 70' RT
+11.54 70' RT.
140
P.T. 139+83.15

NOTE: ALL RADIAL DIMENSIONS ARE TO EDGE OF PAVEMENT WHERE APPLICABLE.

STA. 13+50.01 ℄ CONST. JOHNSON MILL BLVD. =
STA. 138+11.80 ℄ CONST. RAMP 1
STA. 137+11.20 ℄ CONST. RAMP 2
Δ = 74°16'31"

N07°18'36.9"E
+24.90 7.50'
+24.90 -7.50'
RAMP 2
TYPE A CURB AND GUTTER
R 76'
+80.90 -24.00'
+80.48 80' LT
15
+23.40 -36.00'
+30.00 -36.00'
R 100'
P.I. 15+21.63
P.I. 13+34.27
Δ=00°42'56.9"RT
48'
S67°40'51.0"E
JOHNSON MILL BLVD.
S66°57'54.1"E
105°43'29"
+78.38 6.00'
+80.30 8.56'
+67.76 53.10'
R 2'
R 2'
R 101'
+34.44 24.00'
+64.05 53.46'
P.C. 14+37.40
R 100'
29'
+18.55 28.25'
+50.15 -12.00'
18'
R 2'
+27.79 9.58'
+29.01 6.00'
+27.38 55' RT
N07°18'36.9"E
RAMP 1
+44.59 12.00'

NOTE: ALL RADIAL DIMENSIONS ARE TO EDGE OF PAVEMENT WHERE APPLICABLE.

SPECIAL DETAILS

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PLOTTED: 9/4/2013 10:20 SCALE: 40:1 MODEL: INTERSEC. DETAILS

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	12	97

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9/04/13

4707.89

50 25 0 25 50 100

E-5 • SAND BAG DITCH CHECK
E-7 • INLET BARRIER SILT FENCE
E-4 E-11 • SILT FENCE
E-6 • ROCK DITCH CHECK
• GENERAL SITE FLOW DIRECTION INDICATOR

DATE	REVISION

TEMPORARY EROSION CONTROL DETAILS - STAGE 1

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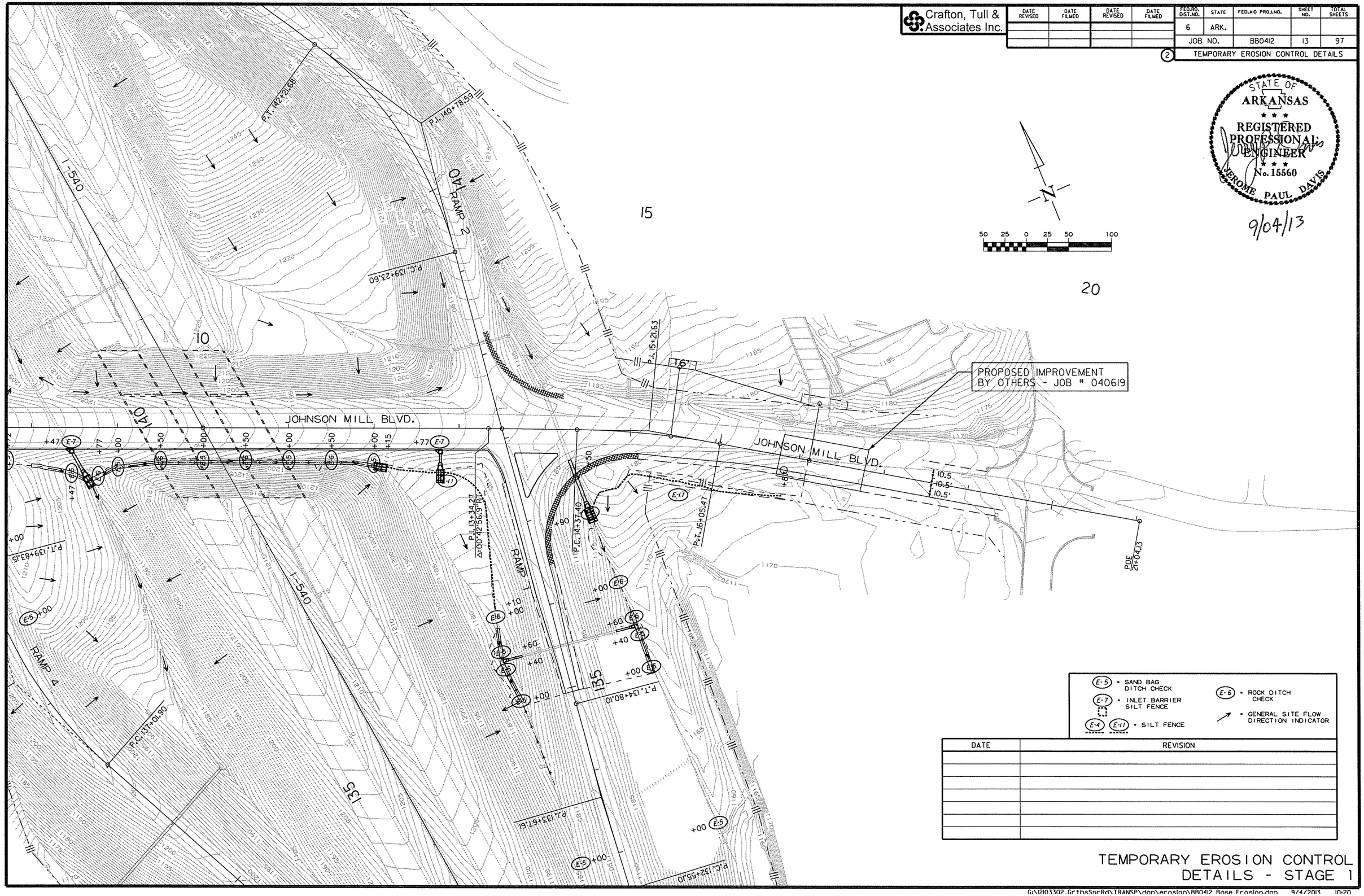
Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	13	97

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9/04/13



E-5 • SAND BAG DITCH CHECK
E-7 • INLET BARRIER SILT FENCE
E-4 E-11 • SILT FENCE
E-6 • ROCK DITCH CHECK
• GENERAL SITE FLOW DIRECTION INDICATOR

DATE	REVISION

TEMPORARY EROSION CONTROL DETAILS - STAGE 1

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MODEL: EROSION PHASE 1

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Crafton, Tull & Associates Inc.

DATE REVISED	DATE REVISED	DATE REVISED	DATE REVISED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	14	97

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9/04/13

4107.89

50 25 0 25 50 100

E-5 = SAND BAG DITCH CHECK
E-6 = ROCK DITCH CHECK
E-7 = INLET BARRIER SILT FENCE
E-4 E-11 = SILT FENCE
= GENERAL SITE FLOW DIRECTION INDICATOR

DATE	REVISION

TEMPORARY EROSION CONTROL DETAILS - STAGE 2

USER: jdsi03
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MODEL: EROSION PHASE 2

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Crafton, Tull & Associates Inc.

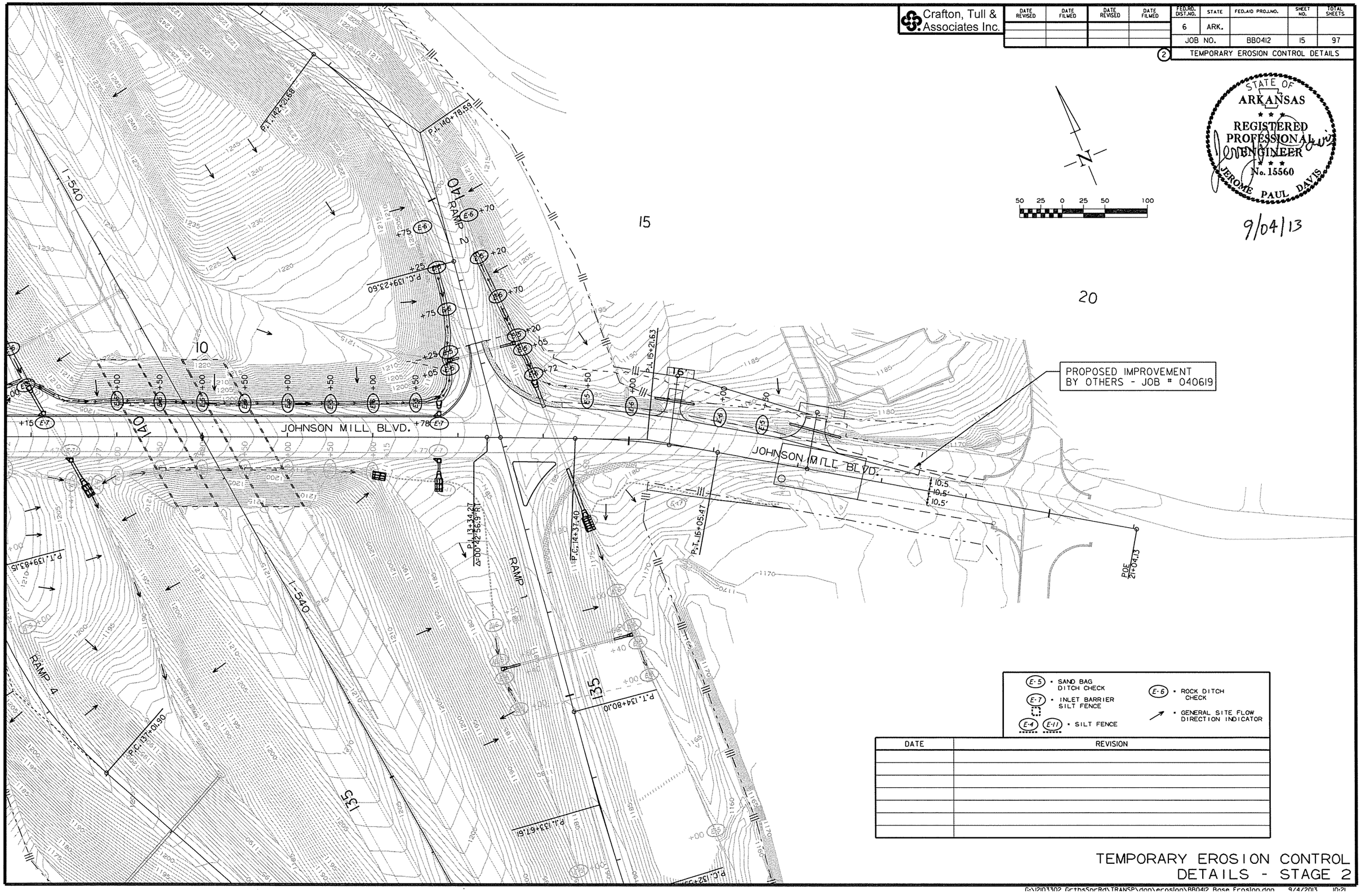
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	15	97

(2) TEMPORARY EROSION CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS

9/04/13



(E-5) • SAND BAG DITCH CHECK
(E-7) • INLET BARRIER SILT FENCE
(E-4) (E-11) • SILT FENCE
(E-6) • ROCK DITCH CHECK
• GENERAL SITE FLOW DIRECTION INDICATOR

DATE	REVISION

TEMPORARY EROSION CONTROL DETAILS - STAGE 2

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Crafton, Tull & Associates Inc.

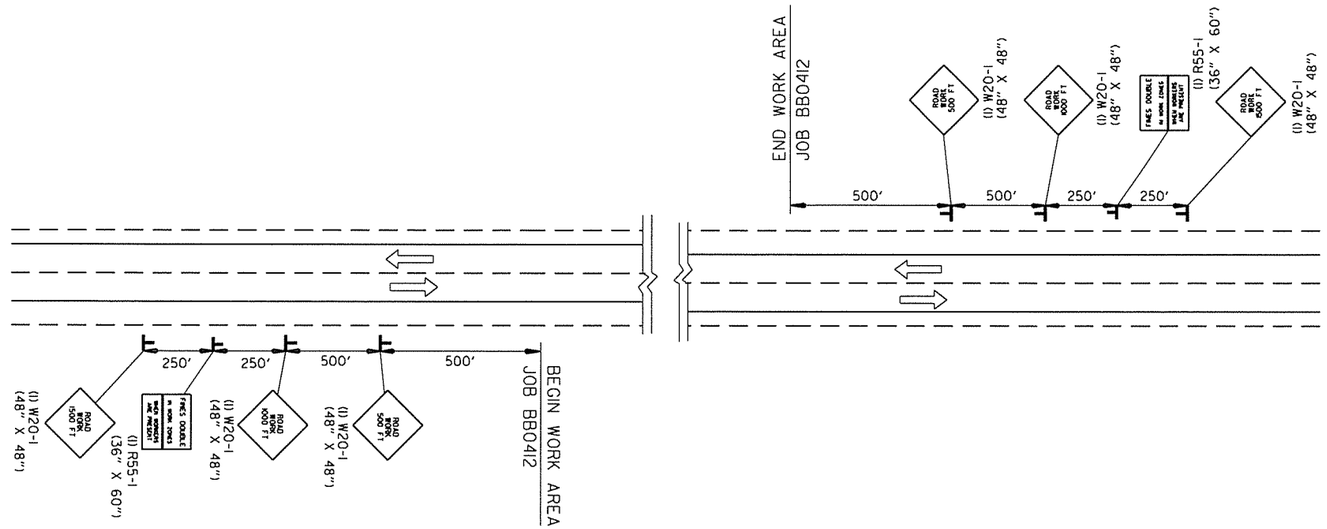
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	16	97

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS

9/04/13

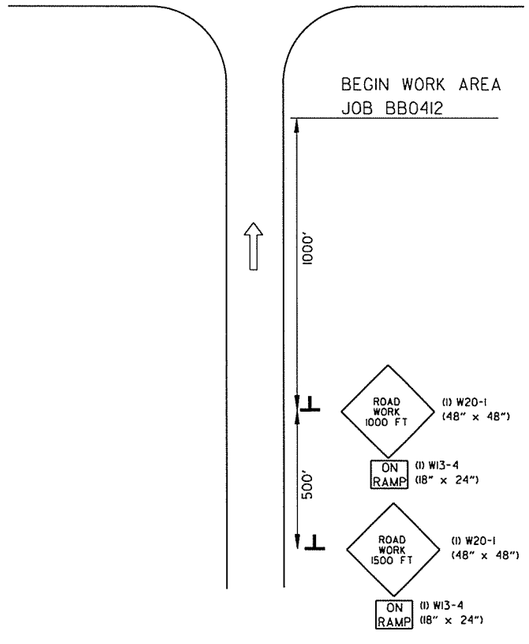


ADVANCE SIGNS AT BEGINNING AND END OF JOB
ALL STAGES

STAGE 1:
INSTALL ADVANCE WARNING SIGNS.
RESTRIPE THE EXISTING LANES TO MAINTAIN TRAFFIC (3-10' LANES) AS SHOWN.
NOTCH AND WIDEN JOHNSON MILL BLVD. RT.
NOTCH AND WIDEN RAMP 1 AND RAMP 4 LT.
WIDENING WILL NOT INCLUDE FINAL LIFT OF ASPHALT IN STAGE 1.
STAGE 1A: NOTCH AND WIDEN RT. SIDE OF RAMP 4
STAGE 1B: NOTCH AND WIDEN RT. SIDE OF RAMP 1, CONSTRUCT ISLAND & SIGNAL BASE RAMP 1.

STAGE 2:
REMOVE CONFLICTING PAVEMENT MARKINGS AND
STRIPE STAGE 2 CONSTRUCTION LANES (3-11' LANES) AS
SHOWN TO MAINTAIN TRAFFIC.
NOTCH AND WIDEN JOHNSON MILL BLVD. LT.
NOTCH AND WIDEN RAMP 2 AND RAMP 3 LT.
WIDENING WILL NOT INCLUDE FINAL LIFT OF ASPHALT IN STAGE 2.
STAGE 2A: NOTCH AND WIDEN RAMP 3 RT., CONSTRUCT ISLAND & SIGNAL BASE RAMP 3.
STAGE 2B: NOTCH AND WIDEN RAMP 2 RT.

STAGE 3:
OPEN AND OPERATIONAL INCLUDING FINAL 2" ACHM SURFACE COURSE, SIGNAL INSTALLATION,
STRIPING, CLEANUP, AND OPENING COMPLETED ROADWAY TO FULL
TWO-WAY TRAFFIC UTILIZING ALL LANES.



ADVANCE SIGNS AT EXIT RAMPS
ALL STAGES

MAINTENANCE OF TRAFFIC DETAILS
ADVANCE SIGNS AT JOB ENDS

USER: jd5103
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PLOTTED: 9/4/2013 10:21 SCALE: 100:1 MODEL: MOT PHASE 1

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	17	97

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9/04/13

50 25 0 25 50 100

STAGE 1:
INSTALL ADVANCE WARNING SIGNS.
RESTRIPE THE EXISTING LANES TO MAINTAIN TRAFFIC (3-10' LANES) AS SHOWN.
NOTCH AND WIDEN JOHNSON MILL BLVD. RT.
NOTCH AND WIDEN RAMP 1 AND RAMP 4 LT.
WIDENING WILL NOT INCLUDE FINAL LIFT OF ASPHALT IN STAGE 1.
STAGE 1A: NOTCH AND WIDEN RT. SIDE OF RAMP 4.
STAGE 1B: NOTCH AND WIDEN RT. SIDE OF RAMP 1, CONSTRUCT ISLAND & SIGNAL BASE RAMP 1.

NOTE:
CONTRACTOR SHALL ONLY WIDEN ONE SIDE OF RAMP 4 AT A TIME. MIN. LANE WIDTH OF 13' SHALL BE MAINTAINED AT ALL TIMES.

INSET A

FOR STAGE IA SEE INSET A

VERTICAL PANEL
TRAFFIC DRUM

MAINTENANCE OF TRAFFIC DETAILS - STAGE 1

USER: Jd5103
DESIGN FILE: G:\2103302.Gr-1thSprRd\TRANSP\dgn\maint.of.traffic\BB0412 Base_MOT.dgn
PLOTTED: 9/3/2013 18:03
SCALE: 100.1
MODEL: MOT PHASE 1

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	18	97

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9/04/13

P.T. 142+21.68
P.I. 140+78.59
I-540
140 RAMP 2
END ROAD WORK (1) G20-2 (48" X 24")
500'
P.C. 139+23.60
END WORK AREA JOB BB0412 +25
10
15
20
DBL. YELLOW CONST. PVMT. MARKING
WHITE CONST. PVMT. MARKING
P.I. 15+21.63
16'
YELLOW CONST. PVMT. MARKING
YELLOW W/ SKIP CONST. PVMT. MARKING
END WORK AREA JOB BB0412 +41
BEGIN PROPOSED IMPROVEMENTS BY OTHERS JOB # 040619
ADVANCE SIGN SERIES (1) W20-1 (48" X 48")
ROAD WORK AHEAD
JOHNSON MILL BLVD.
10'
10'
10.5'
10.5'
10.5'
9 DRUMS (70' MAX. SP.)
TRAFFIC DRUMS @ 20' O.C. TYP.
SHOULDER CLOSED (1) RSP-1 (48" X 30")
4 VERTICAL PANELS (70' MAX. SP.)
4 VERTICAL PANELS (35' MAX. SP.)
P.I. 13+34.27 Δ=00°42'56.9"RT
P.C. 14+37.40
P.T. 16+05.47 Δ=00°42'56.9"RT
FOR STAGE IB SEE INSET B
4 DRUMS (70' MAX. SP.)
RAMP 1
13'
135
BEGIN WORK AREA JOB BB0412 +95
P.T. 134+80.10
100'
4 DRUMS (35' MAX. SP.)
ROAD WORK AHEAD (1) W20-1 (48" X 48")
SHOULDER CLOSED (1) RSP-1 (48" X 30")
STAGE IA SEE INSET
P.I. 133+67.61
BEGIN ADVANCE SIGN SERIES AT EXIT RAMP
P.C. 132+55.10
END ROAD WORK (1) G20-2 (48" X 24")
POE 21+04.13
ADVANCE SIGN SERIES
ROAD WORK AHEAD (1) W20-1 (48" X 48")
N
50 25 0 25 50 100

INSET B
RAMP 1
P.C. 14+37.40
3 DRUMS (70' MAX. SP.)
13'
135
P.T. 134+80.10
4 DRUMS (35' MAX. SP.)
ROAD WORK AHEAD (1) W20-1 (48" X 48")
SHOULDER CLOSED (1) RSP-1 (48" X 30")

⊥ VERTICAL PANEL
o TRAFFIC DRUM

STAGE 1:
INSTALL ADVANCE WARNING SIGNS.
RESTRIPE THE EXISTING LANES TO MAINTAIN TRAFFIC (3-10' LANES) AS SHOWN.
NOTCH AND WIDEN JOHNSON MILL BLVD. RT.
NOTCH AND WIDEN RAMP 1 AND RAMP 4 LT.
WIDENING WILL NOT INCLUDE FINAL LIFT OF ASPHALT IN STAGE 1.
STAGE 1A: NOTCH AND WIDEN RT. SIDE OF RAMP 4.
STAGE 1B: NOTCH AND WIDEN RT. SIDE OF RAMP 1.

NOTE:
CONTRACTOR SHALL ONLY WIDEN ONE SIDE OF RAMP 4 AT A TIME. MIN. LANE WIDTH OF 13' SHALL BE MAINTAINED AT ALL TIMES.

MAINTENANCE OF TRAFFIC DETAILS - STAGE 1

USER: jd5103
DESIGN FILE: G:\2103302.Gr\hsSprRd\TRANSP\dgn\maint_of_traffic\BB0412 Base_MOT.dgn
PLOTTED: 9/3/2013 18:03 SCALE: 100: MODEL: MOT PHASE 1

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	19	97

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9/04/13

INSET A

FOR STAGE 2A SEE INSET A

STAGE 2:
REMOVE CONFLICTING PAVEMENT MARKINGS AND STRIPE STAGE 2 CONSTRUCTION LANES (3-11' LANES) AS SHOWN TO MAINTAIN TRAFFIC.
NOTCH AND WIDEN JOHNSON MILL BLVD. LT.
NOTCH AND WIDEN RAMP 2 AND RAMP 3 LT.
WIDENING WILL NOT INCLUDE FINAL LIFT OF ASPHALT IN STAGE 2.
STAGE 2A: NOTCH AND WIDEN RAMP 3 RT., CONSTRUCT ISLAND & SIGNAL BASE RAMP 3.
STAGE 2B: NOTCH AND WIDEN RAMP 2 RT.

NOTE:
CONTRACTOR SHALL ONLY WIDEN ONE SIDE OF RAMP 3 AT A TIME. MIN. LANE WIDTH OF 13' SHALL BE MAINTAINED AT ALL TIMES.

⊥ VERTICAL PANEL
o TRAFFIC DRUM

MAINTENANCE OF TRAFFIC DETAILS - STAGE 2

USER: jd5103
DESIGN FILE: G:\2103302_Graham Spur Rd\TRANSP\dgn\maint_of_traffic\BB0412 Base_MOT.dgn
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SCALE: 100:1
MODEL: MOT PHASE 2

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	20	97

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9/04/13

P.T. 142+21.68
P.I. 140+78.59
I-540
140 RAMP 2
10
15
20
FOR STAGE 2B SEE INSET B
4 TRAFFIC DRUMS (35' MAX. SP.)
2 VERTICAL PANELS (35' MAX. SP.)
5 VERTICAL PANELS (35' MAX. SP.)
P.C. 139+23.60
4 DRUMS (35' MAX. SP.)
13'
END WORK AREA JOB BB0412 +25
SHOULDER CLOSED
(1) RSP-1 (48" X 30")
END ROAD WORK
(1) G20-2 (48" X 24")
WHITE CONST. PVMT. MARKING
TRAFFIC DRUMS @ 20' O.C. TYP.
10 DRUMS (70' MAX. SP.)
P.I. 15+21.63
16'
3 DRUMS (EQ. SP.)
3 DRUMS (EQ. SP.)
12" YELLOW HASH
YELLOW W/ SKIP CONST. PVMT. MARKING
WHITE CONST. PVMT. MARKING
END WORK AREA JOB BB0412 +41
BEGIN PROPOSED IMPROVEMENTS BY OTHERS JOB # 040619
SHOULDER CLOSED
(1) RSP-1 (48" X 30")
ADVANCE SIGN SERIES
(1) W20-1 (48" X 48")
ROAD WORK AHEAD
2 DRUMS (EQ. SP.)
(1) W20-1 (48" X 48")
ADVANCE SIGN SERIES
11'
12'
12'
11'
10' JOHNSON MILL BLVD.
10.5'
10.5'
10.5'
DBL. YELLOW CONST. PVMT. MARKING
WHITE CONST. PVMT. MARKING
DBL. YELLOW CONST. PVMT. MARKING
WHITE CONST. PVMT. MARKING
WHITE CONST. PVMT. MARKING
DBL. YELLOW CONST. PVMT. MARKING
YELLOW CONST. PVMT. MARKING
P.I. 13+34.27
Δ=00°42'56.9" RT
P.C. 14+37.40
P.T. 16+05.47
Δ=00°42'56.9"
RAMP 1
135
BEGIN WORK AREA JOB BB0412 +95
P.T. 134+80.10
100'
(1) W20-1 (48" X 48")
ROAD WORK AHEAD
P.I. 133+67.61
BEGIN ADVANCE SIGN SERIES AT EXIT RAMP
P.C. 132+55.10
(1) G20-2 (48" X 24")
ROAD END WORK
P.T. 21+04.13
ADVANCE SIGN SERIES
(1) W20-1 (48" X 48")
ROAD WORK AHEAD
PROPOSED IMPROVEMENT BY OTHERS - JOB # 040619

INSET B
4 DRUMS (35' MAX. SP.)
13'
WHITE CONST. PVMT. MARKING
END WORK AREA JOB BB0412 +25
END ROAD WORK
(1) G20-2 (48" X 24")
TRAFFIC DRUMS @ 20' O.C. TYP.

VERTICAL PANEL
TRAFFIC DRUM

50 25 0 25 50 100

STAGE 2:
REMOVE CONFLICTING PAVEMENT MARKINGS AND
STRIPE STAGE 2 CONSTRUCTION LANES (3-11' LANES) AS
SHOWN TO MAINTAIN TRAFFIC.
NOTCH AND WIDEN JOHNSON MILL BLVD. LT.
NOTCH AND WIDEN RAMP 2 AND RAMP 3 LT.
WIDENING WILL NOT INCLUDE FINAL LIFT OF ASPHALT IN STAGE 2.
STAGE 2A: NOTCH AND WIDEN RAMP 3 RT., CONSTRUCT ISLAND & SIGNAL BASE RAMP 3
STAGE 2B: NOTCH AND WIDEN RAMP 2 RT.

NOTE:
CONTRACTOR SHALL ONLY WIDEN ONE SIDE
OF RAMP 3 AT A TIME. MIN. LANE WIDTH
OF 13' SHALL BE MAINTAINED AT ALL TIMES.

MAINTENANCE OF TRAFFIC DETAILS - STAGE 2

USER: jd5103
DESIGN FILE: G:\2103302_GrnsSprRd\TRANSP\dgn\maint_of_traffic\BB0412 Base_MOT.dgn
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SCALE: 100:1
MODEL: MOT PHASE 2

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				6	ARK.			
				JOB NO.		BB0412	21	97

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
10-03-13

50 25 0 25 50 100

PERMANENT PAVEMENT MARKINGS

THERMOPLASTIC PAVEMENT MARKING WHITE SKIP 4" = 220 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING SOLID WHITE 4" = 2618 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING SOLID WHITE 8" = 329 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKING SOLID WHITE 10" = 300 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING SOLID YELLOW 4" = 2416 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW 12" = 244 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WHITE 12" = 146 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING ARROWS = 12 EACH
HIGH PERFORMANCE MARKING TAPE SOLID WHITE 4" = 1331 LIN. FT.
HIGH PERFORMANCE MARKING TAPE SOLID YELLOW 4" = 796 LIN. FT.
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 11 EACH
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW)=7 EACH

RAISED PAVEMENT MARKERS (TYPE II) (WHITE/RED) ARE TO BE PLACED ON THE LANES AT 80' INTERVALS.

RAISED PAVEMENT MARKERS (TYPE II) (YELLOW/YELLOW) ARE TO BE PLACED ON THE LANES AT 80' INTERVALS.

REFER TO THE PERMANENT PAVEMENT MARKING DETAIL. STD. DRWING. PM-1. AND THE LATEST EDITION OF THE MUTCD FOR ADDITIONAL PAVEMENT MARKING DETAILS.

JOB BB0412 +87.50 BEGIN WORK AREA
4" SOLID YELLOW HIGH PERFORMANCE
4" SOLID WHITE HIGH PERFORMANCE
145
P.T. 145+07.10
RAMP 3
P.I. 143+82.18
4" SOLID WHITE HIGH PERFORMANCE
4" SOLID YELLOW HIGH PERFORMANCE
P.C. 142+57.10
4" SOLID WHITE HIGH PERFORMANCE
8" SOLID WHITE
REFLECTORIZED PAINT 10" SOLID WHITE
5
12" HASH WHITE
12" SOLID WHITE (STOP LINE)
BEGIN WORK AREA JOB BB0412 +47.75
P.I. 4+06.34
16'
4" SOLID WHITE
4" DBL. YELLOW
12" SOLID WHITE (STOP LINE)
JOHNSON MILL BLVD.
12" HASH YELLOW
4" SOLID WHITE
4" SOLID WHITE HIGH PERFORMANCE
P.C. 2+92.60
P.T. 5+17.96
END WORK AREA JOB BB0412 +44.94
POB 0+12.70
140
P.T. 139+83.15
STA. 140+81.10 RAMP 3
STA. 6+99.96 JOHNSON MILLS BLVD.
STA. 141+46.05 RAMP 4
RAMP 4
P.I. 138+46.74
P.C. 137+01.90
P.T. 142+21.68
P.I. 140+78.59
RAMP 2
P.C. 139+23.60
I-540
10
100' TAPER
100' TAPER
4" DBL. YELLOW
4" SOLID WHITE
12" SOLID WHITE (STOP LINE)
4" SOLID WHITE
4" SKIP WHITE
RAISED PAVEMENT MARKER TYPE II, (WHITE/RED) @ 80' O.C. (TYP.)
RAISED PAVEMENT MARKER TYPE II, (YELLOW/YELLOW) @ 80' O.C. (TYP.)
4" SKIP WHITE
RAISED PAVEMENT MARKER TYPE II, (WHITE/RED) @ 80' O.C. (TYP.)
END WORK AREA JOB BB0412 +25
P.I. 13+34.27
Δ=00°42'56.9"RT
P.C. 14+37.40
4" SOLID WHITE HIGH PERFORMANCE
4" SOLID YELLOW HIGH PERFORMANCE
RAMP 1
135

PERMANENT PAVEMENT MARKING DETAILS

USER: jd5103
DESIGN FILE: G:\12103302_GrthsSprRd\TRANSP\dgn\misc\BB0412 Base_PP Marking.dgn
PLOTTED: 10/3/2013 08:14
SCALE: 100:1
MODEL: PPM DETAILS PHASE I

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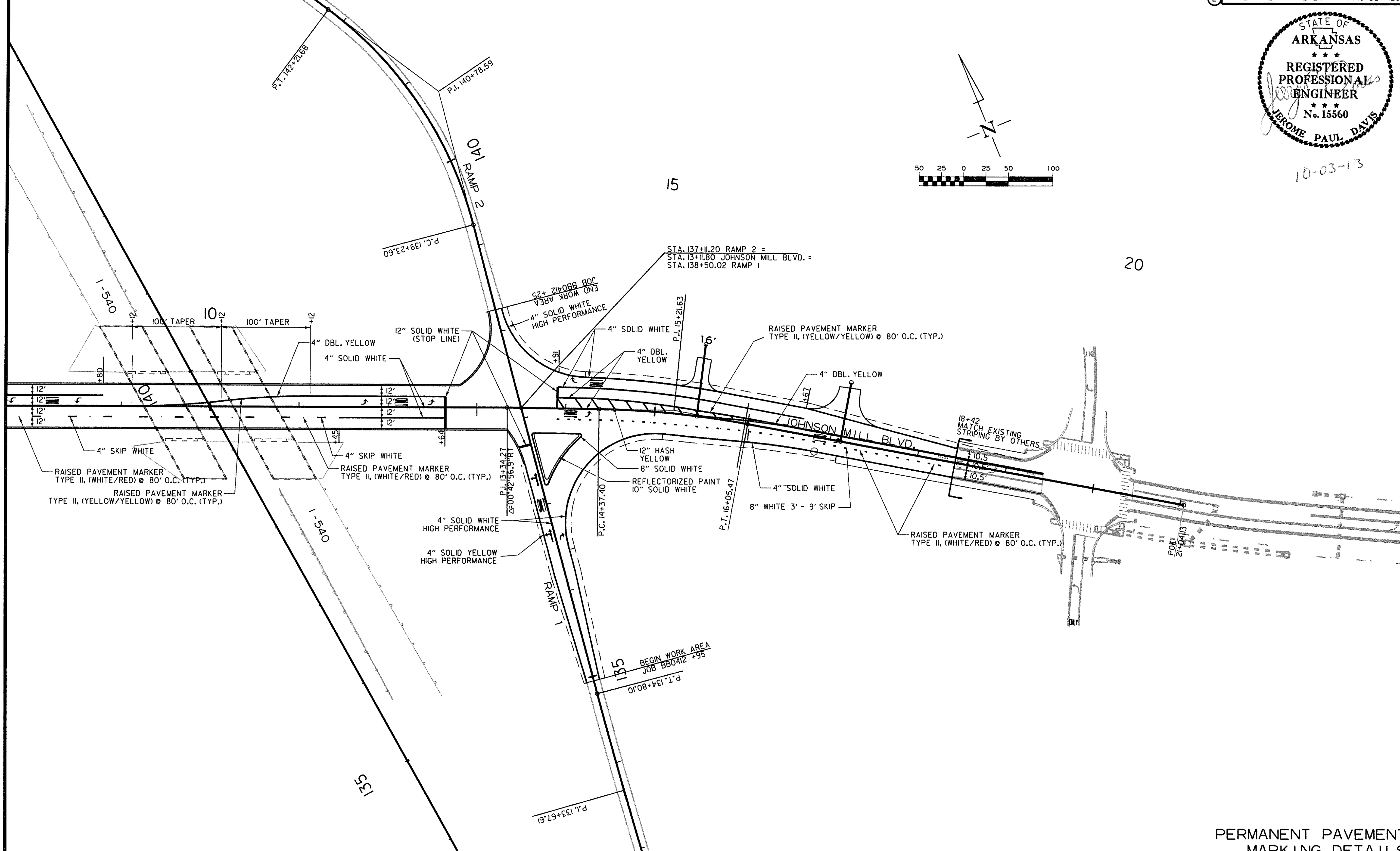
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	22	97

(2) PERMANENT PAVEMENT MARKING DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS

10-03-13



PERMANENT PAVEMENT
MARKING DETAILS

USER: jd5103
DESIGN FILE: G:\12103302_GrthsSprRd\TRANSP\dgn\misc\BB0412 Base_PP Marking.dgn
PLOTTED: 10/3/2013 08:14 SCALE: 100:1 MODEL: PPM DETAILS PHASE 1

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	23	97

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
10-10-13

ADVANCE WARNING SIGNS AND DEVICES

SIGN NUMBER	DESCRIPTION	SIGN SIZE	STAGE 1	STAGE 2	SIGNS		TRAFFIC DRUMS	VERTICAL PANELS
					MAXIMUM NUMBER REQUIRED			
		IN.	EACH		NO.	SQ.FT.	EACH	EACH
R55-1	FINES DOUBLE	36x60	4	4	4	60		
W20-1	ROAD WORK 1500 FT.	48x48	6	6	6	96		
W20-1	ROAD WORK AHEAD	48x48	6	6	6	96		
G20-2	END ROAD WORK	48x24	4	4	4	32		
W13-4	ON RAMP	18x24	4	4	4	12		
W20-1	ROAD WORK 1000 FT.	48x48	6	6	6	96		
W20-1	ROAD WORK 500 FT.	48x48	4	4	4	64		
RSP-1	SHOULDER CLOSED	48x30	5	5	5	50		
	TRAFFIC DRUMS		50	90			90	
	VERTICAL PANELS		8	7				8
TOTALS:						506	90	8

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

EARTHWORK

STATION	STATION	LOCATION/DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT
			CU. YD.	CU. YD.
ENTIRE	PROJECT	JOHNSON MILL BLVD. STAGE 1	516	1486
ENTIRE	PROJECT	JOHNSON MILL BLVD. STAGE 2	1255	817
ENTIRE	PROJECT	RAMP 1	318	2489
ENTIRE	PROJECT	RAMP 2	221	106
ENTIRE	PROJECT	RAMP 3	119	2952
ENTIRE	PROJECT	RAMP 4	185	91
ENTIRE	PROJECT	CONSTRUCT APPROACHES		85
IF AND WHERE DIRECTED BY THE ENGINEER			1000 *	1000 *
TOTALS:			3614	9026

NOTE: EARTHWORK QUANTITIES AT THE LOCATIONS SHOWN ABOVE SHALL BE PAID FOR AS PLAN QUANTITY.
* QUANTITIES ARE ESTIMATED. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS
COMPACTION WILL BE AT THE SATISFACTION OF THE ENGINEER.

REMOVAL AND DISPOSAL OF DITCH PAVING

LOCATION	STATION	STATION	MEASURED LIN. FT.	AREA SQ. YD.
JOHNSON MILL BLVD. LT.	4+42	5+89	159	53.0
JOHNSON MILL BLVD. RT.	8+56	8+68	11.4	4.5
JOHNSON MILL BLVD. RT.	14+31	14+60	69	61.3
RAMP 2 RT.	137+47	139+25	182	121.3
RAMP 2 LT.	138+10	139+25	159.6	106.4
RAMP 3 RT.	141+05	145+25	443	295.3
TOTAL:				641.8

REMOVAL AND DISPOSAL OF PIPE CULVERTS

STATION	DESCRIPTION	PIPE CULVERTS
		EACH
8+30	JOHNSON MILL BLVD. LT. SIDE 36"	1
8+30	JOHNSON MILL BLVD. RT. SIDE 36"	1
15+47	JOHNSON MILL BLVD. LT. SIDE DRAIN 24" X 35'	1
17+10	JOHNSON MILL BLVD. LT. SIDE DRAIN 24" X 35'	1
TOTAL:		4

CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

DESCRIPTION	STAGE 1	STAGE 2	REMOVAL OF PERMANENT PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	CONSTRUCTION PAVEMENT MARKINGS	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS (ARROWS)	RAISED PAVEMENT MARKERS TYPE II		REFLECTORIZED PAINT PAVEMENT MARKINGS	THERMOPLASTIC PAVEMENT MARKINGS							HIGH PERFORMANCE MARKING TAPE	
					ARROWS			(WHITE/RED)	(YELLOW/ YELLOW)	10" WHITE	4" WHITE	4" YELLOW	8" WHITE	12" WHITE	12" YELLOW	WORDS	ARROWS	4" WHITE	4" YELLOW
	LIN. FT.		LIN. FT.		EACH	LIN. FT.	EACH	EACH		LIN. FT.	LIN. FT.					EACH	EACH	LIN. FT.	
REMOVAL OF PERMANENT PAVEMENT MARKINGS	8294	744	9038																
CONSTRUCTION PAVEMENT MARKINGS		6733		6733															
CONSTRUCTION PAVEMENT MARKINGS (ARROWS)		10			10														
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	5232					5232													
REMOVABLE CONSTRUCTION PAVEMENT MARKINGS (ARROWS)	10						10												
RAISED PAVEMENT MARKERS (TYPE II) (WHITE/RED)								11											
RAISED PAVEMENT MARKERS (TYPE II) (YELLOW/YELLOW)									7										
THERMOPLASTIC PAVEMENT MARKINGS WHITE (4")											2618								
THERMOPLASTIC PAVEMENT MARKINGS WHITE (8")													329						
THERMOPLASTIC PAVEMENT MARKINGS WHITE (12")														146					
THERMOPLASTIC PAVEMENT MARKINGS WHITE SKIP (4")											220								
THERMOPLASTIC PAVEMENT MARKINGS YELLOW (12")															244				
THERMOPLASTIC PAVEMENT MARKINGS YELLOW (4")												2416							
THERMOPLASTIC PAVEMENT MARKINGS WORDS																8			
THERMOPLASTIC PAVEMENT MARKINGS ARROWS																	12		
REFLECTORIZED PAINT PAVEMENT MARKINGS WHITE (10")										300									
HIGH PERFORMANCE PAVEMENT MARKINGS WHITE (4")																		1331	
HIGH PERFORMANCE PAVEMENT MARKINGS YELLOW (4")																			796
TOTALS:			9038	6733	10	5232	10	11	7	300	2838	2416	329	146	244	8	12	1331	796

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

USER: jd5103
DESIGN FILE: G:\12103302_GrthsSprRd\TRANSP\dgn\quantities\BB0412 Qty.dgn
PLOTTED: 10/10/2013 14:37
SCALE: 16:1
MODEL: QUANTITIES

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	24	97
				②	QUANTITIES			

CONCRETE DITCH PAVING

STATION	STATION	LOCATION	LENGTH	WIDTH "W"	"B"	CONC. DITCH PAVING (TYPE A)	CONC. DITCH PAVING (TYPE B)	SOLID SODDING	*WATER
			FT.			SQ.YD.			M.GAL.
4+50	5+87	JOHNSON MILL BLVD. LT.	153	4.0			68	68	0.9
7+65	8+40	JOHNSON MILL BLVD. LT.	91	4.0			40	40	0.5
8+40	10+63	JOHNSON MILL BLVD. LT.	218	11.7	3.5	283 *		48	0.6
10+63	12+70	JOHNSON MILL BLVD. LT.	218	4.0			97	97	1.2
8+00	9+00	JOHNSON MILL BLVD. RT.	108	4.0			48	48	0.6
9+00	11+50	JOHNSON MILL BLVD. RT.	238	11.5	3.5	304 *		53	0.7
11+50	12+00	JOHNSON MILL BLVD. RT.	52	4.0			23	23	0.3
134+95	135+90	RAMP 1 LT.	91	4.0			40	40	0.5
134+95	136+00	RAMP 1 RT.	76	4.0			34	34	0.4
137+73	139+25	RAMP 2 LT.	158	6.0			105	70	0.9
137+65	139+25	RAMP 2 RT.	163	6.0			109	72	0.9
141+16	145+25	RAMP 3 RT.	593	6.5			428	264	3.3
TOTALS:						**587**	**992**	**857**	**10.8**

BASIS OF ESTIMATE:
WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING.
*MODIFIED TYPE A. SEE SPECIAL DETAIL SHEET.

A.C.H.M. PATCHING OF EXISTING ROADWAY

DESCRIPTION	TON
ENTIRE PROJECT - TO BE USED IF AND WHERE	
DIRECTED BY THE ENGINEER	200
TOTAL:	**200**

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
10-10-13

A.C.H.M. PATCHING FOR MAINTENANCE OF TRAFFIC

LOCATION	ASPH. CONC. PATCHING FOR M.O.T.	TACK COAT
	TON	GALLON
ENTIRE PROJECT - TO BE USED IF AND WHERE	25	50
DIRECTED BY THE ENGINEER		
TOTALS:	**25**	**50**

NOTE: QUANTITIES ARE ESTIMATED. SEE SECTION 104.03 OF THE STANDARD SPECIFICATIONS
BASIS OF ESTIMATE: PATCHING 25 TONS/MI.
TACK: 50 GAL./MI.

EROSION CONTROL

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					TEMPORARY EROSION CONTROL							
			SEEDING	LIME	MULCH COVER	WATER	SECOND SEEDING APPLICATION	TEMPORARY SEEDING	MULCH COVER	WATER	SAND BAG DITCH CHECKS	ROCK DITCH CHECKS	DROP INLET SILT FENCE	SILT FENCE	* SEDIMENT REMOVAL AND DISPOSAL
											(E-5)	(E-6)	(E-7)	(E-11)	
			ACRE	TON	ACRE	M. GAL.	ACRE	ACRE	ACRE	M. GAL.	BAG	CU. YD.	LIN. FT.	LIN.FT.	CU. YD.
3+75	7+00	JOHNSON MILL ON RT. STAGE 1	0.21	0.42	0.21	21.4	0.21	0.21	0.21	4.3	66	9		154	24
7+00	13+50	JOHNSON MILL ON RT. STAGE 1	0.56	1.12	0.56	57.1	0.56	0.56	0.56	11.4	198	18	36	255	51
13+50	17+00	JOHNSON MILL ON RT. STAGE 1	0.45	0.90	0.45	45.9	0.45	0.45	0.45	9.2	88	6		239	25
3+75	7+00	JOHNSON MILL ON LT. STAGE 2	0.11	0.22	0.11	11.2	0.11	0.11	0.11	2.2	176	21			44
7+00	13+50	JOHNSON MILL ON LT. STAGE 2	0.68	1.36	0.68	69.4	0.68	0.68	0.68	13.9	264	39	36		77
13+50	17+00	JOHNSON MILL ON LT. STAGE 2	0.26	0.52	0.26	26.5	0.26	0.26	0.26	5.3	110	15			30
ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER *			**1.00**	**2.00**	**1.00**	**102.0**	**0.79**	**1.00**	**1.00**	**20.4**	**50**	**15**	**11**	**50**	**25**
TOTALS:			**3.27**	**6.54**	**3.27**	**333.5**	**3.06**	**3.27**	**3.27**	**66.70**	**952**	**123**	**83**	**698**	**276**

BASIS OF ESTIMATE:
LIME.....2 TONS / ACRE OF SEEDING
WATER.....102.0 M.G./ACRE OF SEEDING
WATER..... 20.4 M.G./ACRE OF TEMPORARY SEEDING
SAND BAG DITCH CHECKS.....22 BAGS / LOCATION
DROP INLET SILT FENCE.....18 LIN.FT./LOCATION
ROCK DITCH CHECKS.....3 CU. YDS. PER DITCH

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 STANDARD SPECIFICATIONS.

USER: jd5103
DESIGN FILE: G:\12103302_GrthsSprRd\TRANSP\dgn\quantities\BB0412 Qty.dgn
PLOTTED: 10/10/2013 14:37
SCALE: 1&1
MODEL: QUANTITIES

G:\12103302_GrthsSprRd\TRANSP\dgn\quantities\BB0412 Qty.dgn 10/10/2013 14:37

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	25	97

(2) QUANTITIES

CONCRETE COMBINATION CURB AND GUTTER (TYPE A)

STATION	STATION	SIDE	DESCRIPTION	CONC. COMB CURB AND GUTTER (TYPE A) (1'6")
				LIN.FT.
7+42	12+81	LT	JOHNSON MILL	520
7+53	13+34	RT	JOHNSON MILL	566
141+09	140+45	LT	RAMP 4	75
141+51	140+93	LT	RAMP 3	60
137+52	138+25	LT	RAMP 2	94
137+50	137+93	LT	RAMP 1	43
TOTAL:				1358

CONCRETE ISLANDS

STATION	STATION	LOCATION	CURB FACE TYPE	CONCRETE ISLANDS
				SQ.YD.
6+48	6+86	JOHNSON MILL ON LT	"A"	99
13+65	14+15	JOHNSON MILL ON RT	"A"	144
TOTAL:				243

MAILBOXES

LOCATION	MAILBOXES	MAILBOX SUPPORTS (SINGLE)
	EACH	
STA. 4+10 LT. JOHNSON MILL BLVD.	1	1
TOTALS:	1	1

DUMPED RIPRAP

STATION	SIDE	DUMPED RIPRAP (1'-6" DEPTH)	* FILTER BLANKET
		CU.YD.	SQ.YD.
8+30	RT	8	15
11+50	RT	8	8
14+15	RT	10	20
TOTALS:		26	43

NOTE: QUANTITIES ARE ESTIMATED.

FENCING

STATION	STATION	LOCATION	WIRE FENCE (TYPE A)
			LIN.FT.
14+81	15+36	JOHNSON MILL BLVD LT.	63
5+18	6+12	JOHNSON MILL BLVD LT.	103
TOTAL:			166

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS

9/04/13

SELECTED PIPE BEDDING

LOCATION	SELECTED PIPE BEDDING
	CU.YD.
ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER	10
TOTAL:	10

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

STRUCTURES

STATION	DESCRIPTION	REINFORCED CONCRETE PIPE CULVERT CLASS III				FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS				DROP INLETS	DROP INLET EXTENSIONS	SOLID SODDING	WATER	STD. DWG. NOS.
		42"	36"	24"	18"	42"	36"	24"	18"	TYPE MO	4'			
		LIN. FT.				EACH						SQ. YD.	M. GAL.	
8+15	JOHNSON MILL BLVD. R.C. PIPE CULVERT LT.		26				1			1	1	17	0.21	FPC-9M, PCC-1, FES-1, FES-2
8+47	JOHNSON MILL BLVD. R.C. PIPE CULVERT RT.		23				1			1	1	17	0.21	FPC-9M, PCC-1, FES-1, FES-2
12+78	JOHNSON MILL BLVD. DROP INLET ON LT.				12				1	1	1	5	0.06	FPC-9M, FPC-9E,PCC-1
12+78	JOHNSON MILL BLVD. DROP INLET ON RT.				16				1	1	1	5	0.06	FPC-9M, FPC-9E,PCC-1
14+15	JOHNSON MILL BLVD. R.C. PIPE CULVERT LT.	18				1						23	0.29	PCC-1, FES-1, FES-2
14+15	JOHNSON MILL BLVD. R.C. PIPE CULVERT RT.	52				1						23	0.29	PCC-1, FES-1, FES-2
135+50	RAMP 1 R.C. PIPE CULVERT ON LT			17				1				8	0.10	PCC-1, FES-1, FES-2
135+50	RAMP 1 R.C. PIPE CULVERT ON RT			16				1				8	0.10	PCC-1, FES-1, FES-2
138+14	RAMP 2 R.C. PIPE CULVERT ON LT			8				1				8	0.10	PCC-1, FES-1, FES-2
138+14	RAMP 2 R.C. PIPE CULVERT ON RT			12				1				8	0.10	PCC-1, FES-1, FES-2
142+00	RAMP 3 R.C. PIPE CULVERT ON RT		37				1					17	0.21	PCC-1, FES-1, FES-2
TOTALS :		70	86	53	28	2	3	4	2	4	4	139	1.73	

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.

QUANTITIES

USER: jd5103
DESIGN FILE: G:\2103302_Gr-thSprRd\TRANSP\dgn\quantities\BB0412 01-y.dgn
PLOTTED: 9/4/2013 08:01
SCALE: 1"=1"
MODEL: QUANTITIES

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	26	97

(2) QUANTITIES

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9/04/13

CONCRETE BASE

STATION	STATION	LOCATION	LENGTH	TACK COAT 0.1 GAL. PER SQ.YD.			PORTLAND CEMENT CONCRETE BASE			
				AVG. WID.	SQ.YD.	GAL.	AVG. WID.	3" U.T.	AVG. WID.	5" U.T.
			FT.	FT.			FT.	SQ.YD.	FT.	SQ.YD.
7+47	13+08	NOTCH AND WIDEN JOHNSON MILL BLVD. RT.	561	VAR.	417.5	41.8	VAR.	417.5	VAR.	578
7+47	13+08	NOTCH AND WIDEN JOHNSON MILL BLVD. LT.	561	VAR.	391.5	39.2	VAR.	391.5	VAR.	542
137+49	137+94	NOTCH AND WIDEN RAMP 1 LT.	154	VAR.	24.5	2.5	VAR.	24.5	VAR.	39
TOTALS:						83.5		833.5		1159

REMOVAL AND DISPOSAL OF FENCE

STATION	STATION	LOCATION	FENCE
			LIN. FT.
14+80	15+36	JOHNSON MILLS BLVD. LT.	68
5+18	6+12	JOHNSON MILLS BLVD. RT.	99
TOTAL:			167

COLD MILLING ASPHALT PAVEMENT

STATION	STATION	LOCATION	AVG. WIDTH	COLD MILLING ASPHALT	TACK COAT (0.1 GAL/ SQ. YD.)
			FT.	SQ.YD.	GAL.
3+75	8+00	JOHNSON MILL	46	2165	216.5
8+00	12+00	JOHNSON MILL	48	2125	212.5
12+00	14+37	JOHNSON MILL	49	1302	130.2
14+37	18+41	JOHNSON MILL	23	1013	101.3
137+36	138+25	RAMP 2	41	408	40.8
134+95	137+86	RAMP 1	31	1016	101.6
141+21	140+45	RAMP 4	41	345	34.5
145+40	141+06	RAMP 3	33	1611	161.1
TOTALS:				9985	998.5

REMOVAL AND DISPOSAL OF ITEMS

STATION	STATION	LOCATION	ASPHALT DRIVEWAYS	CONCRETE DRIVEWAYS	CONCRETE ISLANDS
			SQ.YD.	SQ.YD.	SQ.YD.
6+32.39	6+76.67	JOHNSON MILL ON LT.			105.82
13+40.25	13+77.04	JOHNSON MILL ON LT.			8.18
13+69.37	14+13.97	JOHNSON MILL ON RT.			28.07
15+21.63	15+68.46	JOHNSON MILL ON LT.	20		
16+73.72	17+50.15	JOHNSON MILL ON LT.		160	
TOTALS:			20	160	142.07

DRIVEWAYS & TURNOUTS

STATION	SIDE	DESCRIPTION	WIDTH	PORTLAND CEMENT CONCRETE DRIVES	AGGREGATE BASE COURSE	ACHM SURFACE COURSE (1/2") 220 LBS. PER. SQ. YD.	SIDE DRAINS
					CLASS 7	PG-64-22	24"
			FEET	SQ.YD.	TONS	TONS	LIN. FT.
15+47	LT	JOHNSON MILL BLVD.	16		19.4	5.6	46
17+10	LT	JOHNSON MILL BLVD.	24	96.10			62
ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER					5		
TOTALS:				96.10	24.4	5.6	108

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.4% MIN. AGG.....5.6% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS= 115 FOR PG 64-22

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

QUANTITIES

USER: jd5103
DESIGN FILE: G:\12103302.GrthsSprRd\TRANSP\dgn\quantities\BB0412 Qty.dgn
PLOTTED: 9/4/2013 10:16
SCALE: 16:1
MODEL: QUANTITIES

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	27	97
				(2)	QUANTITIES			

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS

9/04/13

BASE AND SURFACING

STATION	STATION	LOCATION	LENGTH	AGGREGATE BASE COURSE (CLASS 7)		ACHM SURFACE COURSE (1/2")				ACHM SURFACE COURSE (1/2") - WIDENING				ACHM BINDER COURSE (1") - WIDENING				ACHM BASE COURSE (1 1/2") - WIDENING				TACK COAT			
				TON / STATION	TON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 76-22 TON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 76-22 TON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 70-22 TON	AVG. WID.	SQ.YD.	POUND / SQ.YD.	PG 70-22 TON	TOTAL WID.	SQ.YD.	GALLONS/ SQ.YD.	GALLONS
			FT.			FT.				FT.				FT.				FT.				FT.			
3+75	6+45	JOHNSON MILL BLVD.	264.9			54.40	1601.2	220.0	176.1																
6+45	7+47	JOHNSON MILL BLVD.	101.8			35.01	395.9	220.0	43.5																
7+47	13+08	JOHNSON MILL BLVD.	560.4			48.03	2990.7	220.0	329.0																
13+08	14+37	JOHNSON MILL BLVD.	129.1			33.61	482.0	220.0	53.0																
14+37	17+10	JOHNSON MILL BLVD RT.	273.0			8.95	271.5	220.0	29.9																
14+37	18+41	JOHNSON MILL BLVD. LT.	404.2			17.76	797.7	220.0	87.7																
140+99	146+88	RAMP 3	590.6			46.54	3054.3	220.0	336.0																
140+45	141+21	RAMP 4	93.8			47.04	490.5	220.0	54.0																
137+28	138+25	RAMP 2	119.9			56.62	754.1	220.0	83.0																
134+95	137+94	RAMP 1	316.4			40.70	1430.7	220.0	157.4																
ADDITIONAL FOR LEVELING																									
3+75	7+71	JOHNSON MILL BLVD. LT. & RT.	396.1			32.32	1422.4	110.0	78.2																
14+37	15+90	JOHNSON MILL BLVD. LT. & RT.	153.0			33.35	567.0	110.0	31.2																
15+90	18+41	JOHNSON MILL BLVD. LT.	251.0			16.03	447.1	110.0	24.6																
WIDENING																									
3+75	6+45	JOHNSON MILL BLVD. RT.	253.3	65.8	166.5					4.73	136.1	220.0	15.0	4.96	139.6	330.0	23.0	5.13	144.3	550.0	39.7	14.82	420.0	0.03	12.6
7+47	13+08	JOHNSON MILL BLVD. RT.	578.9							6.50	425.0	220.0	46.7									6.50	418.3	0.03	12.5
14+37	16+84	JOHNSON MILL BLVD. RT.	273.0	61.3	167.3					4.72	146.2	220.0	16.1	4.95	150.0	330.0	24.8	5.11	155.1	550.0	42.7	14.77	451.3	0.03	13.5
3+75	6+45	JOHNSON MILL BLVD. LT.	205.3	65.8	135.0					3.71	87.0	220.0	9.6	3.94	89.9	330.0	14.8	4.11	93.7	550.0	25.8	11.76	270.6	0.03	8.1
7+47	13+08	JOHNSON MILL BLVD. LT.	542.2	56.8	307.7					6.50	397.9	220.0	43.8		405.4							6.50	391.6	0.03	11.7
14+37	18+41	JOHNSON MILL BLVD. LT.	404.2	55.2	223.0					11.98	543.0	220.0	59.7	12.21	548.6	330.0	90.5	12.38	556.1	550.0	152.9	36.58	1647.7	0.03	49.4
141+99	146+88	RAMP 3 LT.	334.4	47.0	157.2					28.20	1051.8	220.0	115.7	28.43	1056.4	330.0	174.3	29.06	1079.6	550.0	296.9	85.69	3187.8	0.03	95.6
140+45	141+21	RAMP 4 LT.	71.6							6.90	55.7	220.0	6.1	7.13	56.7	330.0	9.4	9.79	77.9	550.0	21.4	23.82	190.3	0.03	5.7
137+28	138+25	RAMP 2 LT.	86.0							15.61	150.1	220.0	16.5	15.83	151.3	330.0	25.0	16.00	152.9	550.0	42.0	47.44	454.3	0.03	13.6
137+28	138+25	RAMP 2 RT.	120.1							11.00	148.1	220.0	16.3	11.23	149.8	330.0	24.7	11.39	152.0	550.0	41.8	33.62	449.9	0.03	13.5
134+95	137+46	RAMP 1 RT.	335.6	56.8	190.4					10.02	377.3	220.0	41.5	10.24	381.9	330.0	63.0	10.41	388.1	550.0	106.7	30.67	1147.3	0.03	34.4
134+95	137+49	RAMP 1 LT.	207.5	56.8	117.7					3.70	87.7	220.0	9.7	3.93	90.6	330.0	14.9	4.10	94.4	550.0	26.0	11.73	272.7	0.03	8.2
137+49	137+94	RAMP 1 LT.	43.9	56.8	24.9					4.09	20.5	220.0	2.3									4.09	20.0	0.03	0.6
FULL DEPTH SHOULDERS																									
140+45	141+21	RAMP 4 RT.	109.7	80.4	88.2					5.92	73.4	220.0	8.1	6.14	74.9	330.0	12.4	6.31	76.9	550.0	21.1	18.37	225.2	0.03	6.8
137+28	138+25	RAMP 2 RT.	114.6	53.3	61.1					6.64	85.8	220.0	9.4	6.86	87.4	330.0	14.4	7.03	89.5	550.0	24.6	20.53	262.7	0.03	7.9
136+45	137+49	RAMP 1 RT.	180.6	83.7	151.2					6.33	129.0	220.0	14.2	6.55	131.5	330.0	21.7	6.72	134.9	550.0	37.1	19.60	395.4	0.03	11.9
ADDITIONAL FOR MAINTENANCE OF TRAFFIC																									
ENTIRE PROJECT AS DIRECTED BY THE ENGINEER					50.0				75.0				20.0				15.0				50.0				15.0
TOTALS:					**1840.2**		**14705.1**		**1558.6**		**3914.6**		**450.7**		**3514.0**		**527.9**		**3195.4**		**928.7**		**10205.1**		**321.0**

BASIS OF ESTIMATE:
ACHM SURFACE COURSE (1/2").....94.4% MIN. AGGR.....5.6% ASPHALT BINDER
ACHM BINDER COURSE (1").....95.1% MIN. AGGR.....4.9% ASPHALT BINDER
ACHM BASE COURSE (1 1/2").....95.8% MIN. AGGR.....4.2% ASPHALT BINDER
MAXIMUM NUMBER OF GYRATIONS = 160 FOR PG 70-22
MAXIMUM NUMBER OF GYRATIONS = 205 FOR PG 76-22

QUANTITIES

USER: jd5103 DESIGN FILE: G:\2103302_GrthsSprRd\TRANSP\dgn\quantities\BB0412 Qty.dgn MODEL: QUANTITIES
PLOTTED: 9/4/2013 10:35 SCALE: 1=1

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
11-25-13				6	ARK.			
				JOB NO.		BB0412	28	97

(2) SUMMARY OF QUANTITIES & REVISIONS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS

11-25-13

SUMMARY OF QUANTITIES (BOX 1 OF 2)

ITEM NUMBER	ITEM	QUANTITY	UNIT
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	4	EACH
202	REMOVAL AND DISPOSAL OF DITCH PAVING	642	SQ. YD.
202	REMOVAL AND DISPOSAL OF ASPHALT DRIVEWAYS	20	SQ. YD.
202	REMOVAL AND DISPOSAL OF CONCRETE DRIVEWAYS	160	SQ. YD.
202	REMOVAL AND DISPOSAL OF CONCRETE ISLANDS	142	SQ. YD.
202	REMOVAL AND DISPOSAL OF FENCE	167	LIN. FT.
210	UNCLASSIFIED EXCAVATION	3614	CU. YD.
210	COMPACTED EMBANKMENT	9026	CU. YD.
SS & 303	AGGREGATE BASE COURSE (CLASS 7)	1865	TON
309	PORTLAND CEMENT CONCRETE BASE (3" UNIFORM THICKNESS)	834	SQ. YD.
309	PORTLAND CEMENT CONCRETE BASE (5" UNIFORM THICKNESS)	1159	SQ. YD.
401	TACK COAT	1453	GAL.
SP, SS, & 405	MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")	890	TON
SP, SS, & 405	ASPHALT BINDER(PG70-22) IN ACHM BASE COURSE (1 1/2")	39	TON
SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	502	TON
SP, SS, & 406	ASPHALT BINDER (PG70-22) IN ACHM BINDER COURSE (1")	26	TON
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	1902	TON
SP, SS, & 407	ASPHALT BINDER (PG76-22) IN ACHM SURFACE COURSE (1/2")	112	TON
SP, SS, & 407	ASPHALT BINDER (PG64-22) IN ACHM SURFACE COURSE (1/2")	1	TON
412	COLD MILLING ASPHALT PAVEMENT	9985	SQ. YD.
SP, SS, & 414	ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC	25	TON
SP, SS, & 415	ACHM PATCHING OF EXISTING ROADWAY	200	TON
505	PORTLAND CEMENT CONCRETE DRIVEWAY	96.10	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	TRAFFIC DRUMS	90	EACH
SS & 604	VERTICAL PANELS	8	EACH
SS & 604	SIGNS	506	SQ. FT.
SS & 604	CONSTRUCTION PAVEMENT MARKINGS	6733	LIN. FT.
SS & 604	CONSTRUCTION PAVEMENT MARKINGS (ARROWS)	10	EACH
604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	5232	LIN. FT.
604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS (ARROWS)	10	EACH
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS	9038	LIN. FT.
605	CONCRETE DITCH PAVING (TYPE A)	587	SQ. YD.
605	CONCRETE DITCH PAVING (TYPE B)	992	SQ. YD.
606	SELECTED PIPE BEDDING	10	CU. YD.
606	18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	2	EACH
606	24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	4	EACH
606	36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	3	EACH
606	42" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	2	EACH
SS & 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	28	LIN. FT.
SS & 606	24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	53	LIN. FT.
SS & 606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	86	LIN. FT.
SS & 606	42" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	70	LIN. FT.
SP, SS & 606	24" SIDE DRAIN	108	LIN. FT.
609	DROP INLETS (TYPE MO)	4	EACH
609	DROP INLET EXTENSIONS (4')	4	EACH
619	WIRE FENCE (TYPE A)	166	LIN. FT.
620	LIME	7	TON
620	SEEDING	3.27	ACRE
SS & 620	MULCH COVER	6.54	ACRE
SS & 620	WATER	412.7	M. GAL.
621	TEMPORARY SEEDING	3.27	ACRE
621	DROP INLET SILT FENCE	83	LIN. FT.
621	SAND BAG DITCH CHECKS	952	BAG
621	SEDIMENT REMOVAL AND DISPOSAL	276	CU. YD.
621	ROCK DITCH CHECKS	123	CU. YD.
621	SILT FENCE	698	LIN. FT.
623	SECOND SEEDING APPLICATION	3.06	ACRE
624	SOLID SODDING	996	SQ. YD.
632	CONCRETE ISLAND	243	SQ. YD.
634	CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1' 6")	1358	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
637	MAILBOX SUPPORTS (SINGLE)	1	EACH
637	MAILBOXES	1	EACH
SP & 701	SYSTEM LOCAL CONTROLLER TS 2 - TYPE 2 (8 PHASES)	2	EACH
SP & 701	ON-STREET MASTER CONTROLLER	1	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	12	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	3	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	306	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	400	LIN. FT.
708	TRAFFIC SIGNAL CABLE (12C/14 A.W.G.)	80	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	365	LIN. FT.
709	GALVANIZED STEEL CONDUIT (1.25")	57	LIN. FT.

SUMMARY OF QUANTITIES (BOX 2 OF 2)

ITEM NUMBER	ITEM		QUANTITY	UNIT
710	NON-METALLIC CONDUIT (2")		652	LIN. FT.
710	NON-METALLIC CONDUIT (3")		386	LIN. FT.
SP, SS & 711	CONCRETE PULL BOX (TYPE 1 HD)		2	EACH
SP, SS & 711	CONCRETE PULL BOX (TYPE 2 HD)		5	EACH
SP, SS & 711	CONCRETE PULL BOX (TYPE 3 HD)		2	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (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 (30' - 50')		1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (20'- 64')		1	EACH
SP	ANTENNA SUPPORT (SHOE BASE, 50' HT.)		1	EACH
SS & 718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10")		300	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")		2838	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING WHITE (8")		329	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING WHITE (12")		146	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING YELLOW (12")		244	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")		2416	LIN. FT.
SS & 719	THERMOPLASTIC PAVEMENT MARKING (WORDS)		8	EACH
SS & 719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)		12	EACH
* SS & 719	INVERTED PROFILE THERMOPLASTIC PAVEMENT MARKING WHITE (4")	(ALTERNATE NO.1)	1331	LIN. FT.
* SP	HIGH PERFORMANCE MARKING TAPE WHITE (4")	(ALTERNATE NO.2)	1331	LIN. FT.
* SS & 719	INVERTED PROFILE THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	(ALTERNATE NO.1)	796	LIN. FT.
* SP	HIGH PERFORMANCE MARKING TAPE YELLOW (4")	(ALTERNATE NO.2)	796	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)		18	EACH
SP	COMMUNICATION CABLE, FIBER (6 CHANNEL)		583	LIN. FT.
SP	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)		1	EACH
733	VIDEO CABLE		752	LIN. FT.
SP & 733	VIDEO DETECTOR (CLR)		7	EACH
SP & 733	VIDEO EDGE CARD EXTENDER		2	EACH
733	VIDEO MONITOR (CLR)		2	EACH
SP & 733	VIDEO PROCESSOR , EDGE CARD (2 CAMERA)		5	EACH
SP & 733	VEHICLE DETECTOR RACK (16 CHANNEL)		2	EACH
816	FILTER BLANKET		43	SQ. YD.
816	DUMPED RIPRAP		26	CU. YD.
SP	ANTENNA CABLE (TYPE 6)		75	LIN. FT.
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES		1170	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/ 8 A.W.G., EGC)		504	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/ 6 A.W.G., EGC)		40	LIN. FT.
SP	LOCAL RADIO WITH ANTENNA		1	EACH
SP	MASTER RADIO WITH ANTENNA		1	EACH
SP	MODEM, HARDENED (33.6 K BAUD)		1	EACH
SP	LUMINAIRE ASSEMBLY		4	EACH
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)		2	EACH
SP	TRAFFIC TIMER UNIT		1	EACH
SP	18" STREET NAME SIGN		2	EACH

* ALTERNATE BID ITEMS

REVISIONS

DATE	REVISION	SHEET NUMBER
11/25/2013	REVISED SYSTEM LOCAL CONTROLLER QUANTITY	28 & 39
11/25/2013	NON-QUANTITY REVISION TO SPECIAL PROVISION "CLOSED LOOP TRAFFIC SYSTEM"	

SUMMARY OF QUANTITIES & REVISIONS

USER: jd503
DESIGN FILE: G:\12103302_GrthsSprRd\TRANSP\dgn\quantities\BB0412 Qty.dgn
PLOTTED: 11/25/2013 16:14
SCALE: 16:1
MODEL: QUANTITIES

SURVEY CONTROL COORDINATES

Project Name: BB0412 Survey Ctl
Date: 3/21/2013
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	654795.0854	673409.4045	1206.17	CTL	CPS T-1 FROM JOB 040312
2	655623.2760	673420.7211	1199.80	CTL	CPS T-2 FROM JOB 040312
3	657337.1946	673434.1474	1184.16	CTL	*REBAR CAP T-3 FROM JOB 040312
4	659514.1462	673737.8236	1187.14	CTL	*T-4 REBAR CAP FROM JOB 040312
5	660030.1231	673562.9209	1175.27	CTL	*T-5 REBAR CAP FROM JOB 040312
6	661258.2970	673681.3820	1185.19	CTL	*REBAR CAP T-6 FROM JOB 040312
7	662321.2697	673692.6106	1213.72	CTL	*REBAR CAP T-7 FROM JOB 040312
8	662352.0463	672948.2637	1203.66	CTL	CPS T-8 FROM JOB 040312
9	662603.4090	672551.2542	1192.02	CTL	T-9 =BM A-309 FROM JOB 040312
10	662652.4632	672271.7698	1180.84	CTL	*T-10 REBAR CAP FROM JOB 040312
11	662557.7356	671928.1918	1176.25	CTL	*T-11 REBAR CAP FROM JOB 040312
12	662592.2240	671440.3000	1173.86	CTL	*T-12 REBAR CAP FROM JOB 040312
13	662783.6862	670970.5423	1184.40	CTL	*T-13 REBAR CAP FROM JOB 040312
14	662988.0250	670469.4321	1186.15	CTL	*T-14 REBAR CAP FROM JOB 040312
15	663155.2804	670054.4156	1178.13	CTL	*T-15 REBAR CAP FROM JOB 040312
16	663393.6935	669531.9656	1166.42	CTL	*T-16 REBAR CAP FROM JOB 040312
17	663594.8764	669155.8847	1164.77	CTL	*T-17\RBR CAP
18	663987.4886	668488.8089	1174.87	CTL	*T-18\RBR CAP
19	664225.8679	668058.0811	1192.84	CTL	*T-19\RBR CAP
20	664482.3972	667435.4978	1224.64	CTL	*T-20\RBR CAP
100	653463.1072	671548.7155	1249.09	GPS	720018 GPS *100 FROM JOB 040312
101	654210.4546	673186.0826	1237.50	GPS	720018A GPS FROM JOB 040312
102	664384.1151	667867.9148	1224.55	GPS	AHTD GPS 720025 10/9/2001 WASHINGTON
103	662718.5955	668071.9737	-99999.00	GPS	AHTD GPS 720025A 10/9/2001
104	662603.4090	672551.2542	1192.022	GPS	NGS POINT A 309
803	662736.9901	668048.2835	1199.36	TBM	CUT SQUARE I-540 SPRINGDALE
804	663074.3441	668118.3381	1192.67	TBM	CUT SQUARE I-540 SPRINGDALE
806	665630.3891	667717.4873	1259.24	TBM	CUT SQUARE I-540 SPRINGDALE
839	664013.1356	668574.3497	1177.80	TBM	CUT SQUARE I-540 SPRINGDALE
840	664476.8190	666870.8289	1217.35	TBM	CUT SQUARE I-540 SPRINGDALE
900	654219.2349	673331.5505	1212.08	BM	NS POINT K 310 FROM JOB 040312
901	654094.9991	673403.2065	1207.53	BM	CH SQ TOP CA FROM JOB 040312
902	656296.9855	673319.6728	1198.649	BM	NGS POINT A 27 FROM JOB 040312
903	657709.1539	673439.1248	1183.84	BM	CPS INS PP TBM-903 FROM JOB 040312
904	659232.5125	673839.1605	1187.90	BM	CH SQ IN TOP OF CA BM904 FROM JOB 040312
905	658314.9380	673655.5859	1191.01	BM	AHTD DSK 720114 FROM JOB 040312
906	660174.5213	673667.9787	1187.89	BM	AHTD DSK TOPOF BR SE COR FROM JOB 040312
907	662320.3385	673718.1107	1213.32	BM	CH SQ IN HDW TBM-907 FROM JOB 040312
908	662604.4364	672551.3231	1192.022	BM	NGS POINT A 309 FROM JOB 040312
909	663359.6191	669673.8783	1166.95	BM	TBM-909 CH SQ HW FROM JOB 040312
910	663231.0237	669851.8527	1170.69	BM	TBM-910\CH SQ HW
911	664149.0525	667964.4123	1217.56	BM	TBM-911\AHTD DSK
912	664394.2939	667648.8040	1213.01	BM	BM-912\CORP. 00 FP-3-2 BRS CAP SET YR 2000
1006	662351.1253	668186.4053	1209.57	CTL	*5/8" Rebar with 2" Aluminum Cap
1007	663325.2246	668068.5227	1194.22	CTL	*5/8" Rebar with 2" Aluminum Cap
1008	665171.0013	667842.5085	1247.79	CTL	*5/8" Rebar with 2" Aluminum Cap
1009	666107.0612	667736.7172	1278.90	CTL	*5/8" Rebar with 2" Aluminum Cap
1046	663847.1736	668826.5892	1164.98	CTL	*5/8" Rebar with 2" Aluminum Cap
1047	664099.4386	668220.3901	1186.68	CTL	*5/8" Rebar with 2" Aluminum Cap
1048	664422.7548	667587.4159	1217.37	CTL	*5/8" Rebar with 2" Aluminum Cap
1049	664494.4587	667061.0353	1221.09	CTL	*5/8" Rebar with 2" Aluminum Cap
1050	663872.8188	667646.1646	1202.90	CTL	*5/8" Rebar with 2" Aluminum Cap
1051	664625.9869	668198.5114	1211.22	CTL	*5/8" Rebar with 2" Aluminum Cap
1052	664868.3885	667631.7937	1233.11	CTL	*5/8" Rebar with 2" Aluminum Cap
1500	661560.0684	673600.7511	1190.48	CTL	8-SPIKE 13' S OF SE COR OF SHED
1501	661397.8483	673732.9558	1189.74	CTL	8-SPIKE 3' W OF NW COR MOBILE HOM
1502	661148.3238	673695.9632	1180.13	CTL	8-SPIKE 5' S TWIN 14" CATAPA
1503	660814.1049	673609.2810	1175.12	CTL	8-SPIKE 10' S OF GY
1504	662246.3951	673891.4224	1208.20	CTL	8-SPIKE 20' S OF CP
1505	662347.3398	673887.8301	1215.39	CTL	8-SPIKE 5' W OF 30" SYCAMORE 20' N 5-BARB FE
1506	662394.2441	673589.6275	1213.98	CTL	8-SPIKE 7' E OF SE COR HOUSE
1507	662263.3023	673540.1534	1203.41	CTL	8-SPIKE 5' E CHAINLINK
1508	662568.5022	672772.8406	1191.93	CTL	8-SPIKE 10' E CONC SCALE
1509	662405.1360	672657.9831	1193.59	CTL	8-SPIKE 14' E OF 14" CHERRY
1510	662467.2323	672431.6518	1191.09	CTL	8-SPIKE 9' NW OF NW COR METAL B
1511	662697.7320	672907.1347	1193.29	CTL	8-SPIKE 15' NE GR DW 6' SW LP
1513	662709.2897	672335.3304	1175.56	CTL	8-SPIKE 12' SW TWIN 14" ASH
1514	662467.2717	672431.4991	1192.54	CTL	8-SPIKE 9' NW OF NW COR METAL B
1515	662562.6729	672190.8199	1172.66	CTL	8-SPIKE 18' S 28" CHINABERRY
1516	662561.1438	672048.3556	1170.95	CTL	8-SPIKE 4' E 8" MAPLE
1518	662603.0944	670510.8395	1169.75	CTL	8-SPIKE 10' S 14" PINE
1519	662697.7550	670273.4780	1166.80	CTL	8-SPIKE 12' SE 12" PINE
1520	663088.6585	670545.0271	1184.13	CTL	8-SPIKE 5' S 16" MAPLE
1521	663130.7429	670311.3591	1180.53	CTL	8-SPIKE 8' N CP
1523	662697.7318	670273.5062	1166.97	CTL	8-SPIKE 12' SE 12" PINE
1524	663181.8275	670244.2027	1179.95	CTL	8-SPIKE 3' W WOOD POST FE
1525	663250.3023	670114.0094	1176.87	CTL	8-SPIKE 3' S 12" CATAPA
1526	663314.9510	670022.6795	1176.12	CTL	8-SPIKE 3' S WOOD FE COR

*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*(standard markings common to all caps), or as indicated
(other markings indicated in the point description of the individual point).
ALL DISTANCES ARE GROUND.
USE CAF = 1.0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAF OF 0.9999168402 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 BB0412gil.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: 720018-720018A
CONVERGENCE ANGLE: 1-15-54.08 LEFT AT PN: 14
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

MIDPOINT:
LT: 36-08-06.6
LG: 094-10-26.2

JOHNSON MILL BLVD (CL Great House Springs Rd)

POINT	NAME	STATION	NORTHING	EASTING
8000	POB	0+12.70	664518.3727	666938.2605
8001	PC	2+92.60	664502.9258	667217.7339
	PI	4+06.34	664496.6487	667331.3021
8002	CC		663829.8831	667180.5338
8003	PT	5+17.96	664453.4536	667436.5224
8029	PI	13+34.27	664143.4480	668191.6746
8030	PC	14+37.40	664103.0943	668286.5807
	PI	15+21.63	664070.1350	668364.0964
8031	CC		663182.8282	667895.2876
8032	PT	16+05.47	664024.6734	668435.0066
8033	POE	21+04.13	663755.5329	668854.8078

I-540 (CL I-540)

POINT	NAME	STATION	NORTHING	EASTING
8011	POB	130+00.00	663322.5185	667998.0277
8012	POE	153+00.00	665605.5984	667719.5568

RAMP 1 (CL Ramp 1)

POINT	NAME	STATION	NORTHING	EASTING
8013	POB	128+49.30	663180.3921	668103.9259
8014	PC	132+55.10	663584.6104	668139.7188
	PI	133+67.61	663696.6864	668149.6430
8015	CC		663079.2423	673846.9677
8016	PT	134+80.10	663808.2864	668163.9596
8034	POE	138+11.80	664137.2866	668206.1653

RAMP 2 (CL Ramp 2)

POINT	NAME	STATION	NORTHING	EASTING
8034	POB	137+11.20	664137.2866	668206.1653
8017	PC	139+23.60	664347.9637	668233.1920
	PI	140+78.59	664501.6968	668252.9137
8018	CC		664404.0444	667796.0345
8019	PT	142+21.68	664633.9351	668172.0691
8020	POE	146+53.78	665002.5982	667946.6850

RAMP 3 (CL Ramp 3)

POINT	NAME	STATION	NORTHING	EASTING
8004	POB	140+81.10	664384.3362	667604.8875
8021	PC	142+57.10	664558.9125	667627.2287
	PI	143+82.18	664682.9801	667643.1062
8022	CC		664922.5659	664785.6133
8023	PT	145+07.10	664807.9594	667648.1100
8024	POE	151+05.50	665405.8804	667672.0491

RAMP 4 (CL Ramp 4)

POINT	NAME	STATION	NORTHING	EASTING
8025	POB	132+42.10	663537.7792	667835.2073
8026	PC	137+01.90	663949.4229	667630.3525
	PI	138+46.74	664079.0898	667565.8238
8027	CC		664162.1457	668057.8067
8028	PT	139+83.15	664222.7540	667584.2091
8004	POE	141+46.05	664384.3362	667604.8875

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9/04/13

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	29	97

(2) SURVEY CONTROL DETAILS

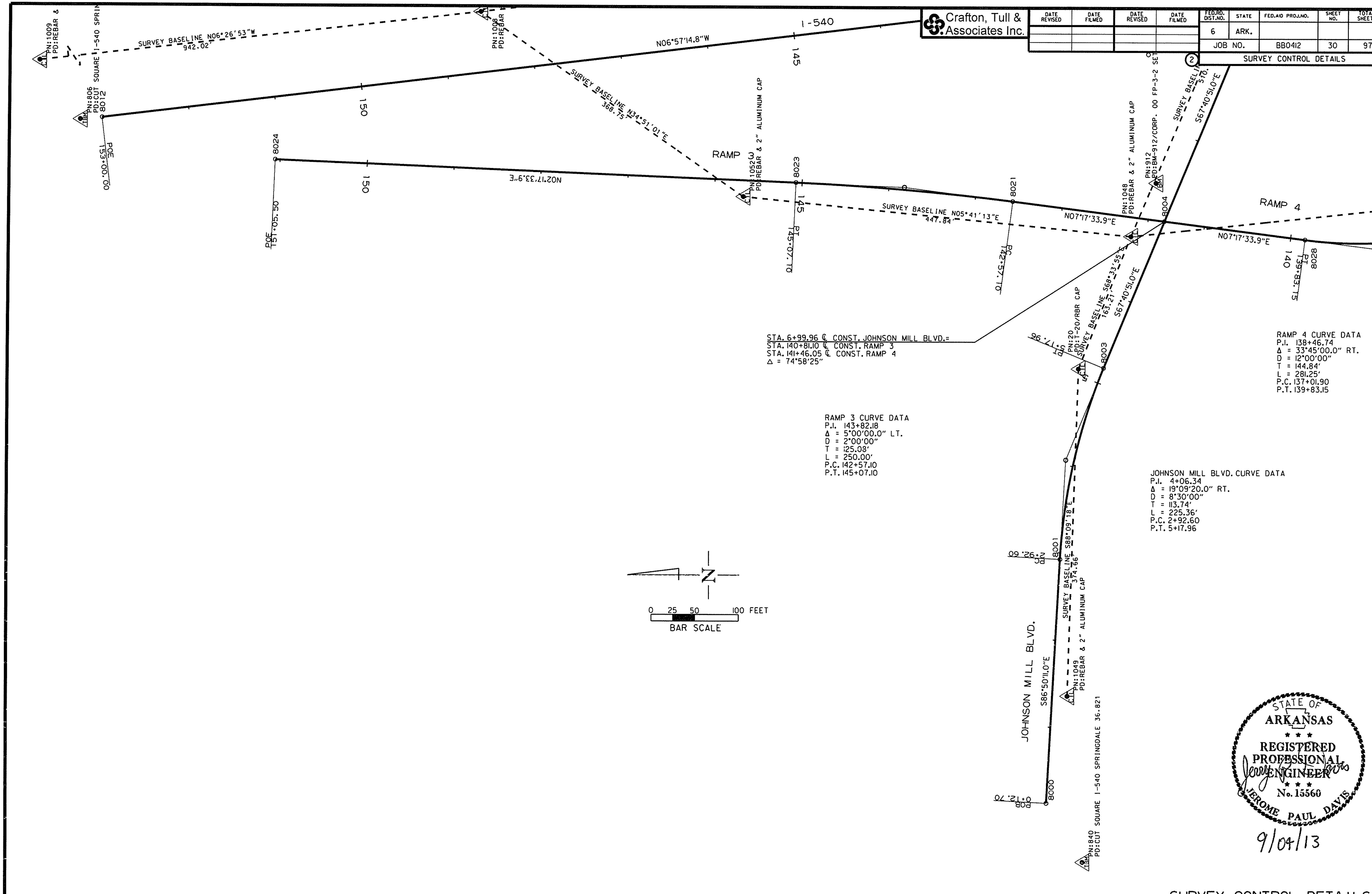
USER: jd5103
DESIGN FILE: G:\2013302.Gr+theSprRd\TRANSP\dgn\BB0412 Survey Ctl.dgn
PLOTTED: 9/3/2013 18:29 SCALE: 100.0 MODEL: SURVEY CONTROL DETAILS

SURVEY CONTROL DETAILS

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	30	97

SURVEY CONTROL DETAILS



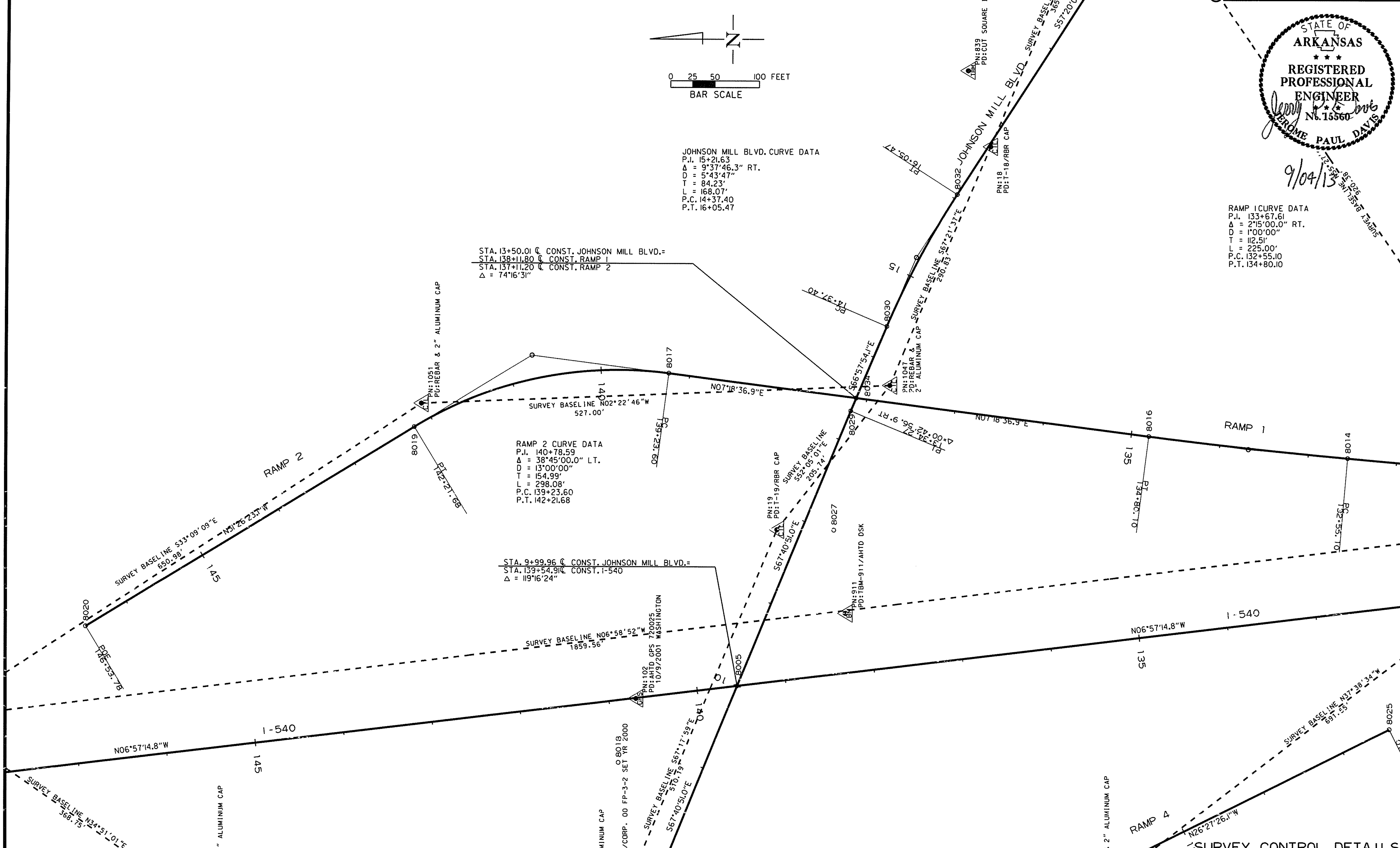
USER: jd5103
DESIGN FILE: G:\2103302.GrthsSprRd\TRANSP\dgn\BB0412 Survey Ctl.dgn
PLOTTED: 9/3/2013 18:29
SCALE: 100:1
MODEL: SURVEY CONTROL DETAILS

SURVEY CONTROL DETAILS

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	31	97

SURVEY CONTROL DETAILS



0 25 50 100 FEET
BAR SCALE
JOHNSON MILL BLVD. CURVE DATA
P.I. 15+21.63
Δ = 9°37'46.3" RT.
D = 5°43'47"
T = 84.23'
L = 168.07'
P.C. 14+37.40
P.T. 16+05.47
RAMP 1 CURVE DATA
P.I. 133+67.61
Δ = 2°15'00.0" RT.
D = 1°00'00"
T = 112.51'
L = 225.00'
P.C. 132+55.10
P.T. 134+80.10
STA. 13+50.01 ℄ CONST. JOHNSON MILL BLVD.=
STA. 138+11.80 ℄ CONST. RAMP 1
STA. 137+11.20 ℄ CONST. RAMP 2
Δ = 74°16'31"
RAMP 2 CURVE DATA
P.I. 140+78.59
Δ = 38°45'00.0" LT.
D = 13°00'00"
T = 154.99'
L = 298.08'
P.C. 139+23.60
P.T. 142+21.68
STA. 9+99.96 ℄ CONST. JOHNSON MILL BLVD.=
STA. 139+54.91℄ CONST. I-540
Δ = 119°16'24"
JOHNSON MILL BLVD.
RAMP 1
RAMP 2
RAMP 4
I-540
SURVEY BASELINE N02°22'46"W 527.00'
SURVEY BASELINE S33°09'09"E 650.98'
SURVEY BASELINE N06°58'52"W 1859.56'
SURVEY BASELINE S52°05'01"E 205.74'
SURVEY BASELINE S67°21'31"E 290.83'
SURVEY BASELINE S67°11'59"E 510.19'
SURVEY BASELINE N34°51'01"E 368.75'
SURVEY BASELINE N37°38'34"W 691.55'
N07°18'36.9"E
N51°26'23.7"W
N06°57'14.8"W
S66°57'54.1"E
S67°40'51.0"E
S57°20'07.8"
N26°27'26.1"W
PN:839 PD:CUT SQUARE I-540
PN:18 PD:T-18/RBR CAP
PN:1051 PD:REBAR & 2" ALUMINUM CAP
PN:1047 PD:REBAR & 2" ALUMINUM CAP
PN:19 PD:T-19/RBR CAP
PN:911 PD:TBM-911/AHTD DSK
PN:102 PD:AHTD GPS 720025 10/9/2001 WASHINGTON
PT 16+05.47
PC 14+37.40
PC 139+23.60
PT 142+21.68
PT 134+80.10
PC 132+55.10
POE 146+53.78
Δ=00°42'56.9" RT
8005
8014
8016
8017
8019
8020
8025
8027
8029
8030
8032
8034
8018
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9/04/13

SURVEY CONTROL DETAILS

USER: jd5103 DESIGN FILE: G:\12103302_GrthsSprRd\TRANSP\dgn\BB0412 Survey Ctl.dgn PLOTTED: 9/3/2013 18:29 SCALE: 100:1 MODEL: SURVEY CONTROL DETAILS

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	32	97

2 SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9/04/13

RAMP 4 CURVE DATA
P.I. 138+46.74
Δ = 33°45'00.0" RT.
D = 12°00'00"
T = 144.84'
L = 281.25'
P.C. 137+01.90
P.T. 139+83.15

RAMP 1 CURVE DATA
P.I. 133+67.61
Δ = 2°15'00.0" RT.
D = 1°00'00"
T = 112.51'
L = 225.00'
P.C. 132+55.10
P.T. 134+80.10

PN:1050
PD:REBAR & 2" ALUMINUM CAP

PN:1047
PD:REBAR & 2" ALUMINUM CAP

PN:18
PD:T-18/RBR CAP

PN:839
PD:CUT SQUARE I-540 SPRINGDALE

PN:1046
PD:REBAR & 2" ALUMIN

PN:17
PD:T-17/RBR CAP

PN:1007
PD:REBAR & 2" ALUMINUM I-540 SPRINGDALE

PN:1006
PD:REBAR & 2" ALUMINUM I-540 SPRINGDALE

PN:804
PD:CUT SQUARE I-540 SPRINGDALE 36.0808

8026 POB 137+01.90
8025 POB 132+42.10
8016 PI 134+80.10
8014 PC 132+55.10
8013 POB 128+49.30
8011 POB 130+00.00
8033
8031

SURVEY BASELINE N06°05'52"W 553.07'
SURVEY BASELINE N37°38'34"W 691.55'
SURVEY BASELINE N26°27'26.1"W
SURVEY BASELINE N06°54'01"W 901.21'
SURVEY BASELINE N07°18'36.9"E
SURVEY BASELINE N03°03'36.9"E
SURVEY BASELINE S67°21'37"E 290.83'
SURVEY BASELINE S67°26'31"E 365.76'
SURVEY BASELINE S57°20'07.8"E
SURVEY BASELINE S52°32'30"E 314.84'
SURVEY BASELINE N53°27'06"E 520.38'

PI 133+34.27 Δ=00°42'56.0"

RAMP 4
RAMP 1
I-540
8032 JOHNSON MILL BLVD

N
0 25 50 100 FEET
BAR SCALE

USER: jd5103
DESIGN FILE: G:\2103302.0r+hsSpr-Rd\TRANSP\dgn\BB0412 Survey Ctl.dgn
PLOTTED: 9/3/2013 18:29 SCALE: 1:001 MODEL: SURVEY CONTROL DETAILS

SURVEY CONTROL DETAILS

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	33	97

2 PLAN & PROFILE JOHNSON MILL BLVD.

DENOTES FULL DEPTH SHOULDER

JOHNSON MILL BLVD. CURVE DATA
P.I. 4+06.34
Δ = 19°09'20.0" RT.
D = 8°30'00"
T = 113.74'
L = 225.36'
P.C. 2+92.60
P.T. 5+17.96
e = 0.074'/'
Ls = 337.5'

STA. 3+75.00
BEGIN JOB BB0412

STA. 6+99.96 ℄ CONST. JOHNSON MILL BLVD. =
STA. 140+81.10 ℄ CONST. RAMP 3
STA. 141+46.05 ℄ CONST. RAMP 4
Δ = 74°58'25"

STA. 9+99.96 ℄ CONST. JOHNSON MILL BLVD. =
STA. 139+54.91 ℄ CONST. I-540 L.M. +68.95
Δ = 119°16'24"

CONCRETE DITCH PAVING (TYPE A)

STA.	STA.	SIDE	"B"	"W"	SQ. YDS.
9+00	11+50	RT. OF J.M. BLVD.	9'-0"	3'-6"	198
8+40	10+63	LT. OF J.M. BVLD.	9'-0"	3'-6"	187

STA. 8+30 IN PLACE
36" x 105' R.C. PIPE CULVERT
(ON 30° RT. FWD. SKEW)
REMOVE 36" x 27' R.C. PIPE CULVERT
W/ FES LT. AND 36" x 21' R.C. PIPE CULVERT
W/ FES RT. CONNECT TO D.I. STA. 8+47 RT.
Q50=36 CFS D.A.=12 AC.

STA. 8+15 CONSTRUCT
D.I. ON LT. H=9'-9" W/ 4' EXTENSION
AND 36"x26' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING) W/ FES. LT.
CONNECT TO EXISTING R.C. PIPE CULVERT
AT STA. 8+30 RT.
TY MO = 5' DIA.

STA. 8+47 CONSTRUCT
D.I. ON RT. H=9'-1"
W/ 4' EXTENSION AND 36"x23' R.C. PIPE CULVERT
(CLASS III) (TYPE 3 BEDDING)
W/ FES RT.
TY MO = 5' DIA.

STA. 12+78 CONSTRUCT
D.I. ON LT. H= 3'-2"
W/ 4' EXTENSION AND
18" x 4' R.C. PIPE CULVERT
(CLASS III)(TYPE 3 BEDDING)
W/ FES.
TY C = 4'x4'
TY MO = 4'

STA. 12+78 CONSTRUCT
D.I. ON RT H= 3'-2"
W/ 4' EXTENSION AND
18" x 4' R.C. PIPE CULVERT RT.
(CLASS III)(TYPE 3 BEDDING) W/ FES RT.
TY C = 4'x4'
TY MO = 4'

STA. 11+50 RT.
8 CU. YDS. DUMPED RIPRAP

CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	SIDE	"W"	SQ. YDS.
4+50	5+87	LT. OF J.M. BLVD.	4'-0"	68
7+65	8+40	LT. OF J.M. BVLD.	4'-0"	40
8+00	9+00	RT. OF J.M. BVLD.	4'-0"	48
11+50	12+00	RT. OF J.M. BVLD.	4'-0"	23
10+63	12+70	LT. OF J.M. BVLD.	4'-0"	97

REMOVE & DISPOSE OF CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	SIDE	"W"	SQ. YDS.
4+42	5+89	LT. OF J.M. BVLD.	3'-0"	53.0
8+56	8+68	RT. OF J.M. BLVD.	6'-0"	4.5
14+31	14+60	RT. OF J.M. BLVD.	9'-0"	61.3

STA. 3+75.00 MATCH EXIST. SUPERELEVATION (0.068'/')
STA. 3+93.24 BEGIN MAX SUPERELEVATION (0.074'/')
STA. 4+83.58 END MAX. SUPERELEVATION (0.074'/')
STA. 7+71.08 END SUPERELEVATION

450' V.C.
K = 58
SSD = 352'

200' V.C.
K = 94
SSD = 1067'

PVI 1+00.00 ELEV. 1221.68
PVC 2+00.00 Elev 1224.30
PVI 4+25.00 ELEV. 1230.19
PVT 6+50.00 Elev 1216.48
PVI 7+45.00 ELEV. 1213.54
PVT 10+60.00 Elev 1198.01
PVI 9+60.00 ELEV. 1201.48
PVI 11+25.00 ELEV. 1195.75
PVI 13+49.00 ELEV. 1187.67
PVI 14+37.40 ELEV. 1184.49

PROPOSED GRADE
EXISTING GROUND
MAINTAIN EXIST. VERTICAL CLEARANCE

BM 912 CORP. OD FP-3-2 BRASS CAP PLS 1120
25.89' LT. OF STA. 7+36.81
ELEVATION = 1213.01

TBM 911 AHTD DISK
81.12' RT. OF STA. 11+21.90
ELEVATION = 1217.56

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9/04/13

USER: jd5103
DESIGN FILE: G:\2103302_Crtn\SprRd\TRANSPV.dgn\p&p\BB0412 pp01.dgn
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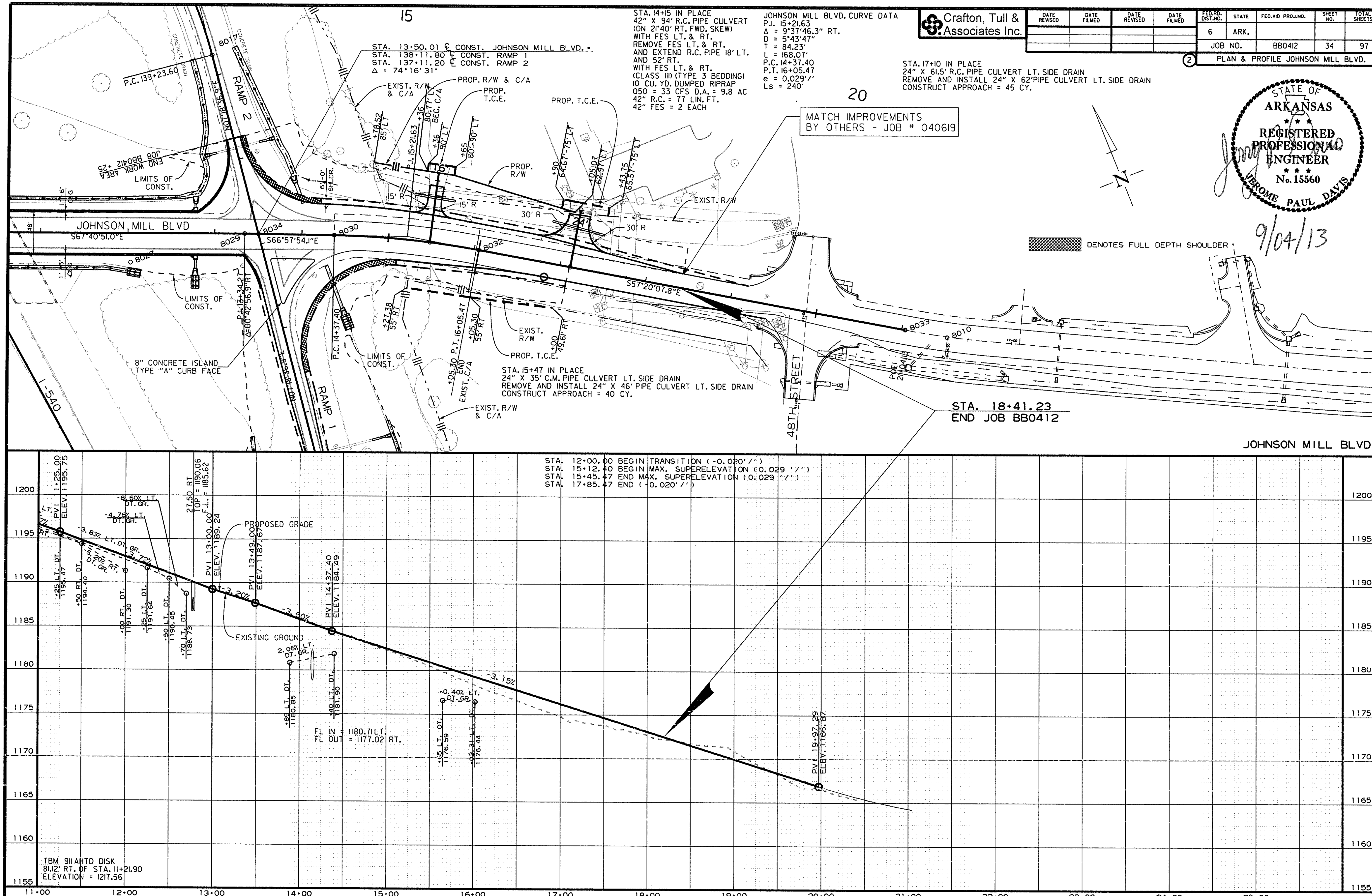
SCALE: 100:1
MODEL: PLAN AND PROFILE

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	34	97

(2) PLAN & PROFILE JOHNSON MILL BLVD.



15
20
STA. 13+50.01 ℄ CONST. JOHNSON MILL BLVD. = STA. 138+11.80 ℄ CONST. RAMP 1 STA. 137+11.20 ℄ CONST. RAMP 2 Δ = 74°16'31"
STA. 14+15 IN PLACE 42" X 94' R.C. PIPE CULVERT (ON 21°40' RT. FWD. SKEW) WITH FES LT. & RT. REMOVE FES LT. & RT. AND EXTEND R.C. PIPE 18' LT. AND 52' RT. WITH FES LT. & RT. (CLASS III) (TYPE 3 BEDDING) 10 CU. YD. DUMPED RIPRAP Q50 = 33 CFS D.A. = 9.8 AC 42" R.C. = 77 LIN. FT. 42" FES = 2 EACH
JOHNSON MILL BLVD. CURVE DATA P.I. 15+21.63 Δ = 9°37'46.3" RT. D = 5°43'47" T = 84.23' L = 168.07' P.C. 14+37.40 P.T. 16+05.47 e = 0.029'/' Ls = 240'
STA. 17+10 IN PLACE 24" X 61.5' R.C. PIPE CULVERT LT. SIDE DRAIN REMOVE AND INSTALL 24" X 62' PIPE CULVERT LT. SIDE DRAIN CONSTRUCT APPROACH = 45 CY.
MATCH IMPROVEMENTS BY OTHERS - JOB # 040619
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 15560 JEROME PAUL DAVIS
9/04/13
DENOTES FULL DEPTH SHOULDER
P.C. 139+23.60
RAMP 2
END WORK AREA JOB BB0412 +25
LIMITS OF CONST.
EXIST. R/W & C/A
PROP. R/W & C/A
PROP. T.C.E.
PROP. T.C.E.
PROP. R/W
EXIST. R/W
JOHNSON MILL BLVD
S67°40'51.0"E
S66°57'54.1"E
S57°20'07.8"E
8029 8030 8032 8033 8034 8010 8017
LIMITS OF CONST.
P.I. 13+34.27 Δ=00°42'56.9"RT
8" CONCRETE ISLAND TYPE "A" CURB FACE
P.C. 14+37.40
LIMITS OF CONST.
EXIST. R/W
PROP. T.C.E.
EXIST. C/A
EXIST. R/W & C/A
STA. 15+47 IN PLACE 24" X 35' C.M. PIPE CULVERT LT. SIDE DRAIN REMOVE AND INSTALL 24" X 46' PIPE CULVERT LT. SIDE DRAIN CONSTRUCT APPROACH = 40 CY.
RAMP 1
I-540
48TH STREET
STA. 18+41.23 END JOB BB0412
JOHNSON MILL BLVD.
STA. 12+00.00 BEGIN TRANSITION (-0.020'/')
STA. 15+12.40 BEGIN MAX. SUPERELEVATION (0.029 '/')
STA. 15+45.47 END MAX. SUPERELEVATION (0.029 '/')
STA. 17+85.47 END (-0.020'/')
PVI 11+25.00 ELEV. 1195.75
PVI 13+00.00 ELEV. 1189.24
PVI 13+49.00 ELEV. 1187.67
PVI 14+37.40 ELEV. 1184.49
PVI 19+97.29 ELEV. 1166.87
27.50 RT TOP = 1190.06 F.L. = 1185.62
PROPOSED GRADE
EXISTING GROUND
-3.20%
-3.60%
-3.15%
FL IN = 1180.71 LT. FL OUT = 1177.02 RT.
TBM 911 AHTD DISK 81.12' RT. OF STA. 11+21.90 ELEVATION = 1217.56
1200 1195 1190 1185 1180 1175 1170 1165 1160 1155
11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00

USER: jd5103
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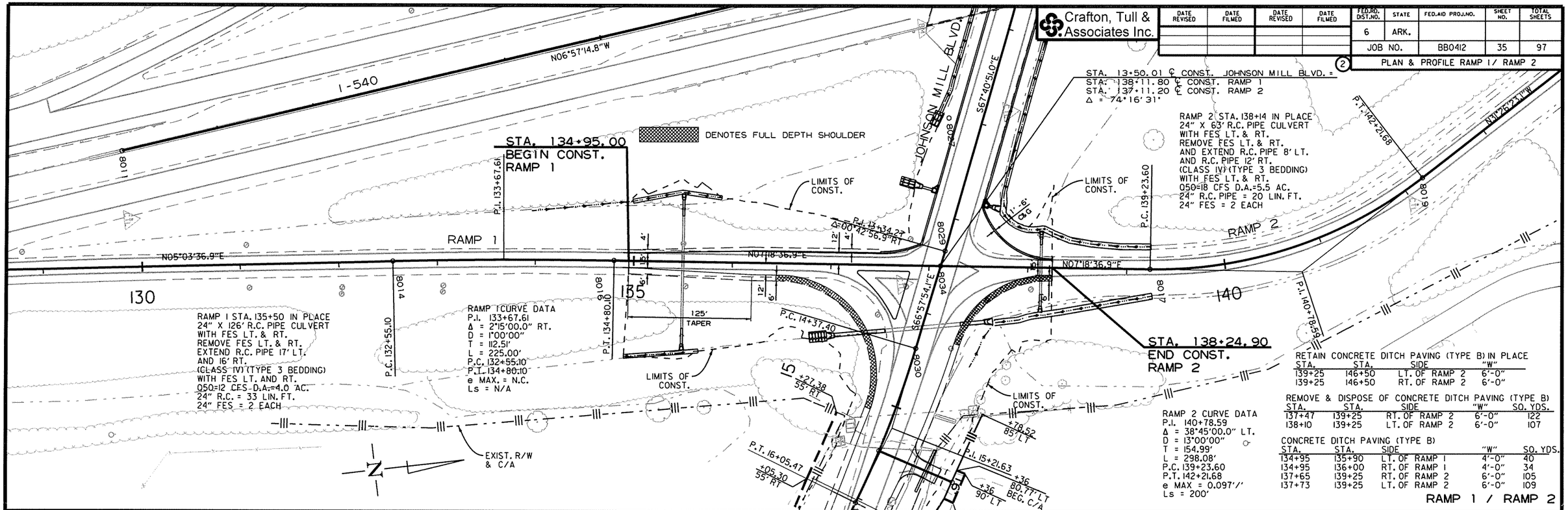
PLOTTED: 9/3/2013 18:29 SCALE: 100:1

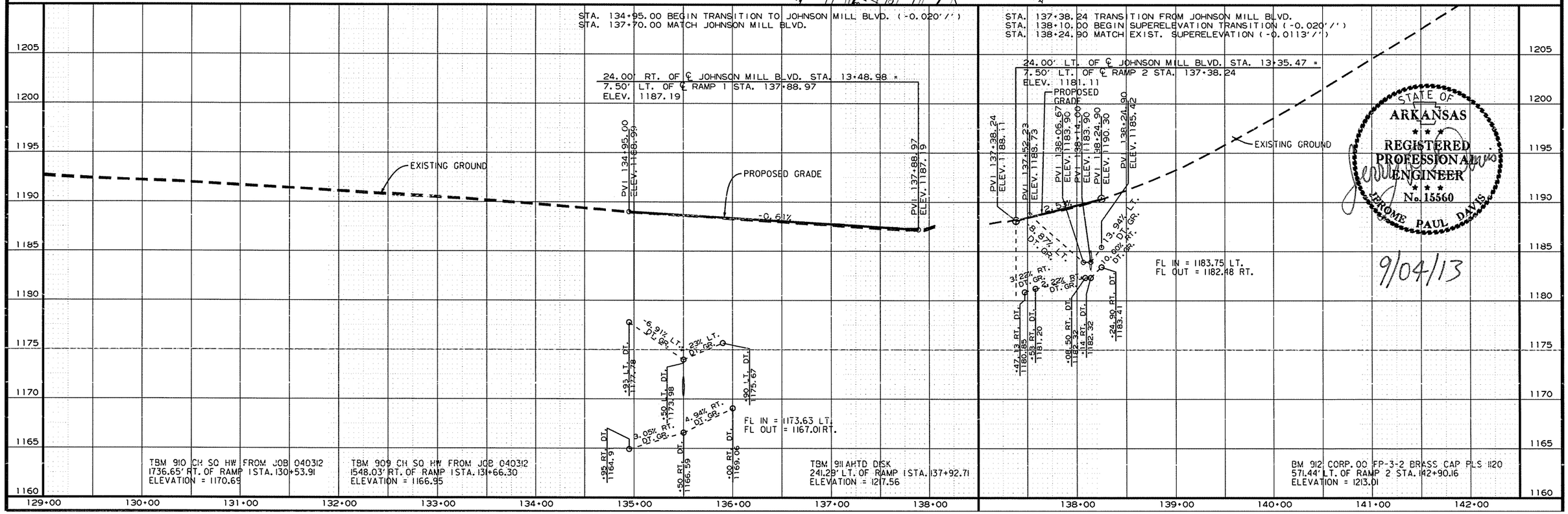
Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	35	97

(2) PLAN & PROFILE RAMP 1 / RAMP 2





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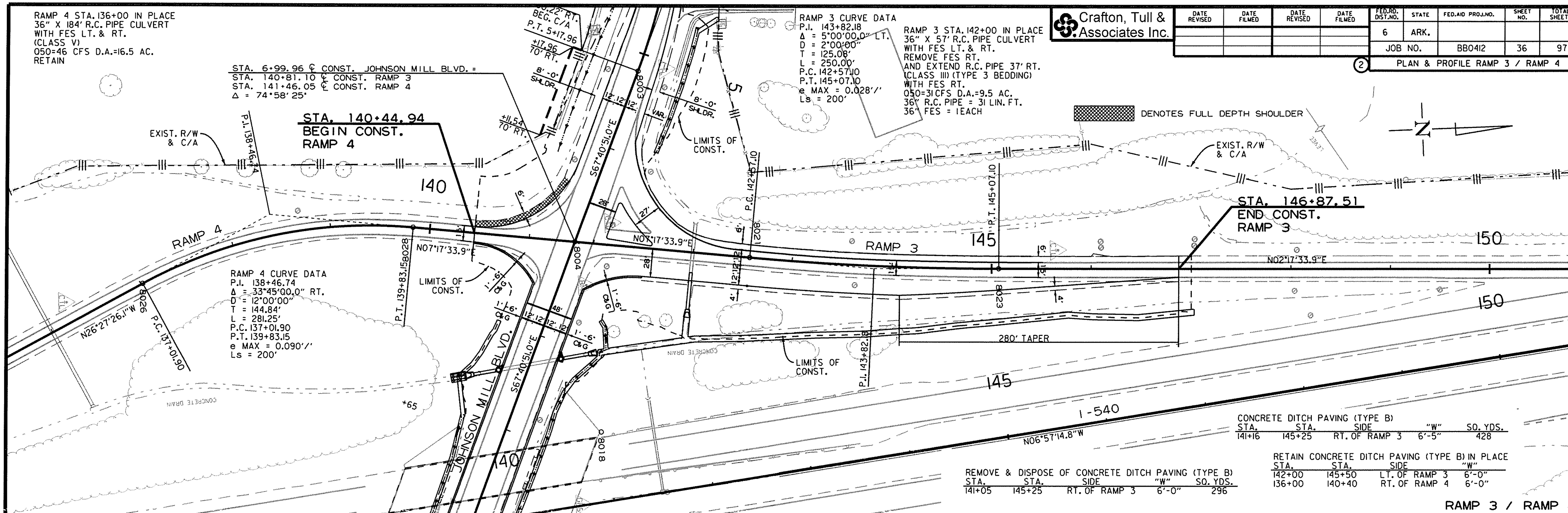
MODEL: PLAN AND PROFILE

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	36	97

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

(2) PLAN & PROFILE RAMP 3 / RAMP 4



RAMP 4 STA. 136+00 IN PLACE
36" X 184' R.C. PIPE CULVERT
WITH FES LT. & RT.
(CLASS V)
Q50=46 CFS D.A.=16.5 AC.
RETAIN
STA. 6+99.96 ℄ CONST. JOHNSON MILL BLVD. =
STA. 140+81.10 ℄ CONST. RAMP 3
STA. 141+46.05 ℄ CONST. RAMP 4
Δ = 74°58'25"
STA. 140+44.94
BEGIN CONST.
RAMP 4
EXIST. R/W & C/A
RAMP 3 CURVE DATA
P.I. 143+82.18
Δ = 5°00'00.0" LT.
D = 2°00'00"
T = 125.08'
L = 250.00'
P.C. 142+57.10
P.T. 145+07.10
e MAX = 0.028'/'
Ls = 200'
RAMP 3 STA. 142+00 IN PLACE
36" X 57' R.C. PIPE CULVERT
WITH FES LT. & RT.
REMOVE FES RT.
AND EXTEND R.C. PIPE 37' RT.
(CLASS III) (TYPE 3 BEDDING)
WITH FES RT.
Q50=31 CFS D.A.=9.5 AC.
36" R.C. PIPE = 31 LIN. FT.
36" FES = 1 EACH
DENOTES FULL DEPTH SHOULDER
LIMITS OF CONST.
STA. 146+87.51
END CONST.
RAMP 3
RAMP 4
RAMP 3
N07°17'33.9"E
N02°17'33.9"E
RAMP 4 CURVE DATA
P.I. 138+46.74
Δ = 33°45'00.0" RT.
D = 12°00'00"
T = 144.84'
L = 281.25'
P.C. 137+01.90
P.T. 139+83.15
e MAX = 0.090'/'
Ls = 200'
N26°27'26.1"W
S67°40'51.0"E
JOHNSON MILL BLVD.
280' TAPER
I-540
N06°57'14.8"W
CONCRETE DRAIN
140
145
150

CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	SIDE	"W"	SQ. YDS.
141+16	145+25	RT. OF RAMP 3	6'-5"	428

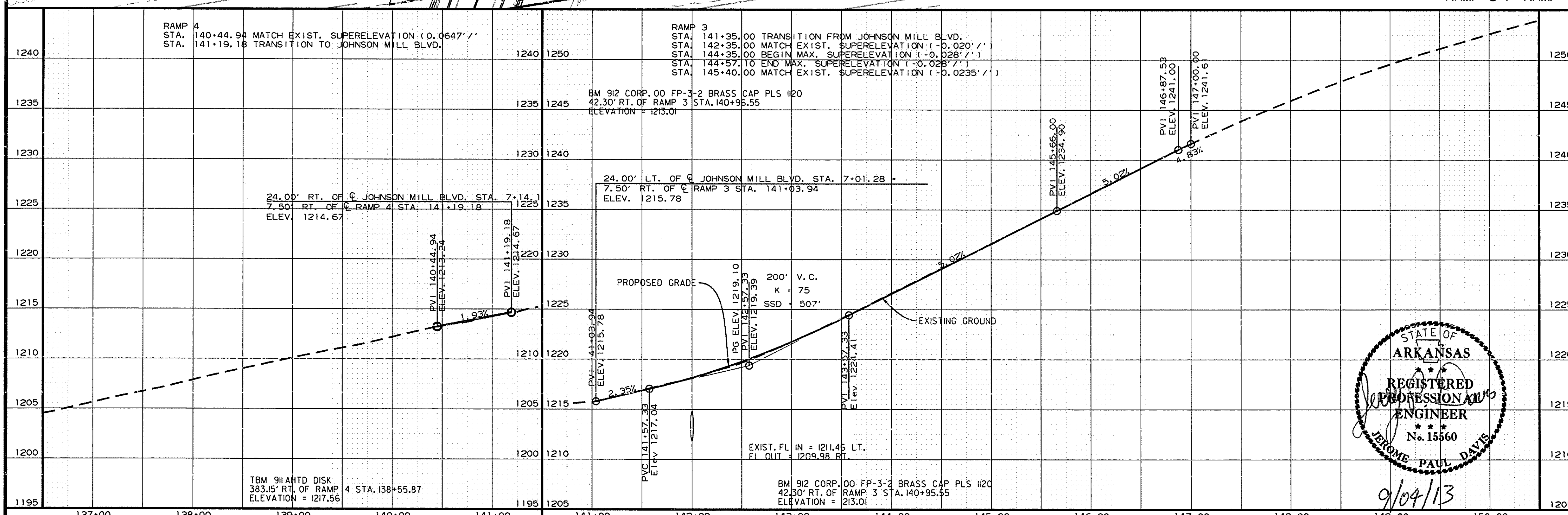
RETAIN CONCRETE DITCH PAVING (TYPE B) IN PLACE

STA.	STA.	SIDE	"W"
142+00	145+50	LT. OF RAMP 3	6'-0"
136+00	140+40	RT. OF RAMP 4	6'-0"

REMOVE & DISPOSE OF CONCRETE DITCH PAVING (TYPE B)

STA.	STA.	SIDE	"W"	SQ. YDS.
141+05	145+25	RT. OF RAMP 3	6'-0"	296

RAMP 3 / RAMP 4



RAMP 4
STA. 140+44.94 MATCH EXIST. SUPERELEVATION (0.0647'/')
STA. 141+19.18 TRANSITION TO JOHNSON MILL BLVD.
24.00' RT. OF ℄ JOHNSON MILL BLVD. STA. 7+14.1
7.50' RT. OF ℄ RAMP 4 STA. 141+19.18
ELEV. 1214.67
PVI 140+44.94 ELEV. 1213.24
PVI 141+19.18 ELEV. 1214.67
1.93%
TBM 911 AHTD DISK
383.15' RT. OF RAMP 4 STA. 138+55.87
ELEVATION = 1217.56
RAMP 3
STA. 141+35.00 TRANSITION FROM JOHNSON MILL BLVD.
STA. 142+35.00 MATCH EXIST. SUPERELEVATION (-0.020'/')
STA. 144+35.00 BEGIN MAX. SUPERELEVATION (-0.028'/')
STA. 144+57.10 END MAX. SUPERELEVATION (-0.028'/')
STA. 145+40.00 MATCH EXIST. SUPERELEVATION (-0.0235'/')
BM 912 CORP.00 FP-3-2 BRASS CAP PLS 1120
42.30' RT. OF RAMP 3 STA. 140+96.55
ELEVATION = 1213.01
24.00' LT. OF ℄ JOHNSON MILL BLVD. STA. 7+01.28 =
7.50' RT. OF ℄ RAMP 3 STA. 141+03.94
ELEV. 1215.78
PROPOSED GRADE
PG ELEV 1219.10
PVI 142+57.33
ELEV. 1219.39
200' V.C.
K = 75
SSD = 507'
EXISTING GROUND
PVI 141+03.94 ELEV. 1215.78
2.35%
PVC 141+57.33 Elev 1217.04
PVI 143+57.33 Elev 1224.41
5.02%
PVI 145+66.00 ELEV. 1234.90
PVI 146+87.53 ELEV. 1241.00
PVI 147+00.00 ELEV. 1241.6
4.83%
EXIST. FL IN = 1211.46 LT.
FL OUT = 1209.98 RT.
BM 912 CORP.00 FP-3-2 BRASS CAP PLS 1120
42.30' RT. OF RAMP 3 STA. 140+95.55
ELEVATION = 1213.01
137+00 138+00 139+00 140+00 141+00 142+00 143+00 144+00 145+00 146+00 147+00 148+00 149+00 150+00

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9/04/13

USER: jd5103
DESIGN FILE: G:\12\03302_Grthsprrd\TRANSP\dgn\p&p\BB0412 pp03 - Ramp3-4.dgn
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MODEL: PLAN AND PROFILE

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DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	37	97

(2) INTERCHANGE LAYOUT JOHNSON MILL BLVD./I-540

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 15560
JEROME PAUL DAVIS
9/04/13

NOTE:
DIMENSIONS ARE TO FACE OF CURB WHERE APPLICABLE.

N

75 0 75 150

STA. 6+99.96 ℄ CONST. JOHNSON MILL BLVD. =
STA. 140+81.10 ℄ CONST. RAMP 3
STA. 141+46.05 ℄ CONST. RAMP 4
Δ = 74°58' 25"

STA. 9+99.96 ℄ CONST. JOHNSON MILL BLVD. =
STA. 139+54.91 ℄ CONST. I-540
Δ = 119°16' 24"

STA. 13+50.01 ℄ CONST. JOHNSON MILL BLVD. =
STA. 138+11.80 ℄ CONST. RAMP 1
STA. 137+11.20 ℄ CONST. RAMP 2
Δ = 74°16' 31"

PROPOSED IMPROVEMENT BY OTHERS - JOB # 040619

END WORK AREA JOB BB0412 +41
BEGIN PROPOSED IMPROVEMENTS BY OTHERS JOB # 040619

BEGIN WORK AREA JOB BB0412 3+75

POB 0+12.70

POE 146+53.78

POB 132+42.10

CURVE DATA											
NO.	P.I.	P.C.	P.T.	RADIUS	DELTA	D	T	L	e	L.S.	REMARKS
C1	133+67.61	132+55.10	134+80.10	5729.58'	2°15'00.0"	1° 00' 00"	112.51'	225.00'	NC	NA	EXIST. RAMP 1
C2	140+78.59	139+23.60	142+21.68	440.74'	38°45'00.0"	13° 00' 00"	154.99'	298.08'	0.097 FT/FT	200'	EXIST. RAMP 2
C3	143+82.18	142+57.10	145+07.10	2864.79'	5°00'00.0"	2° 00' 00"	125.08'	250.00'	0.028 FT/FT	200'	RAMP 3
C4	138+46.74	137+01.90	139+83.15	477.46'	33°45'00.0"	12° 00' 00"	144.84'	281.25'	0.090 FT/FT	200'	EXIST. RAMP 4
C5	4+06.34	2+92.60	5+17.96	674.07'	19°09'20.0"	8° 30' 00"	113.74'	225.36'	0.074 FT/FT	337.5'	EXIST. JOHNSON MILL BLVD.
C6	15+21.63	14+37.40	16+05.47	1000.00'	9°37'46.3"	5° 43' 47"	84.23'	168.07'	0.029 FT/FT	240'	MATCH JOB 040619 IMPROVEMENTS

INTERCHANGE LAYOUT
JOHNSON MILL BLVD./I-540

USER: jd5103
DESIGN FILE: G:\2103302_GrtheSprRd\TRANSP\dgn\D&P\BB0412 Int Layout.dgn
PLOTTED: 9/3/2013 18:29
SCALE: 150ft
MODEL: INTERCHANGE LAYOUT

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	38	97

(2) TRAFFIC SIGNAL NOTES

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 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 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.

TRAFFIC SIGNAL NOTES: (CONT'D).

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 DETECTORS" 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 DISPLAYS TO FIELD WIRING SHALL UTILIZE AN APPROVED TERMINAL STRIP TO BE INSTALLED IN EACH POLE BEHIND THE HAND-HOLE COVER AT THE BASE OF POLE. THE TERMINAL STRIP SHALL PROVIDE PROTECTION TO PREVENT EXPOSURE TO THE PUBLIC IN THE EVENT THAT THE 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 IMSA 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).

24. CONTRACTOR SHALL PROVIDE CONTROLLER, MASTER CONTROLLER, MASTER RADIO AND LOCAL RADIO TO THE DEPARTMENT'S TRAFFIC ENGINEERING STAFF IN THE MAINTENANCE DIVISION FOR SETUP AND TIMING BEFORE IT IS PLACED INTO OPERATION.

SPECIAL NOTES REGARDING 48th STREET:

A TRAFFIC TIMER UNIT AND A LOCAL RADIO WITH ANTENNA SHALL BE SUPPLIED AND INSTALLED AT THE INTERSECTION OF JOHNSON MILL BOULEVARD WITH 48TH STREET. THIS INTERSECTION IS APPROXIMATELY 600 FEET EAST OF THE INTERSECTION OF JOHNSON MILL BOULEVARD WITH THE NORTHBOUND RAMPS (RAMP 1 AND RAMP 2). THE EXISTING TIMER UNIT IN THE EXISTING CONTROLLER CABINET IS TO BE REPLACED, AND A LOCAL RADIO UNIT IS TO BE INSTALLED. THE ANTENNA IS TO BE ATTACHED TO THE POLE NEAREST THE CONTROLLER. THE CONTRACTOR MUST DOCUMENT ANY DEFICIENCIES IN THE TRAFFIC SIGNAL AT THIS INTERSECTION BEFORE BEGINNING WORK AT THIS LOCATION. THE REMOVAL OF THE EXISTING TIMER UNIT AND ANY ADJUSTMENTS NEEDED IN THE CABINET TO ACCOMMODATE THE RADIO UNIT ARE TO BE INCLUDED IN THE PRICES BID FOR THESE ITEMS. IF NO SPARE CONDUIT IS AVAILABLE FOR THE ANTENNA CABLE, THEN A NEW 2-INCH NON-METALLIC CONDUIT IS TO BE INSTALLED FOR THIS PURPOSE, WITH A CONNECTION TO THE CONTROLLER CABINET AND THE POLE ACCORDING TO AHTD STANDARD DRAWINGS, TO BE PAID AT THE PRICES BID FOR THE TRAFFIC SIGNAL CONTROLLER (MODIFICATION). THIS INTERSECTION MUST BE OPERATING PROPERLY AND IN COMMUNICATION WITH THE MASTER BEFORE THE TRAFFIC SIGNAL SYSTEM WILL BE ACCEPTED.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11991
ROBERT E. McNOR JR.
9/4/13

LOCATION: JOHNSON MILL BLVD. RAMPS
CITY: JOHNSON
COUNTY: WASHINGTON
DISTRICT: 4 SCALE: N/A DRAWN BY: rch

USER: 34251
DESIGN FILE: R:\64767J\TRAFFIC SIGNALS\JOHNSON MILL\JOHNSON MILL SIGNAL_notesht.DGN
PLOTTED: 9/04/13 10:08 SCALE: N/A MODEL: JOHNSON MILL SIGNAL

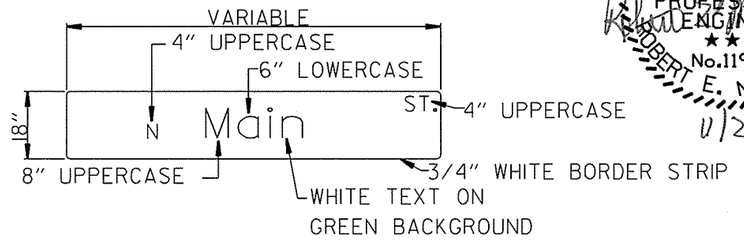
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
11-25-13				6	ARK.			
				JOB NO.	BB0412		39	97
				(2)	TRAFFIC SIGNAL QUANTITIES			

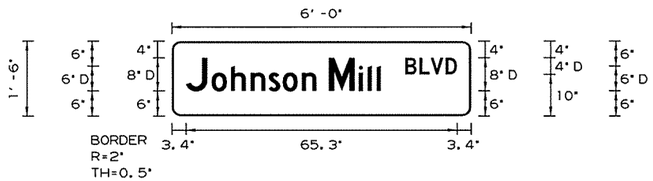
TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	RAMPS 3 & 4	RAMPS 1 & 2	48TH STREET	TOTAL QUANTITY	UNIT
SP & 701	SYSTEM LOCAL CONTROLLER TS 2 -TYPE 2 (8 PHASES)	1	1		2	EACH
SP & 701	ON-STREET MASTER CONTROLLER		1		1	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	6	6		12	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	2	1		3	EACH
708	TRAFFIC SIGNAL CABLE (5C/ 14 A.W.G.)	126	180		306	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/ 14 A.W.G.)	217	183		400	LIN. FT.
708	TRAFFIC SIGNAL CABLE (12C/ 14 A.W.G.)	40	40		80	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/ 14 A.W.G.)	179	186		365	LIN. FT.
709	GALVANIZED STEEL CONDUIT (1.25")	26	21	10	57	LIN. FT.
710	NON-METALLIC CONDUIT (2")	532	100	20	652	LIN. FT.
710	NON-METALLIC CONDUIT (3")	162	224		386	LIN. FT.
SP, SS, & 711	CONCRETE PULL BOX (TYPE 1 HD)	1	1		2	EACH
SP, SS, & 711	CONCRETE PULL BOX (TYPE 2 HD)	2	3		5	EACH
SP, SS, & 711	CONCRETE PULL BOX (TYPE 3 HD)	1	1		2	EACH
SP	ANTENNA SUPPORT (SHOE BASE, 50' HT.)		1		1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (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 (30' - 50')	1			1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (20' - 64')		1		1	EACH
SP	COMMUNICATION CABLE, FIBER (6 CHANNEL)	525	58		583	LIN. FT.
733	VIDEO CABLE	362	390		752	LIN. FT.
SP & 733	VIDEO DETECTOR (CLR)	3	3	1*	7	EACH
SP & 733	VIDEO EDGE CARD EXTENDER	1	1		2	EACH
733	VIDEO MONITOR (CLR)	1	1		2	EACH
SP & 733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	2	2	1*	5	EACH
SP & 733	VEHICLE DETECTOR RACK (16 CHANNEL)	1	1		2	EACH
SP	ANTENNA CABLE (TYPE 6)		75		75	LIN. FT.
SP	ELECTRICAL CONDUCTORS FOR LUMINARIES	578	592		1170	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/ 8 A.W.G., EGC)	220	284		504	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/ 6 A.W.G., EGC)	20	20		40	LIN. FT.
SP	MODEM, HARDENED (33.6 K BAUD)		1		1	EACH
SP	MASTER RADIO WITH ANTENNA		1		1	EACH
SP	LOCAL RADIO WITH ANTENNA			1	1	EACH
SP	TRAFFIC TIMER UNIT			1	1	EACH
SP	LUMINARIES ASSEMBLY	2	2		4	EACH
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1	1		2	EACH
SP	18" STREET NAME SIGN	1	1		2	EACH
SP	TRAFFIC SIGNAL CONTROLLER (MODIFICATION)			1	1	EACH

* ONE SPARE VIDEO DETECTOR AND VIDEO PROCESSOR SHALL BE SUPPLIED TO THE CITY OF JOHNSON FOR FUTURE USE.

OVERHEAD STREET NAME MARKER STANDARD MAST ARM MOUNTED





Panel Style: street sign.ssi
M.U.T.C.D.: 2009 Edition

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 NEAR SIDE 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.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11991
ROBERT E. McNORY, JR.
11/25/13

LOCATION: JOHNSON MILL BLVD. RAMPS
CITY: JOHNSON
COUNTY: WASHINGTON
DISTRICT: 4 SCALE: N/A DRAWN BY: rch

3425I
DESIGN R:\64767J\TRAFFIC SIGNALS\JOHNSON MILL\JOHNSON MILL SIGNAL.Dwg=ST+.DGN
PLOTTED: 11/25/13 15:00 SCALE: N/A MODEL: JOHNSON MILL SIGNAL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	40	97

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11991
ROBERT E. McNOR, JR.
9/4/13

N

RAMP 3

I-40

EXISTING ROW

JOHNSON MILL BLVD.

P.I. 4+06.34

P.C. 142+57.10

P.C. 2+92.60

P.T. 5+17.96

P.T. 139+83.15

VZ 11 COMB.

VZ 41 COMB.

VIRTUAL 6'X6' PULSE ZONES 85' BEHIND STOP LINE

VIRTUAL 6'X50' PRESENCE ZONES Vz 42 AND 72

VIRTUAL 6'X50' PRESENCE ZONE Vz 12

Vz 21 COMB.

VIRTUAL 6'X6' PULSE ZONE

VIRTUAL 6'X6' PULSE ZONES 85' BEHIND STOP LINE

Vz 22A

Vz 22B

VIRTUAL DETECTORS (TYPICAL)

40'

50'

30'

Vz 62

Vz 11 COMB.

Vz 61 COMB.

VIRTUAL 6'X6' PULSE ZONE

VIRTUAL 6'X6' PULSE ZONES 85' BEHIND STOP LINE

Vz 61B COMB.

Vz 61A COMB.

VIRTUAL 6'X6' PULSE ZONES (TYPICAL)

SERVICE POLE

SERVICE POINT AND MAIN BREAKER BY CONTRACTOR WITHIN 10 FEET OF CONTROLLER.

NOTE:
A GAS LINE THROUGH THE INTERCHANGE WAS RELOCATED SUBSEQUENT TO PROJECT SURVEYS. CONTRACTOR MUST VERIFY UTILITY LOCATIONS IN THE FIELD BEFORE BEGINNING WORK.

DETECTOR SPACING CHART

JOHNSON MILL BLVD. & RAMPS 3 & 4		
POSTED SPEED	DIST. FROM LEAD ZONE	STOP LINE LAG ZONE
JOHNSON MILL BLVD. - 45 MPH	330'	115'
RAMPS 3 & 4 - 45 MPH	330'	115'

0' 30' 60'
SCALE IN FEET

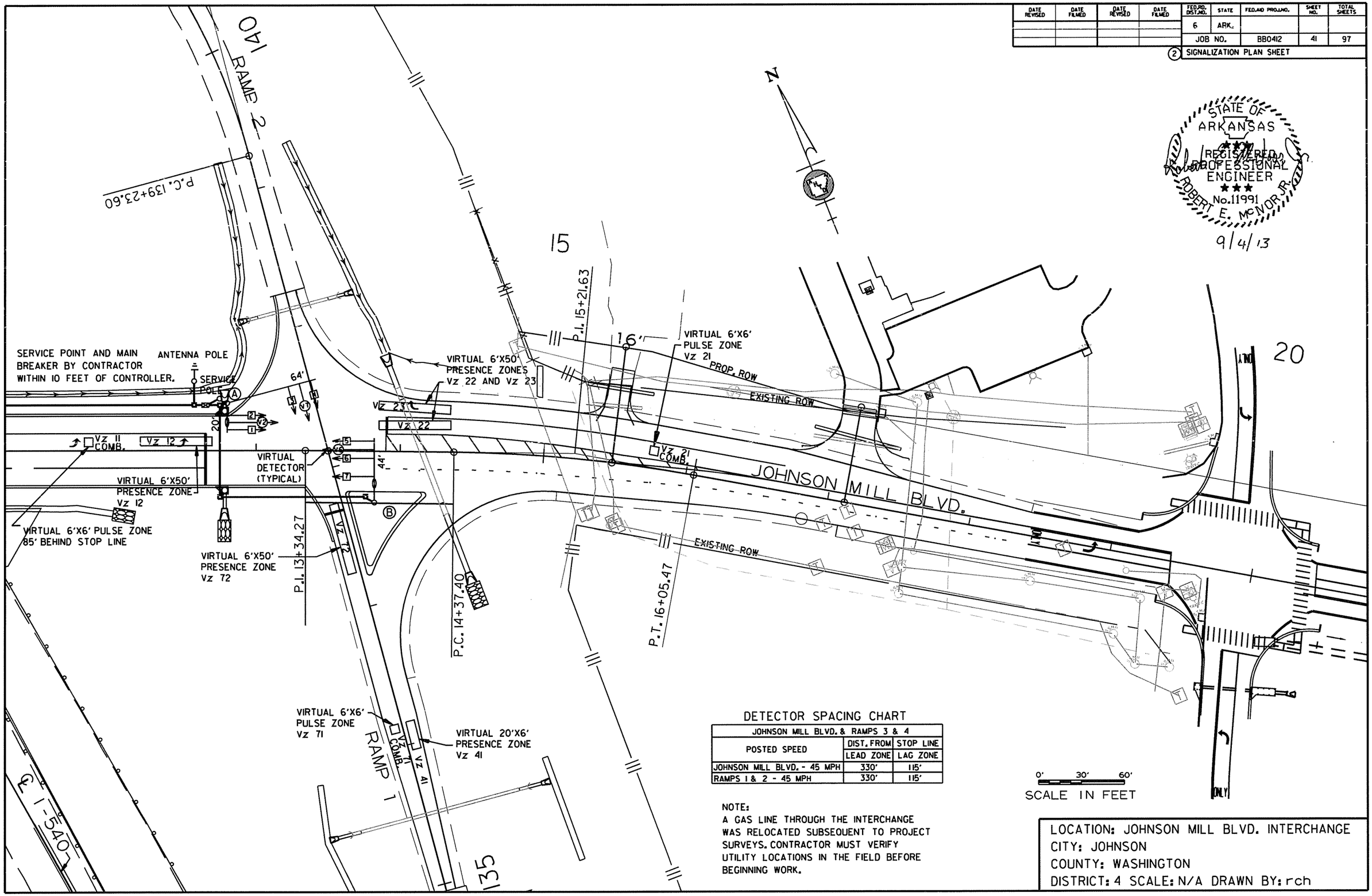
LOCATION: JOHNSON MILL BLVD. INTERCHANGE
CITY: JOHNSON
COUNTY: WASHINGTON
DISTRICT: 4 SCALE: N/A DRAWN BY: rch

USER: 3425I
DESIGN FILE: R:\647673\TRAFFIC SIGNALS\JOHNSON MILL\JOHNSON MILL INTERCHANGE.I.DGN
PLOTTED: 9/04/13 10:08 SCALE: 1:30 MODEL: JOHNSON MILL SIGNAL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	41	97

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11991
ROBERT E. McNOR JR.
9/4/13



DETECTOR SPACING CHART

JOHNSON MILL BLVD. & RAMPS 3 & 4		
POSTED SPEED	DIST. FROM LEAD ZONE	STOP LINE LAG ZONE
JOHNSON MILL BLVD. - 45 MPH	330'	115'
RAMPS 1 & 2 - 45 MPH	330'	115'

NOTE:
A GAS LINE THROUGH THE INTERCHANGE WAS RELOCATED SUBSEQUENT TO PROJECT SURVEYS. CONTRACTOR MUST VERIFY UTILITY LOCATIONS IN THE FIELD BEFORE BEGINNING WORK.

0' 30' 60'
SCALE IN FEET

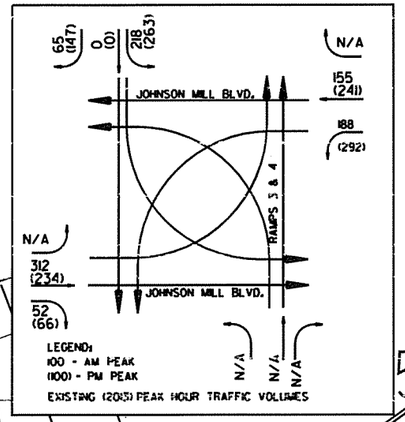
LOCATION: JOHNSON MILL BLVD. INTERCHANGE
CITY: JOHNSON
COUNTY: WASHINGTON
DISTRICT: 4 SCALE: N/A DRAWN BY: rch

USER: 34251
DESIGN FILE: R:\647673\TRAFFIC SIGNALS\JOHNSON MILL\JOHNSON MILL INTERCHANGE.DGN
PLOTTED: 9/04/13 10:40 SCALE: 1:30 MODEL: JOHNSON MILL SIGNAL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	42	97

SIGNALIZATION PLAN SHEET

TRAFFIC FLOW DIAGRAM



JOHNSON MILL BLVD. PHASING DIAGRAM

NOTE:
A GAS LINE THROUGH THE INTERCHANGE WAS RELOCATED SUBSEQUENT TO PROJECT SURVEYS. CONTRACTOR MUST VERIFY UTILITY LOCATIONS IN THE FIELD BEFORE BEGINING WORK.

NOTES:

1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS.
3. SEE TRAFFIC SIGNAL NOTES FOR CONSTRUCTION STAGING INFORMATION.

JOHNSON MILL BLVD. SIGNAL FACES 12" LENSES

JOHNSON MILL BLVD. POLE CHART

POLE	MAST ARM(S) LENGTH	MAST ARM(S) ORIENTATION ANGLE FROM HAND HOLE (CLOCKWISE)	VERTICAL SHAFT LENGTH	LUM. ARM LENGTH	LUM. ARM(S) ORIENTATION ANGLE FROM HAND HOLE (CLOCKWISE)	STATION JOHNSON MILL BLVD.	OFFSET	NORTHING	EASTING
A	40'	180 DEGREES	35'	15'	180 DEGREES	6+66	43' LT.	664,436.87	667,590.15
B	30' & 50'	195 & 90 DEGREES	35'	15'	195 DEGREES	7+59	33' RT.	664,331.84	667,647.19

DESIGN PARAMETERS

POSTED SPEED LIMIT:
35 MPH EAST AND WEST APPROACH
45 MPH NORTH AND SOUTH APPROACH
NO BUS STOPS
NO RAILROAD TRACKS
NO EXISTING INTERCONNECTIONS RADIO
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

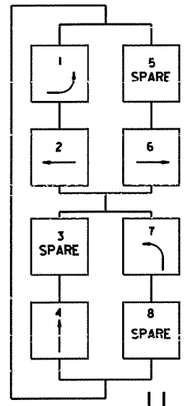
LOCATION: JOHNSON MILL BLVD. RAMPS 3 & 4
CITY: JOHNSON
COUNTY: WASHINGTON
DISTRICT: 4 SCALE: N/A DRAWN BY: rch

USER: 3425I
DESIGN FILE: R:\647673\TRAFFIC SIGNALS\JOHNSON MILL\JOHNSON MILL SIGNAL.Rds.3&4.DGN
PLOTTED: 9/04/13 10:04 SCALE: 1:20 MODEL: JOHNSON MILL SIGNAL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	43	97

(2) SIGNALIZATION PLAN SHEET

JOHNSON MILL BLVD. PHASING DIAGRAM



DESIGN PARAMETERS

POSTED SPEED LIMIT:
35 MPH EAST AND WEST APPROACH
45 MPH NORTH AND SOUTH APPROACH
NO BUS STOPS
NO RAILROAD TRACKS
NO EXISTING INTERCONNECTIONS RADIO
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

P.C. 139+23.60

℄ RAMP 2

N

EXISTING ROW

15

P.I. 15+21.63

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11991
ROBERT E. McNOR JR.
9/4/13

2" CONDUIT WITH 6-MMFO

TYPE I PULLBOX

SERVICE POINT AND MAIN BREAKER BY CONTRACTOR WITHIN 10 FEET OF CONTROLLER.

ANTENNA POLE

SERVICE POLE

A

64'

℄ JOHNSON MILL BLVD.

TYPE B PULLBOX

20'

Vz 11 COMB.

Vz 12

VIRTUAL 6'X6' PULSE ZONE 85' BEHIND STOP LINE

VIRTUAL 6'X50' PRESENCE ZONE Vz 12

Vz 61B COMB.

Vz 61A COMB.

VIRTUAL 6'X6' PULSE ZONES (TYPICAL)

VIRTUAL DETECTOR (TYPICAL)

44'

VIRTUAL 6'X50' PRESENCE ZONES Vz 22 AND Vz 23

Vz 23

Vz 22

EXISTING ROW

Vz 21 COMB.

VIRTUAL 6'X6' PULSE ZONE Vz 21

EXISTING ROW

B

Vz 72

VIRTUAL 6'X50' PRESENCE ZONE Vz 72

P.I. 13+34.27

℄ RAMP 1

P.C. 14+37.40

P.T. 16+05.47

VIRTUAL 20'X6' PRESENCE-ONLY DETECTION ZONE Vz 41

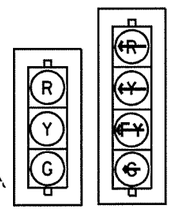
Vz 41 COMB.

Vz 71 COMB.

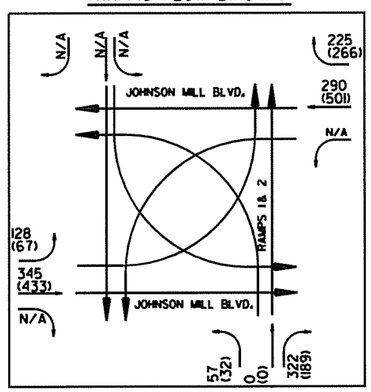
VIRTUAL 6'X6' PULSE ZONE Vz 71

℄ I-540

JOHNSON MILL BLVD. SIGNAL FACES
12" LENSES



TRAFFIC FLOW DIAGRAM



NOTE:
A GAS LINE THROUGH THE INTERCHANGE WAS RELOCATED SUBSEQUENT TO PROJECT SURVEYS. CONTRACTOR MUST VERIFY UTILITY LOCATIONS IN THE FIELD BEFORE BEGINING WORK.

NOTES:
1. ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
2. REFER TO SPECIAL PROVISIONS FOR DETAILS ON NEW REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS.
3. SEE TRAFFIC SIGNAL NOTES FOR CONSTRUCTION STAGING INFORMATION.

JOHNSON MILL BLVD. POLE CHART

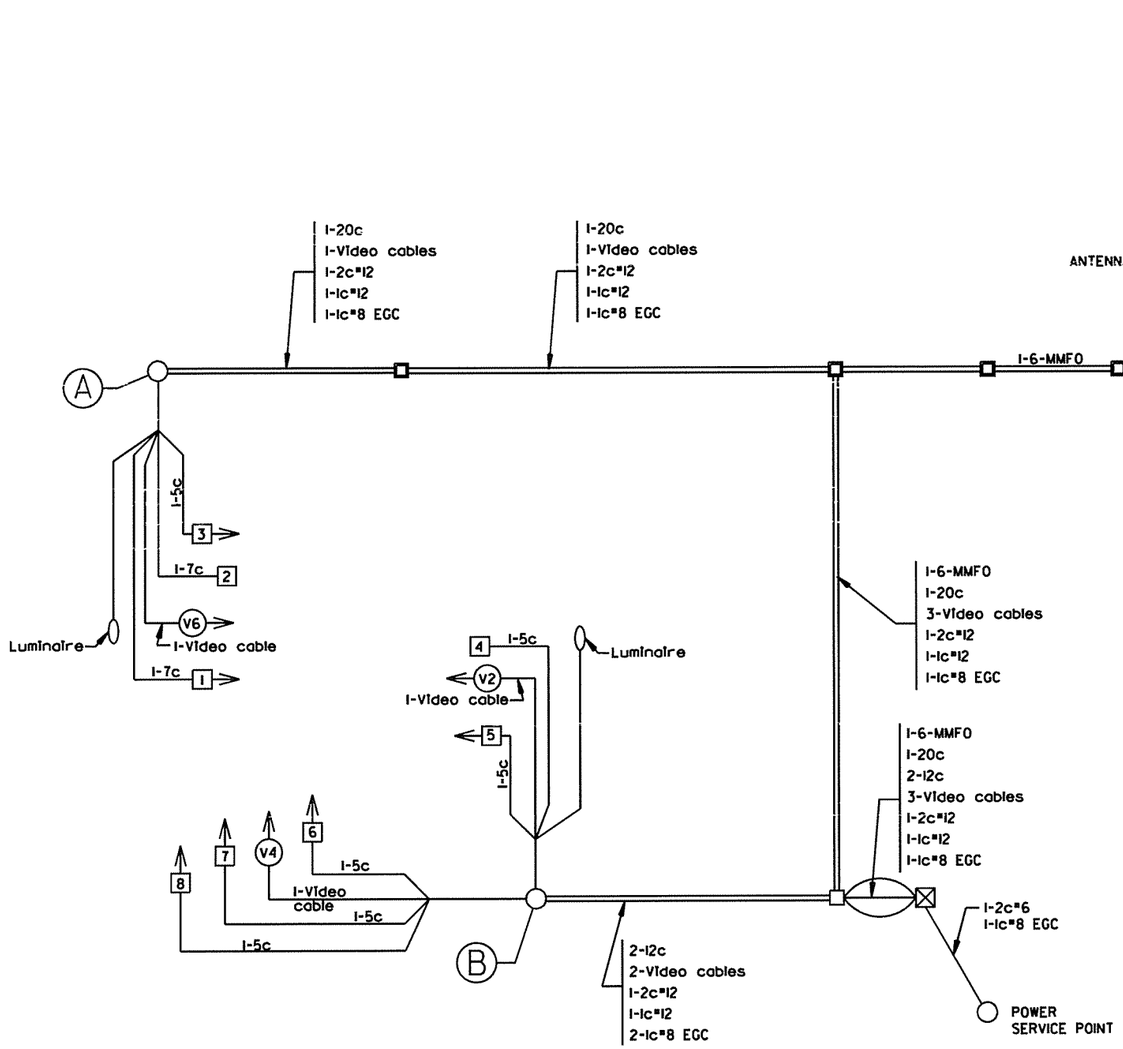
POLE	MAST ARM(S) LENGTH	MAST ARM(S) ORIENTATION ANGLE FROM HAND HOLE (CLOCKWISE)	VERTICAL SHAFT LENGTH	LUM. ARM LENGTH	LUM. ARM(S) ORIENTATION ANGLE FROM HAND HOLE (CLOCKWISE)	STATION JOHNSON MILL BLVD.	OFFSET	NORTHING	EASTING
A	20'&64'	180 & 75 DEGREES	35'	15'	180 DEGREES	12+79.56	33' LT.	664,194.75	668,155.61
B	44'	180 DEGREES	35'	15'	180 DEGREES	13+81.92	36' RT.	664,091.96	668,222.05

SCALE IN FEET
0 20' 40'

LOCATION: JOHNSON MILL BLVD. RAMPS 1 & 2
CITY: JOHNSON
COUNTY: WASHINGTON
DISTRICT: 4 SCALE: 20:1 DRAWN BY: rch

USER: 34251
DESIGN FILE: R:\647673\TRAFFIC SIGNALS\JOHNSON MILL\JOHNSON MILL SIGNAL.Rpb.182.DGN
PLOTTED: 9/04/13 15:03
SCALE: 1:20
MODEL: JOHNSON MILL SIGNAL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	44	97
				(2)	SIGNALIZATION PLAN SHEET			



WIRING DIAGRAM
RAMPS 3 AND 4
AT JOHNSON MILL BLVD.

WIRING DIAGRAM
RAMPS 1 AND 2
AT JOHNSON MILL BLVD.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11991
ROBERT E. McNOR JR.
9/4/13

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.

LOCATION: JOHNSON MILL BLVD. INTERCHANGE
CITY: JOHNSON
COUNTY: WASHINGTON
DISTRICT: 4 SCALE: N/A DRAWN BY: rch

USER: 3425I
DESIGN FILE: R:\TRAFFIC SIGNAL\JOHNSON MILL WIRE DIAGRAM.DGN
PLOTTED: 9/04/13 10:44
SCALE: 20:1
MODEL: JOHNSON MILL SIGNAL

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	BB0412		45	97
				(2)	SIGNALIZATION PLAN SHEET			

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.11991
ROBERT E. McNOR JR.
9/4/13

INTERVAL CHART

SIGNAL FACES	JOHNSON MILL BLVD. RAMPS 3 AND 4						FLASH
	1+6	CLR.	2+6	CLR.	4+7	CLR.	SEQ.
1	~~<G~~	•	~~<FY~~	•••	~~<R~~	~~<R~~	~~<R~~
2&3	G	••	G	••	R	R	R
4&5	R	R	G	••	R	R	R
6	~~<R~~	~~<R~~	~~<R~~	~~<R~~	~~<G~~	•	~~<R~~
7	R	R	R	R	~~<G~~ G	••	R
8	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

INTERVAL CHART

SIGNAL FACES	JOHNSON MILL BLVD. RAMPS 1 AND 2						FLASH
	1+6	CLR.	2+6	CLR.	4+7	CLR.	SEQ.
6&7	G	••	G	••	R	R	R
3&4	R	R	R	R	G	•	R
5	~~<G~~	•	~~<FY~~	•••	~~<R~~	~~<R~~	~~<R~~
1&2	R	R	G	••	R	R	R

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

DETECTOR SYSTEM DESCRIPTION: JOB BB0412

JOHNSON MILL BLVD. RAMPS 3 AND 4 DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS			COMMENTS	TUBE LENGTHS
							LOCAL		MASTER SYSTEM DETECTOR NUMBERS		
DET. ID#	LOCATION DIRECTION	TYPE	DET.#	CAB. TRM #	AMP. CHN. #	CON. INP. #	PHS	SYSTEM DET.#			
Vz11	WB LEFT TURN FAR	COMB.			1	V9	1	1		CAMERA V6	72"
Vz12	WB LEFT TURN	LOCAL			2	V1	1			CAMERA V6	72"
Vz21	EB ADVANCE	COMB.			5	V10	2	2		CAMERA V2	72"
Vz22 A&B	EB NEAR	LOCAL			6	V2	2			CAMERA V2	72"
Vz41	SB ADVANCE	COMB.			9	V12	4	4		CAMERA V4	72"
Vz42	SB NEAR	LOCAL			10	V4	4			CAMERA V4	72"
Vz61	WB ADVANCE	COMB.			3	V14	6	6		CAMERA V6	72"
Vz62	WB NEAR	LOCAL			4	V6	6			CAMERA V6	72"
Vz71 A&B	SB LEFT TURN FAR	COMB.			11	V15	7	7		CAMERA V4	72"
Vz72 A&B	SB LEFT TURN	LOCAL			12	V7	7			CAMERA V4	72"

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

DETECTOR SYSTEM DESCRIPTION: JOB BB0412

JOHNSON MILL BLVD. RAMPS 1 AND 2 DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS			COMMENTS	TUBE LENGTHS
							LOCAL		MASTER SYSTEM DETECTOR NUMBERS		
DET. ID#	LOCATION DIRECTION	TYPE	DET.#	CAB. TRM #	AMP. CHN. #	CON. INP. #	PHS	SYSTEM DET.#			
Vz11	EB LEFT TURN FAR	COMB.			3	V9	1	1		CAMERA V6	72"
Vz12	EB LEFT TURN	LOCAL			4	V1	1			CAMERA V6	72"
Vz21	WB ADVANCE	COMB.			5	V10	2	2		CAMERA V2	72"
Vz22	WB NEAR	LOCAL			6	V2	2			CAMERA V2	72"
Vz23	WB RIGHT TURN	LOCAL			7	V5	2			CAMERA V2	72"
Vz41	NB SPECIAL	COMB.			11	V16	4	4		CAMERA V7	72"
Vz61	EB ADVANCE	LOCAL			1	V14	6	6		CAMERA V6	72"
Vz71	NB ADVANCE	COMB.			9	V15	7	7		CAMERA V7	72"
Vz72	NB NEAR	LOCAL			10	V7	7			CAMERA V7	72"

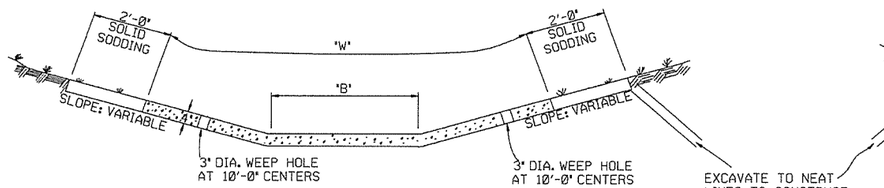
CONTROLLER INPUT ABBREVIATIONS:
V = VEHICULAR INPUT
D = SYSTEM OR AUXILIARY INPUT
P = PEDESTRIAN INPUT

NOTE: USE VIRTUAL ZONE 41 TO CALL PHASE 4+7 IF THE NB RIGHT TURN QUEUE EXTENDS TO THE ZONE. SET FOR PRESENCE-ONLY, WITH SIX-SECOND DELAY.

LOCATION: JOHNSON MILL BLVD. RAMPS 1- 4
CITY: JOHNSON
COUNTY: WASHINGTON
DISTRICT: 4 SCALE: N/A DRAWN BY: rch

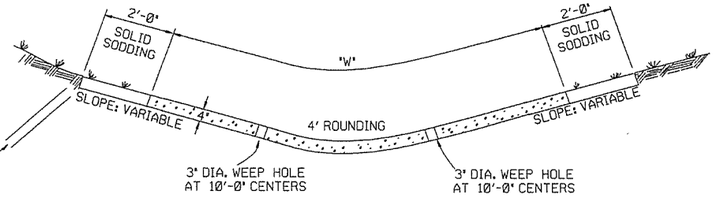
USER: 3425I
DESIGN FILE: R:\TRAFFIC SIGNALS\JOHNSON MILL\JOHNSON MILL SIGNAL INTERVAL.DGN
PLOTTED: 9/04/13 10:23 SCALE: N/A MODEL: JOHNSON MILL SIGNAL

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



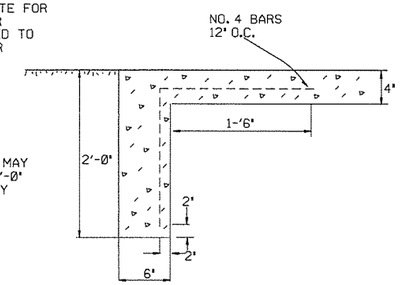
TYPE A

REFER TO TABULATION OF QUANTITIES FOR 'W' DIMENSIONS



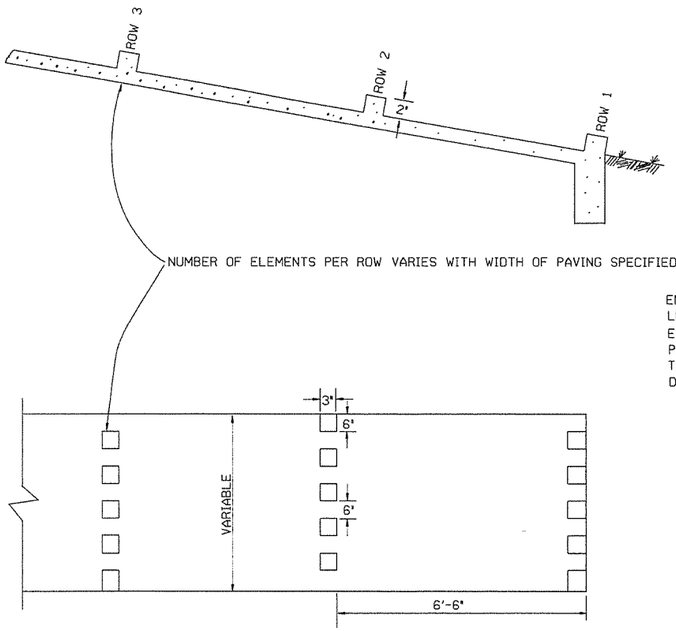
TYPE B

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



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.

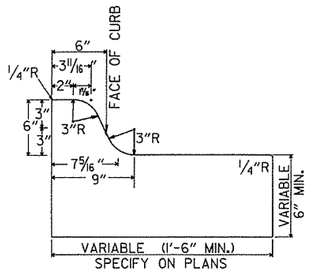
1" WIDE TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE DITCH PAVING AT 45' INTERVALS. THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH AASHTO M213.

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

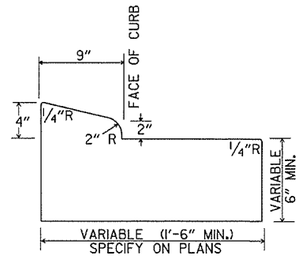
ARKANSAS STATE HIGHWAY COMMISSION

CONCRETE DITCH PAVING

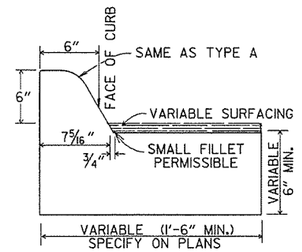
STANDARD DRAWING CDP-1



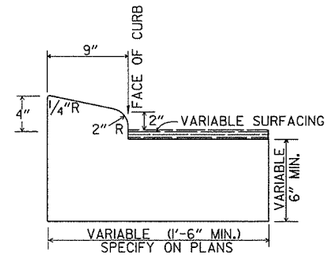
TYPE A



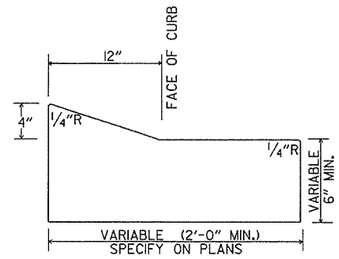
TYPE B-1



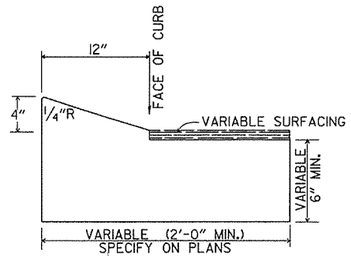
TYPE C



TYPE B-2

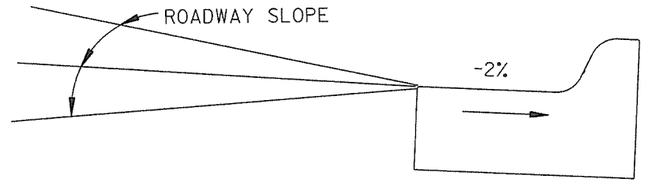


TYPE E-1



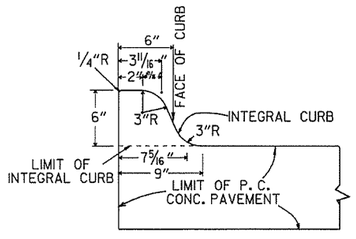
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

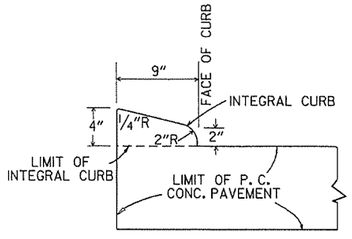


DETAIL OF GUTTER SLOPE

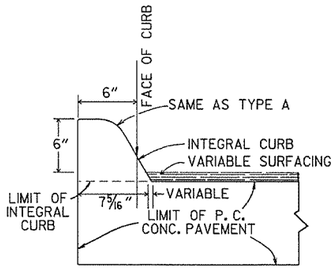
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

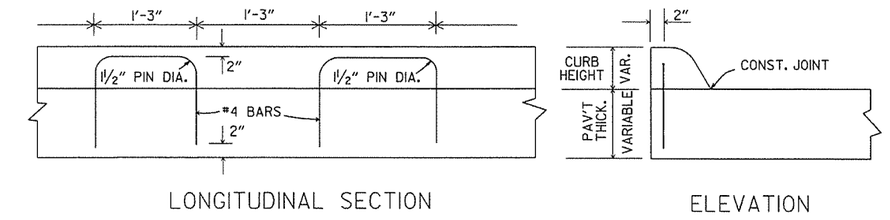


TYPE B

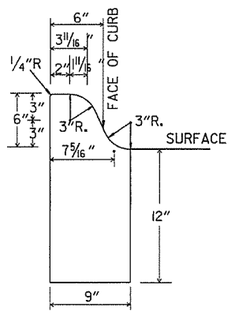


TYPE C

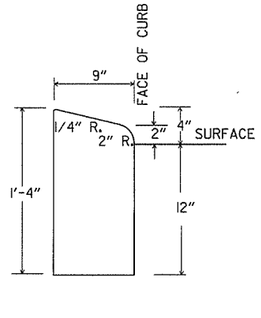
INTEGRAL CURB



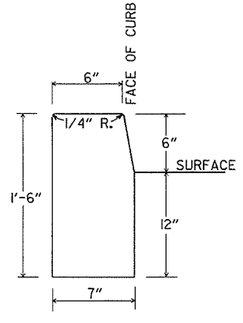
ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



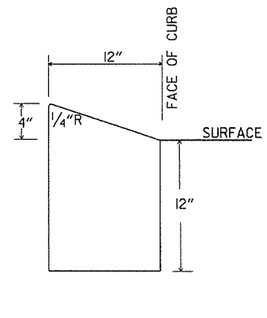
TYPE A



TYPE B

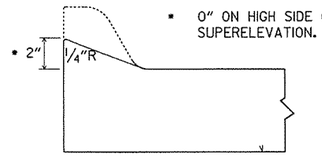


TYPE D



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.

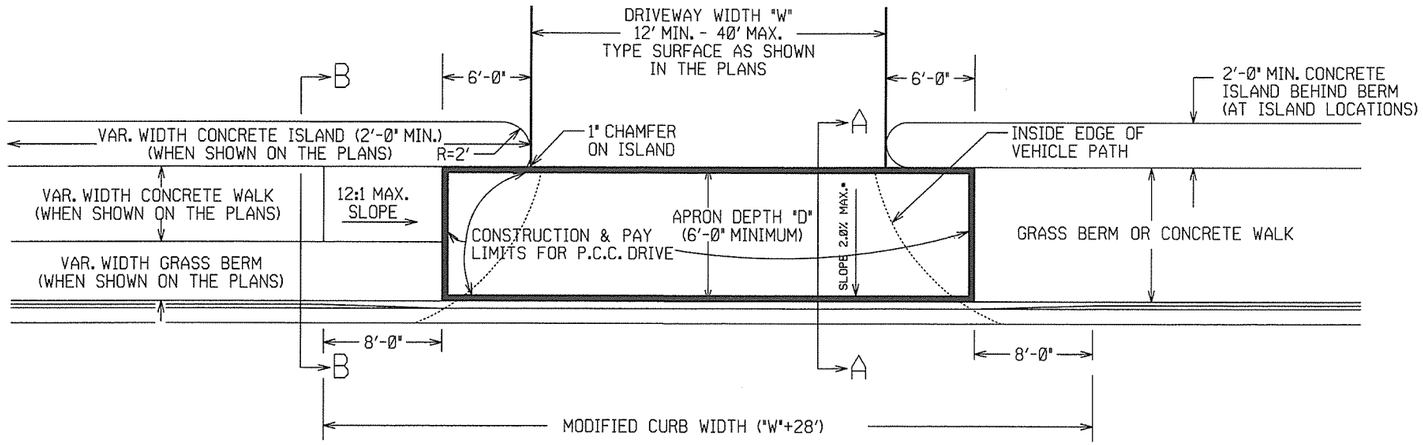
DETAILS OF MODIFIED CURB

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

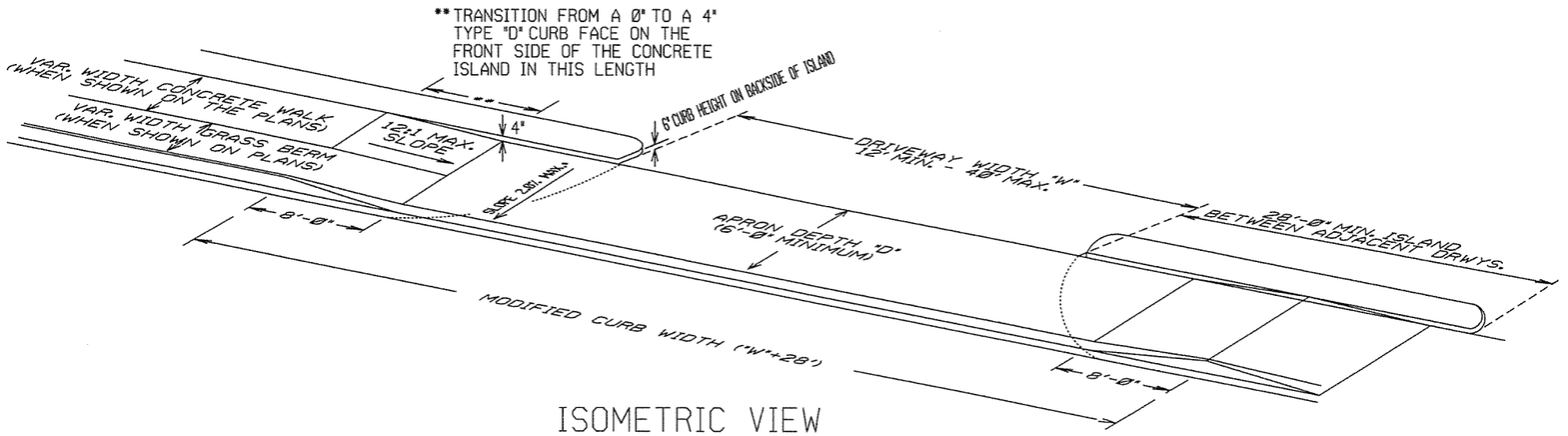
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

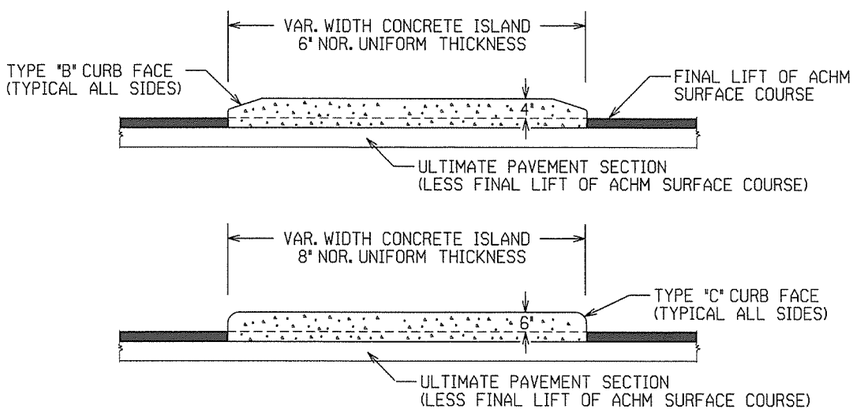
STANDARD DRAWING CG-1



PLAN VIEW

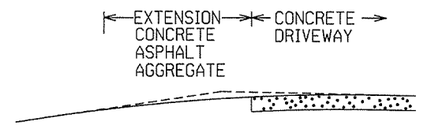


ISOMETRIC VIEW



CURBED ISLANDS FOR CHANNELIZATION

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".



EXTENSION TYPICAL SECTIONS

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

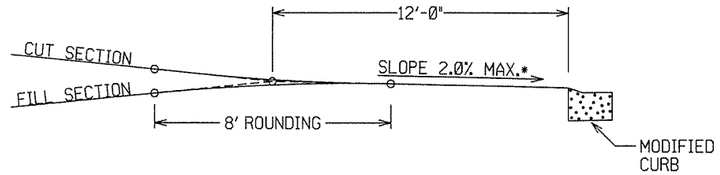
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE.(1") OR
4" ACHM BASE COURSE (1-1/2")

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

4: AGGREGATE - 6" AGGREGATE BASE COURSE

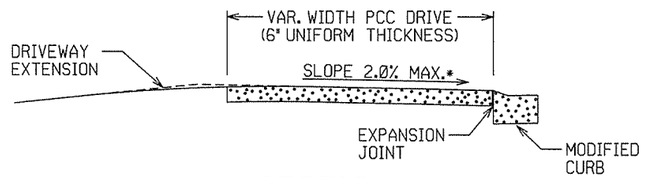
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

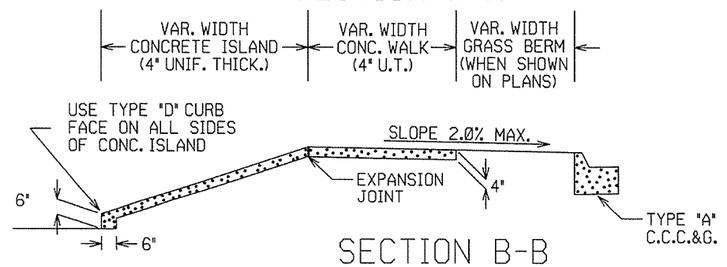


DRIVEWAY VERTICAL ALIGNMENT DETAILS

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



SECTION A-A



SECTION B-B

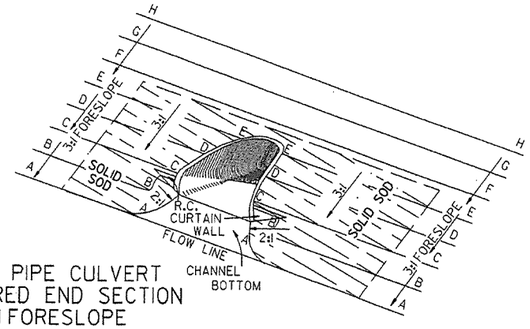
CURBED ISLAND BEHIND WALK

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

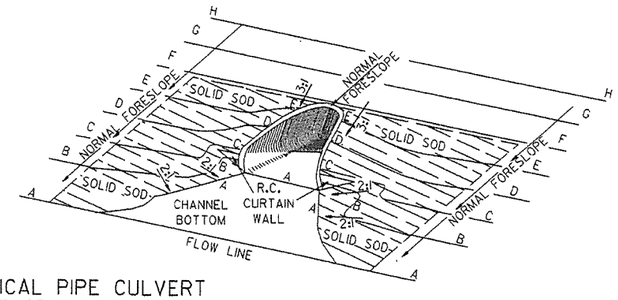
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DRIVEWAYS & ISLANDS

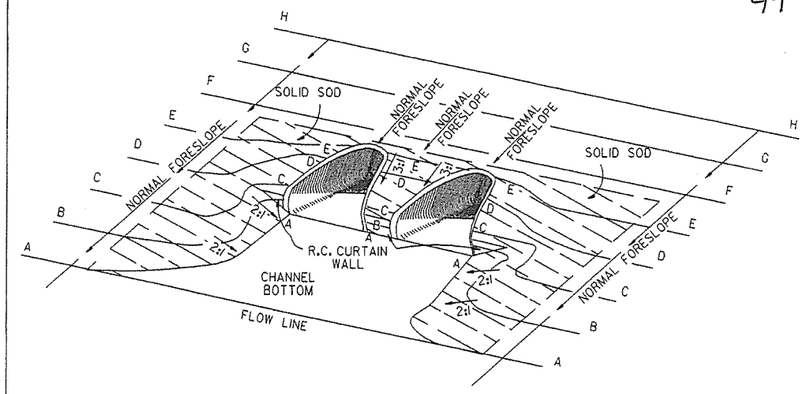
STANDARD DRAWING DR-1



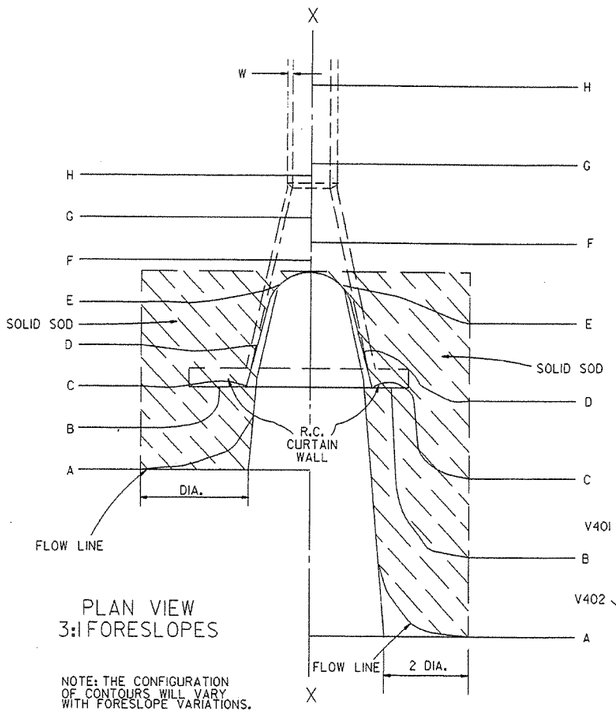
TYPICAL PIPE CULVERT
WITH FLARED END SECTION
& 3:1 FORESLOPE



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

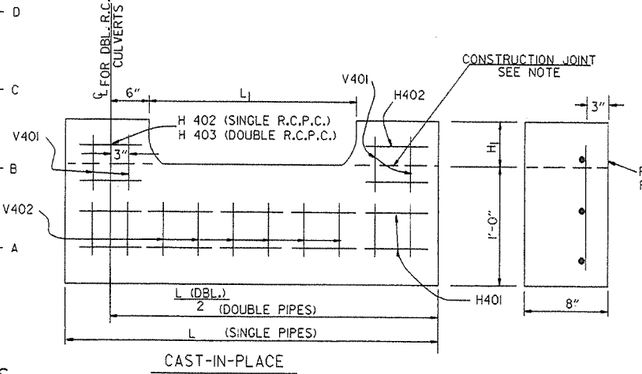
NOTE: THE CONFIGURATION OF CONTOURS WILL VARY WITH FORESLOPE VARIATIONS.

PLAN VIEW
FLATTENED FORESLOPES

R.C. CURTAIN WALL
DIMENSIONS & QUANTITIES

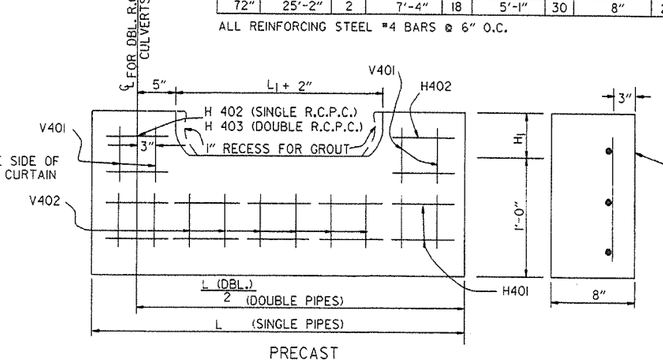
PIPE DIA.	H_1	L_1	L	L (DBL.)/2	SINGLE R.C.P.C. CONC.	SINGLE R.C.P.C. REINF. STEEL	DOUBLE R.C.P.C. CONC.	DOUBLE R.C.P.C. REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	1'-11½"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0½"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3½"	5'-7"	11'-0"	9'-0"	0.45	39.0	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 H401 L	H401 NO.	H402 L	H402 NO.	V401 L	V401 NO.	V402 L	V402 NO.	DOUBLE R.C. PIPE CULVERT H401 L	H401 NO.	H402 L	H402 NO.	H403 L	H403 NO.	V401 L	V401 NO.	V402 L	V402 NO.
18"	7'-8"	2	1'-11½"	4	1'-7½"	8	8"	8	12'-2"	2	1'-11½"	4	8"	2	1'-7½"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8½"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8½"	12	8"	18
30"	10'-8"	2	2'-4½"	4	1'-11½"	10	8"	12	17'-8"	2	2'-4½"	4	8"	2	1'-11½"	14	8"	22
36"	12'-8"	2	2'-10"	6	2'-3"	12	8"	14	20'-8"	2	2'-10"	6	8"	3	2'-3"	14	8"	28
42"	15'-2"	2	3'-9½"	8	2'-9½"	16	8"	15	23'-8"	2	3'-9½"	8	8"	4	2'-9½"	18	8"	30
48"	16'-8"	2	4'-3"	10	3'-1"	18	8"	16	25'-8"	2	4'-3"	10	8"	5	3'-1"	20	8"	32
54"	18'-2"	2	4'-8½"	12	3'-5½"	20	8"	17	27'-8"	2	4'-9"	12	8"	6	3'-5½"	22	8"	34
60"	20'-2"	2	5'-5"	14	4'-0"	24	8"	18	30'-8"	2	5'-5"	14	8"	7	4'-0"	26	8"	36
72"	25'-2"	2	7'-4"	18	5'-1"	30	8"	20	36'-8"	2	7'-4"	18	8"	9	5'-1"	33	8"	40

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

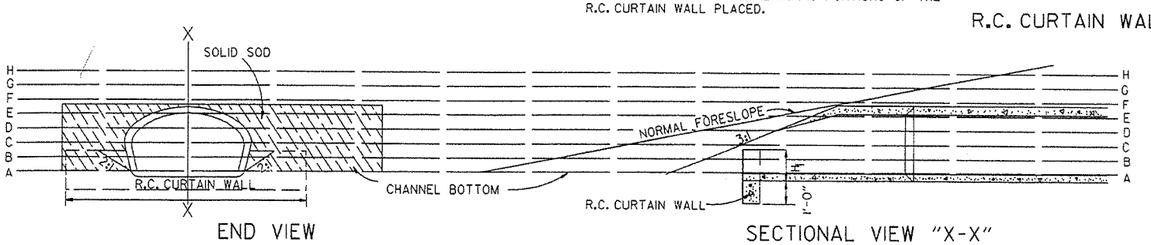
SOLID SODDING

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

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

GENERAL NOTES

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



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

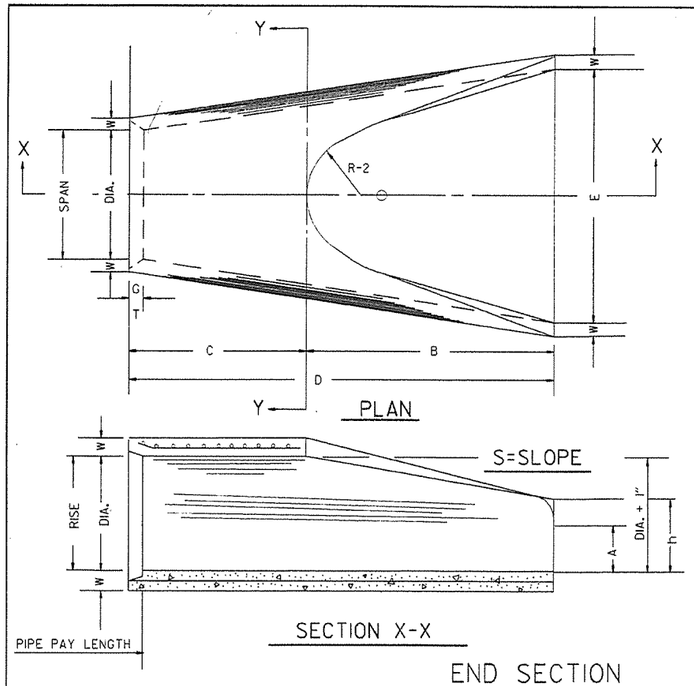
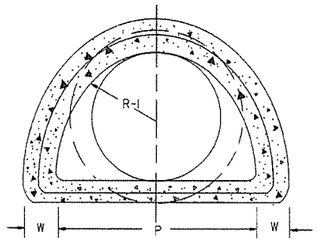
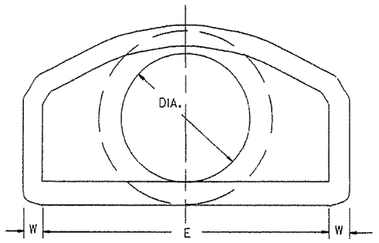


TABLE OF DIMENSIONS

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"	16Ⅼ⅛"	14"	2½"	1600	1'-1½"
30"	3½"	1'-0"	4'-6"	1'-7⅜"	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"	47Ⅼ⅛"	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"	36Ⅼ⅛"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77Ⅼ⅛"	38Ⅼ⅛"	24"	5"	13250	4'-6"



SECTION Y-Y



END VIEW

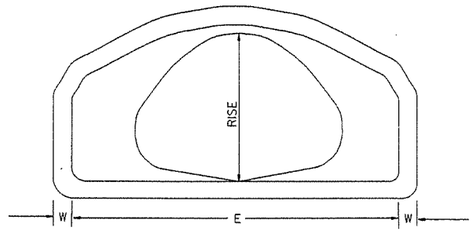
NOTE: TONGUE END ON UPSTREAM SECTION
GROOVE END ON DOWNSTREAM SECTION

END SECTION
FOR REINFORCED CONCRETE PIPE CULVERTS

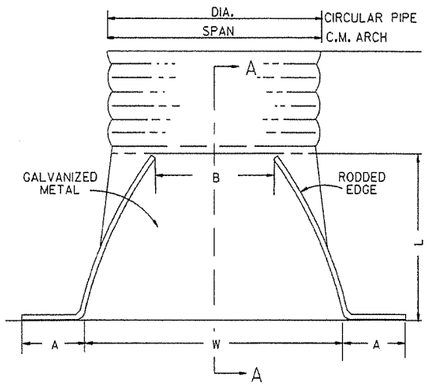
ARCH PIPE

EQUIV. DIA.	• SPAN		• RISE		W	A	B	C	D	E	P	R2	G-T	S
	AASHTO M 206	AHD NOMINAL	AASHTO M 206	AHD NOMINAL										
	INCHES													
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1½"	2½:1
18	22	22	13½	14	2½"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32⅛"	13"	2½"	2½:1
21	26	26	15½	16	2¾"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34⅛"	14"	2½"	2½:1
24	28½	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36Ⅼ⅛"	15"	2½"	2½:1
30	36¼	36	22½	23	3½"	10"	3'-1"	3'-0½"	6'-1½"	6'-0"	47Ⅼ⅛"	20"	3"	2½:1
36	43¾	44	26⅝	27	4"	10½"	4'-0"	2'-1½"	6'-1½"	6'-6"	54⅝"	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"	72Ⅼ⅛"	24"	4¾"	2¼:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77Ⅼ⅛"	24"	5"	2¼:1

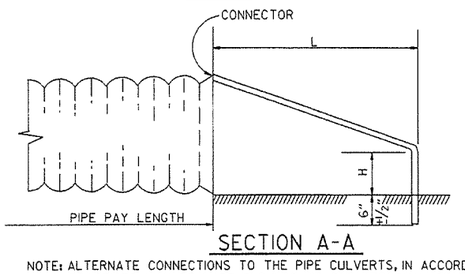
• THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PER CENT FROM THE VALUES SPECIFIED BY AASHTO M 206.



END VIEW
CONCRETE ARCH PIPE

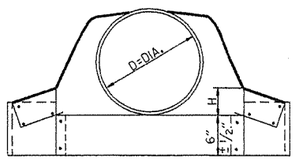


PLAN

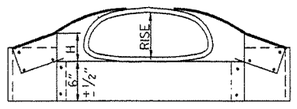


SECTION A-A

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



CIRCULAR PIPE



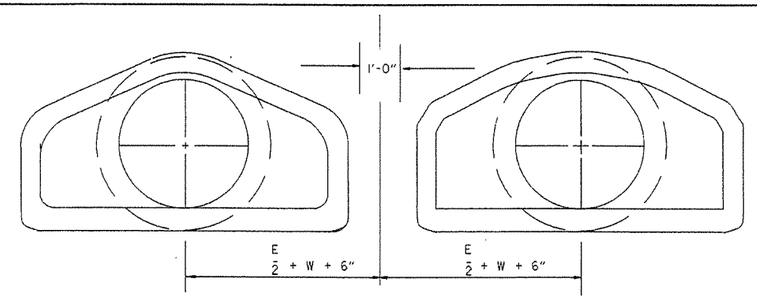
C.M. ARCH PIPE

CIRCULAR PIPE

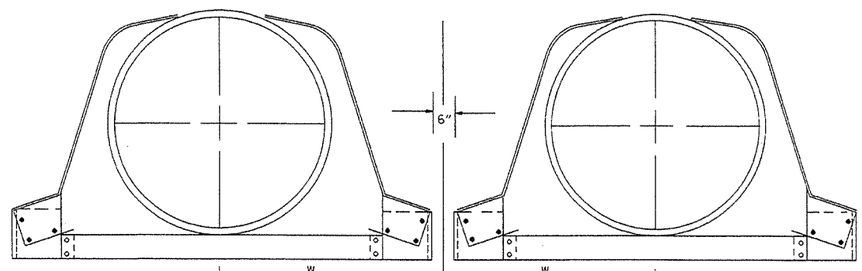
D. DIA.	GAUGE	A 1" ±	B. MAX.	H 1" ±	L 1½" ±	W 2" ±	S
		INCHES					
12	16	6	6	6	21	24	2½:1
15	16	7	8	6	26	30	2½:1
18	16	8	10	6	31	36	2½:1
21	16	9	12	6	36	42	2½:1
24	16	10	13	6	41	48	2½:1
30	14	12	16	8	51	60	2½:1
36	14	14	19	9	60	72	2½:1
42	12	16	22	11	69	84	2½:1
48	12	18	27	12	78	90	2½:1
54	12	18	30	12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



MULTIPLE R.C. PIPE CULVERTS



MULTIPLE C.M. PIPE CULVERTS

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS

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

ARKANSAS STATE HIGHWAY COMMISION

FLARED END SECTION

STANDARD DRAWING FES-2

stdfes2.dgn

4'-0" LENGTH DROP INLET

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

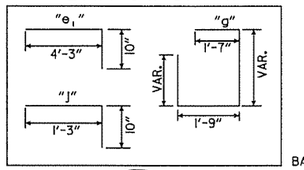
DROP INLET EXTENSION

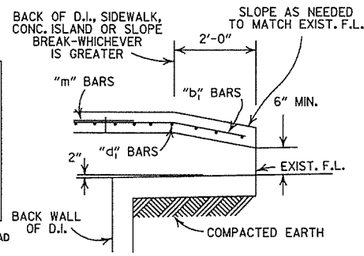
4'-0" CLASS A CONC.	4'-0" REINF. STEEL	8'-0" CLASS A CONC.	8'-0" REINF. STEEL
CU. YDS.	POUNDS	CU. YDS.	POUNDS
0.58	38	0.87	72
DEDUCT FROM QUANTITY COMPUTED FOR EACH EXTENSION ADDED.			
0.04	3		

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

DEDUCT FROM QUANTITY COMPUTED FOR EACH PIPE ENTERING INLET		
INSIDE DIA. PIPE	CLASS A CONC.	REINF. STEEL
INCHES	CU. YDS.	POUNDS
18	0.05	2
24	0.09	3
30	0.13	4
42	0.24	8

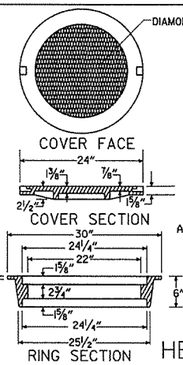
BAR DIAGRAM





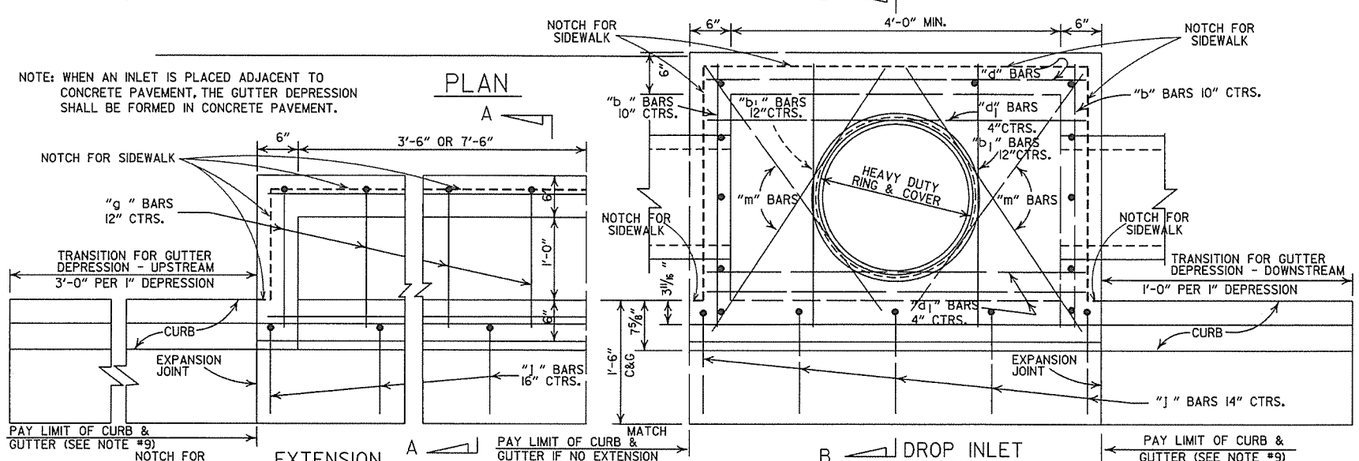
BACK OPENING

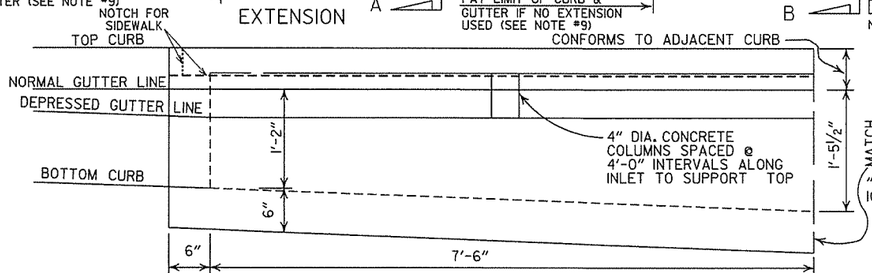
WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE C).

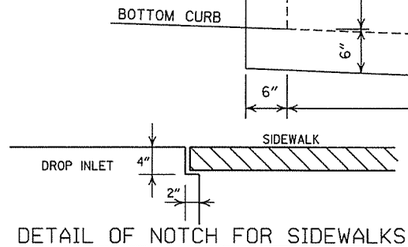


APPROXIMATE TOTAL WEIGHT = 333 LBS.

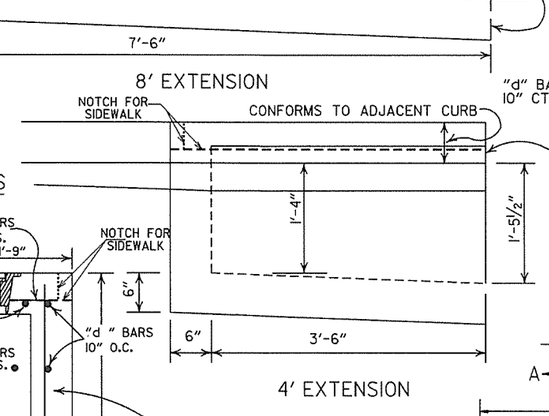
HEAVY DUTY RING & COVER

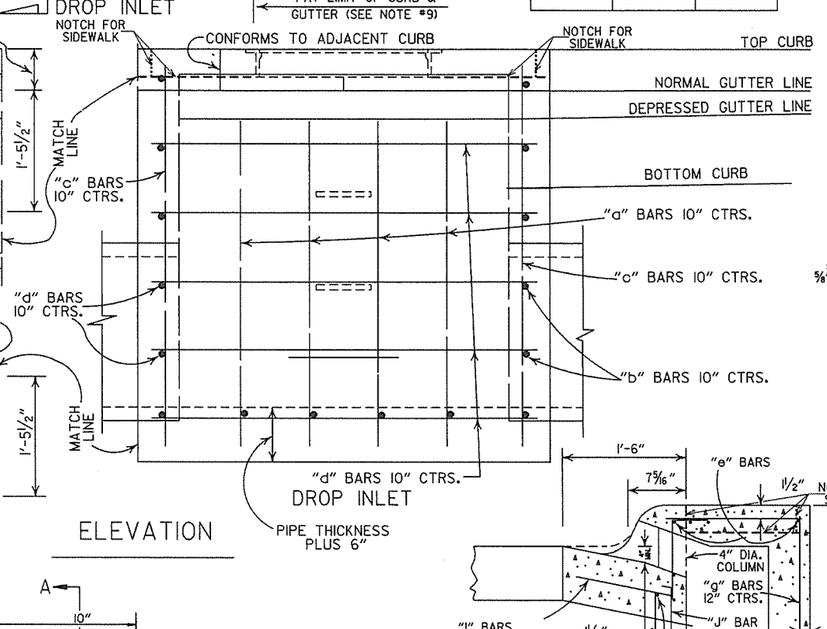






DETAIL OF NOTCH FOR SIDEWALKS

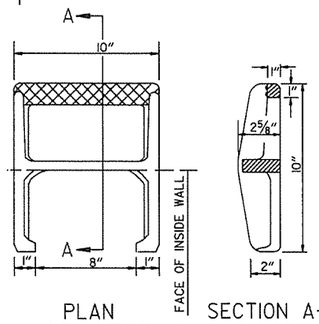




ELEVATION

SECTION A-A

SECTION B-B



PLAN SECTION A-A

DETAIL OF STEP FOR DROP INLET

APPROX. WEIGHT = 11 LBS. (CAST IRON)

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

GENERAL NOTES:
1. ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER.
2. STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OF AS APPROVED BY THE ENGINEER.
3. ALL REINF. BARS SHALL BE #4 AND HAVE 1 1/2" COVER.
4. DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
5. THIS DROP INLET MAY BE CONSTRUCTED ON NEW OR EXISTING R.C. BOX CULVERT AS SHOWN ON F.P.C.-9.
6. WHEN PLANS CALL FOR DROP INLET OVER 10'-0" HIGH, FLOOR AND WALLS SHALL BE CONSTRUCTED AS SHOWN FOR TYPE "RM" DROP INLET (F.P.C.-9D).
7. HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
8. DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
9. PAYMENT FOR CURB AND/OR CURB AND GUTTER WITHIN THE LIMITS OF DROP INLETS AND DROP INLET EXTENSIONS SHALL BE CONSIDERED INCLUDED IN PAYMENT MADE FOR DROP INLETS AND/OR DROP INLET EXTENSIONS.
10. HEAVY DUTY RING AND COVER SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M105 CLASS 35B & AASHTO M306.
11. HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
12. 4"x2" NOTCH SHALL BE FORMED IN ALL DROP INLETS TO SUPPORT SIDEWALK CONSTRUCTION. REFER TO DETAIL OF NOTCH FOR SIDEWALKS.
13. DIMENSIONS SHOWN FOR RING AND COVER ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR CASTINGS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR CASTING DESIGNS MAY BE MADE BY REFERRING TO PREVIOUSLY APPROVED DRAWINGS.

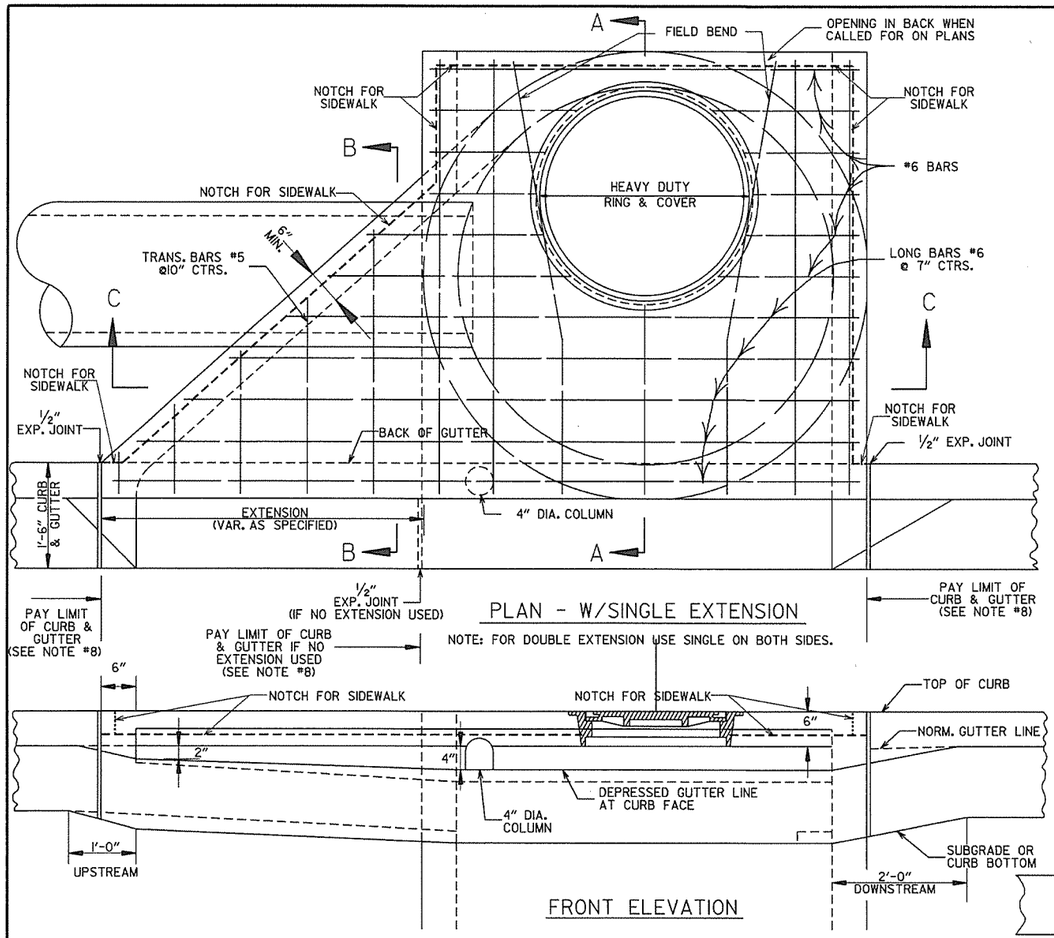
DATE REV.	REVISION	DATE FILMED
8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13; REVISED SECTION B-B	
1-12-00	CORRECTED DIMENSION ON SECTION B-B & REVISED RING & COVER	
5-13-99	ADDED DETAIL OF NOTCH FOR SIDEWALKS	
7-02-98	REPLACED RING & COVER W/HEAVY DUTY RING & COVER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

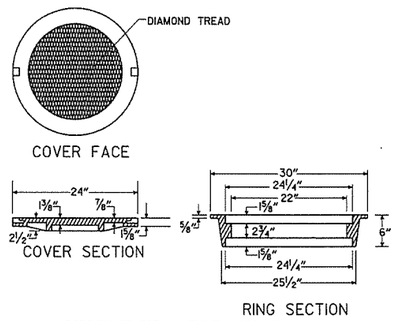
ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLETS

(TYPE C)

STANDARD DRAWING FPC-9E

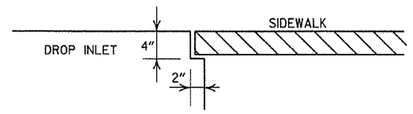




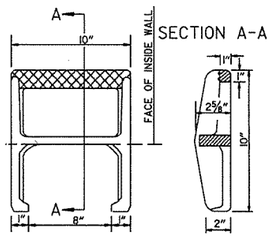
APPROXIMATE TOTAL WEIGHT = 333 LBS.

HEAVY DUTY RING & COVER

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



DETAIL OF NOTCH FOR SIDEWALKS



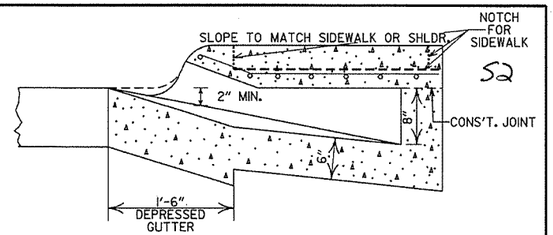
SECTION A-A

APPROX. WEIGHT = 11 LBS. (CAST IRON)

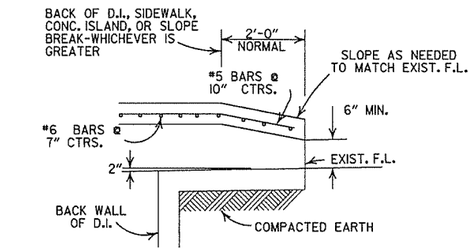
PLAN

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

DETAIL OF STEP FOR DROP INLET



SECTION B-B

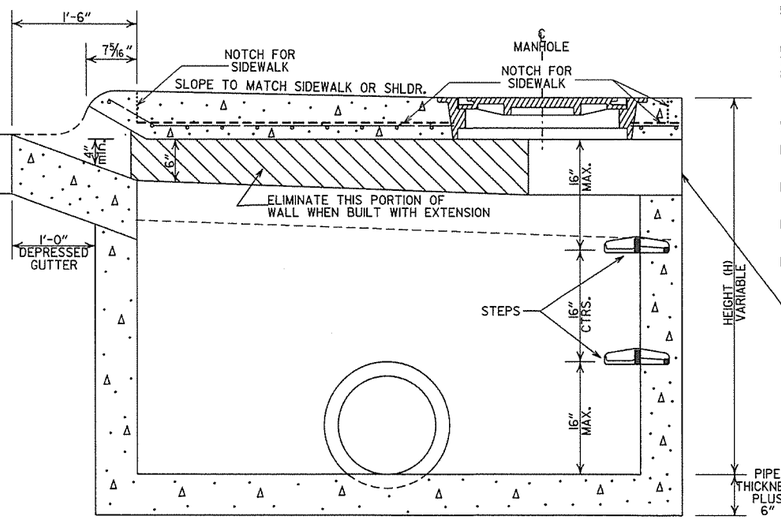


BACK OPENING

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

GENERAL NOTES:

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



SECTION A-A

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

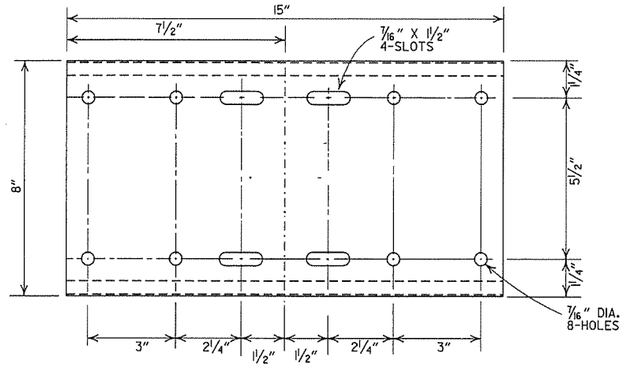
DIA. OF D.I.	DIA. OF OUTLET PIPE	MINIMUM WALL THICKNESS	
		CAST IN PLACE	PRECAST
4' I.D.	12" THRU 27"	6"	5"
5' I.D.	30" THRU 42"	8"	6"
6' I.D.	48" THRU 54"	8"	7"

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	
4-28-96	ADDED NOTE 11 & ADJ. OPENING DIMENSION	
10-12-95	CORRECTED #5 BAR SPACING	
7-20-95	CORRECTED DIAMETER OF D.I. IN BOX	
2-2-95	TYPE C TO MO (OPEN, BACK DETAIL)	
11-3-94	REVISED GENERAL NOTES	11-3-94
4-1-93	REV. BACK OPEN. DETAIL & NOTE	4-1-93
8-15-91	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 5 MINUMUM WALL THICKNESS	5A-5-23-89
7-15-88	ADDED EXTEND NOTE TO SECTION A-A	63B-7-15-88
1-14-87	MODIFIED WALL THICKNESS	78A-1-14-87
6-12-87	ISSUED	4-6-7-87

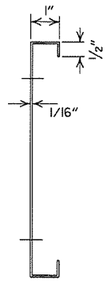
ARKANSAS STATE HIGHWAY COMMISSION

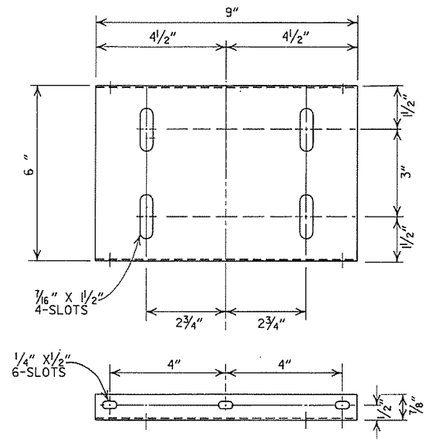
DETAILS OF DROP INLET (TYPE MO)

STANDARD DRAWING FPC-9M

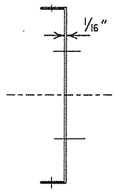


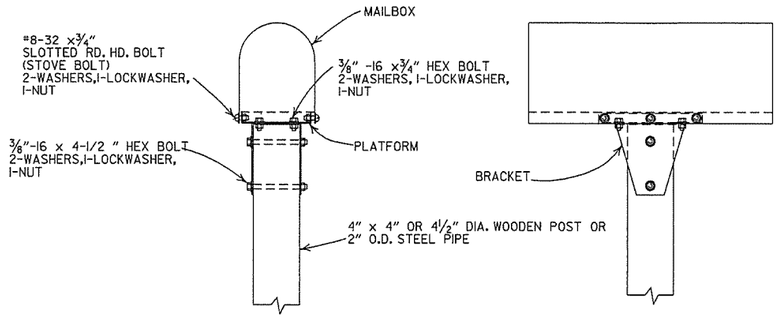
SHELF



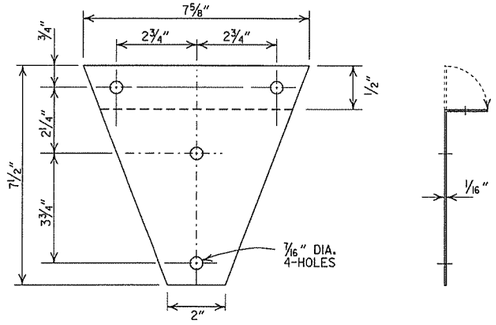


PLATFORM





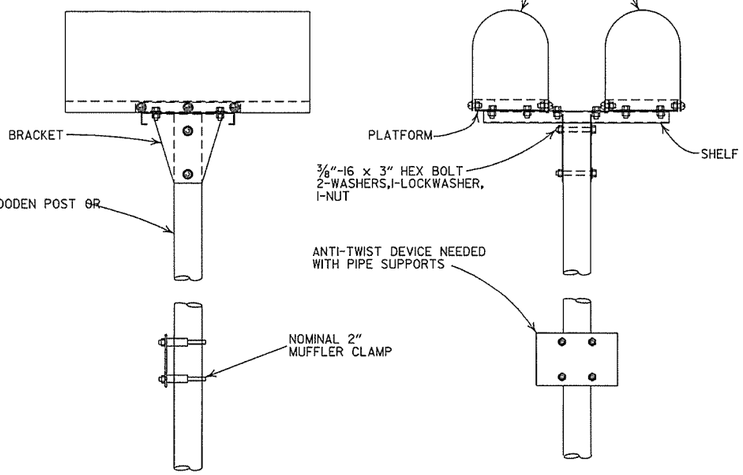
SINGLE INSTALLATION



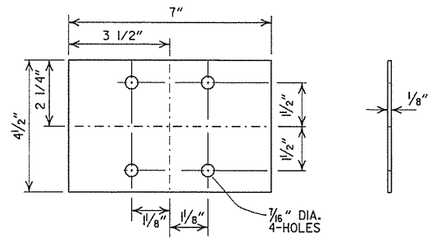
BRACKET

GENERAL NOTES

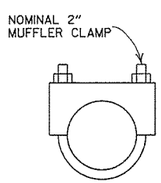
1. MAILBOX POSTS MAY BE WOOD OR METAL. WOOD POSTS SHALL BE PRESSURE TREATED FOR GROUND CONTACT IN ACCORDANCE WITH SECTION 637.02 OF THE STANDARD SPECIFICATIONS.
2. ANTI-TWIST PLATES SHALL BE USED ONLY ON METAL POSTS.
3. MAILBOX SHELF, BRACKET & PLATFORM SHALL BE GALVANIZED OR PAINTED STEEL, HOWEVER TREATED WOOD MAY BE USED WITH WOODEN POSTS. THE WOODEN SHELF, BRACKET & PLATFORM SHALL BE A MINIMUM OF ¾" THICK AND SHALL BE ASSEMBLED WITH BOLTS OF THE APPROPRIATE LENGTH WITH SIX 8 X 2½" FLATHEAD WOOD SCREWS USED TO ATTACH THE MAILBOX TO THE PLATFORM.
4. THE MAILBOX SHELF AND PLATFORM THAT IS SHOWN IS FOR STANDARD SIZE MAILBOXES. THE SHELF AND PLATFORM SIZE SHALL BE MODIFIED TO FIT MAILBOXES OF A DIFFERENT SIZE.
5. METAL PIPE FOR MAILBOX SUPPORT SHALL BE 2" OUTSIDE DIAMETER STEEL WITH A WALL THICKNESS OF 0.145" AND A WEIGHT OF 2.72 LBS PER FT. OUTSIDE DIAMETER AND WEIGHT SHALL HAVE A TOLERANCE OF +/- 5% ACCORDING TO AASHTO M 181.
6. MAILBOX SUPPORT SYSTEM DIFFERING FROM THOSE SHOWN MAY BE USED, PROVIDED THEY ARE ON THE AHTD QUALIFIED PRODUCTS LIST FOR MAILBOX SUPPORTS.



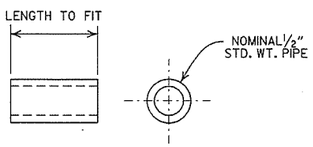
DOUBLE INSTALLATION



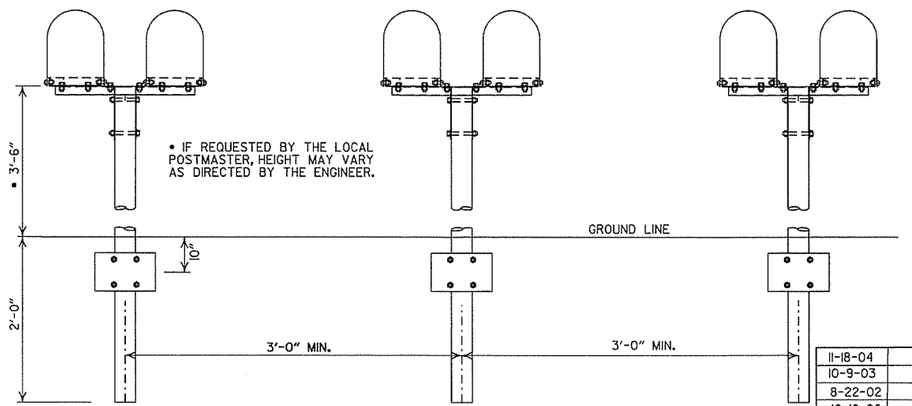
ANTI-TWIST PLATE



CLAMP



SPACER



SPACING FOR MULTIPLE POST INSTALLATION

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

ARKANSAS STATE HIGHWAY COMMISSION

MAILBOX DETAILS

STANDARD DRAWING MB-1

REINFORCED CONCRETE ARCH PIPE DIMENSIONS

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	AHTD NOMINAL	AASHTO M 206	AHTD NOMINAL
INCHES	INCHES			
15	18	18	11	11
18	22	22	13½	14
21	26	26	15½	16
24	28½	29	18	18
30	36¼	36	22½	23
36	43⅜	44	26⅝	27
42	51⅛	51	31⅞	31
48	58½	59	36	36
54	65	65	40	40
60	73	73	45	45
72	88	88	54	54
84	102	102	62	62
90	115	115	72	72
96	122	122	77½	77
108	138	138	87⅛	87
120	154	154	96⅞	97
132	168¾	169	106½	107

THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PERCENT FROM THE VALUES SPECIFIED BY AASHTO M206.

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE DIMENSIONS

EQUIV. DIA.	AASHTO M 207	
	SPAN	RISE
INCHES	INCHES	
18	23	14
24	30	19
27	34	22
30	38	24
33	42	27
36	45	29
39	49	32
42	53	34
48	60	38
54	68	43
60	76	48
66	83	53
72	91	58
78	98	63
84	106	68

THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ± 2 PERCENT FROM THE VALUES SPECIFIED BY AASHTO M207.

CONSTRUCTION SEQUENCE

1. PLACE STRUCTURAL BEDDING MATERIAL TO GRADE. DO NOT COMPACT.
2. INSTALL PIPE TO GRADE.
3. COMPACT STRUCTURAL BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
4. PLACE AND COMPACT THE HAUNCH AREA UP TO THE MIDDLE OF THE PIPE.
5. COMPLETE BACKFILL ACCORDING TO SUBSECTION 606.03.(f)(1).

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

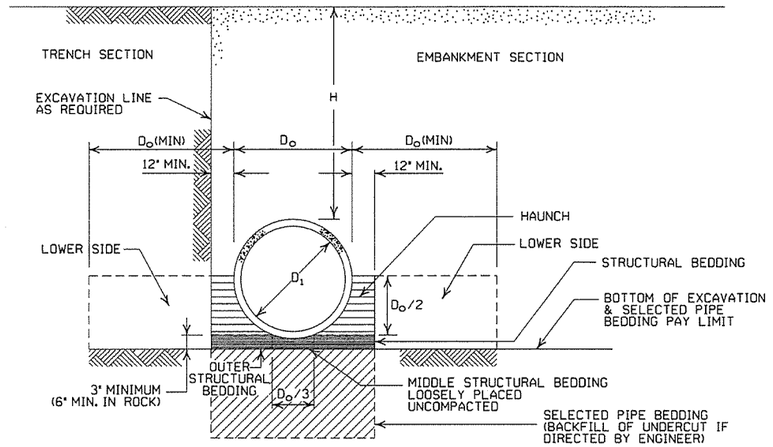
- LEGEND -

D_1 = NORMAL INSIDE DIAMETER OF PIPE
D_o = OUTSIDE DIAMETER OF PIPE
H = FILL COVER HEIGHT OVER PIPE (FEET)
MIN. = MINIMUM
= UNDISTURBED SOIL

INSTALLATION TYPE	MATERIAL REQUIREMENTS FOR HAUNCH AND STRUCTURAL BEDDING
TYPE 1	AGGREGATE BASE COURSE (CLASS 5 OR CLASS 7)
TYPE 2	SELECTED MATERIALS (CLASS SM-1, SM-2, OR SM-4) OR TYPE 1 INSTALLATION MATERIAL*
TYPE 3**	AASHTO CLASSIFICATION A-1 THRU A-6 SOIL OR TYPE 1 OR 2 INSTALLATION MATERIAL

*SM-3 WILL NOT BE ALLOWED.

**MATERIALS SHALL NOT INCLUDE ORGANIC MATERIALS OR STONES LARGER THAN 3 INCHES.



EMBANKMENT AND TRENCH INSTALLATIONS

1. MATERIAL IN THE HAUNCH AND OUTER STRUCTURAL BEDDING SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.
2. FOR TRENCHES WITH WALLS OF NATURAL SOIL, THE DENSITY OF THE SOIL IN THE LOWER SIDE ZONE SHALL BE AS FIRM AS THE 95% DENSITY REQUIRED FOR THE HAUNCH. IF THE EXISTING SOIL DOES NOT MEET THIS CRITERIA, IT SHALL BE REMOVED AND RECOMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OF MATERIAL USED.
3. FOR EMBANKMENTS, THE MATERIAL IN THE LOWER SIDE ZONE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY ACCORDING TO THE TYPE OR CLASS OF MATERIAL USED.

GENERAL NOTES

1. CONCRETE PIPE CULVERT CONSTRUCTION SHALL CONFORM TO ARKANSAS 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)	①MINUMUM COVER TOP OF PIPE TO TOP OF GROUND "H" (FEET)	MAX. FILL HEIGHT "H" ABOVE TOP OF PIPE (FEET)				
		METAL THICKNESS IN INCHES				
		0.060	0.075	0.105	0.135	0.164
		2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM				
12	1	45	45			
18	2	30	30	52		
24	2	22	22	39	41	
30	2		18	31	32	34
36	2.5		15	26	27	28
42	2			43	43	44
48	2			40	41	43
54	2			35	37	38
60	2				33	34
66	2					31
72	2					29

CORRUGATED METAL PIPE ARCHES

EQUIV. DIA. (INCHES)	PIPE DIMENSION SPAN X RISE (INCHES)	MINUMUM CORNER RADIUS (INCHES)	STEEL				ALUMINUM			
			MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)		MAX. HEIGHT OF FILL, "H" (FT.)	MIN. THICKNESS REQUIRED INCHES	① MIN. HEIGHT OF FILL, "H" (FT.)		MAX. HEIGHT OF FILL, "H" (FT.)
				INSTALLATION		INSTALLATION		INSTALLATION		INSTALLATION
				TYPE 1		TYPE 1		TYPE 1		TYPE 1
			2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM				2 ⅔ INCH BY ½ INCH CORRUGATION RIVETED OR HELICAL LOCK-SEAM			
15	17x13	3	0.064	2		15	0.060	2		15
18	21x15	3	0.064	2		15	0.060	2		15
21	24x18	3	0.064	2.25		15	0.060	2.25		15
24	28x20	3	0.064	2.5		15	0.075	2.5		15
30	35x24	3	0.079	3		12	0.075	3		12
36	42x29	3½	0.079	3		12	0.105	3		12
42	49x33	4	0.079	3		12	0.105	3		12
48	57x38	5	0.109	3		13	0.135	3		13
54	64x43	6	0.109	3		14	0.135	3		14
60	71x47	7	0.138	3		15	0.164	3		15
66	77x52	8	0.168	3		15				
72	83x57	9	0.168	3		15				
			② 3 INCH BY 1 INCH OR 5 INCH BY 1 INCH CORRUGATION RIVETED, WELDED, OR HELICAL LOCK-SEAM							
				INSTALLATION		INSTALLATION				
				TYPE 2	TYPE 1	TYPE 2	TYPE 1			
36	40x31	5	0.079	3	2	12	15			
42	46x36	6	0.079	3	2	13	15			
48	53x41	7	0.079	3	2	13	15			
54	60x46	8	0.079	3	2	13	15			
60	66x51	9	0.079	3	2	13	15			
66	73x55	12	0.079	3	2	15	15			
72	81x59	14	0.079	3	2	15	15			
78	87x63	14	0.079	3	2	15	15			
84	95x67	16	0.109	3	2	15	15			
90	103x71	16	0.109	3	2	15	15			
96	112x75	18	0.109	3	2	15	15			
102	117x79	18	0.109	3	2	15	15			
108	128x83	18	0.138	3	2	15	15			

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.

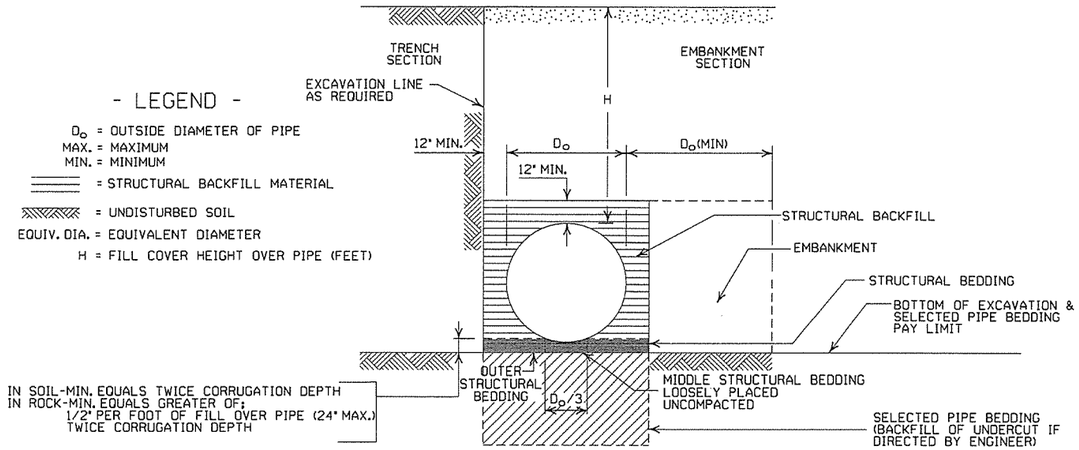
NOTE: STRUCTURAL BACKFILL AND STRUCTURAL BEDDING MATERIAL WILL NOT BE PAID FOR SEPARATELY, BUT COMPENSATION WILL BE CONSIDERED TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF METAL PIPE.

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."

① FOR MINIMUM COVER VALUES, "H" SHALL INCLUDE A MINIMUM 12" OF PAVEMENT AND/OR BASE.

② WHERE THE STANDARD 2 2/3"x ½" CORRUGATION AND GAUGE IS SPECIFIED FOR A GIVEN DIAMETER, A PIPE OF THE SAME DIAMETER WITH A 3" x 1" OR 5" x 1" CORRUGATION MAY BE SUBSTITUTED, PROVIDING IT IS GAUGED FOR A FILL HEIGHT CONDITION EQUAL TO OR GREATER THAN THE MAXIMUM FILL HEIGHT CONDITION FOR THE SPECIFIED GAUGE AND CORRUGATION.

DATE	REVISION	DATE FILMED
12-15-11	REVISED FOR LRFD DESIGN SPECS	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

METAL PIPE CULVERT FILL HEIGHTS & BEDDING

STANDARD DRAWING PCM-1

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

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

SM3 WILL NOT BE ALLOWED.

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

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

MULTIPLE INSTALLATION OF HIGH DENSITY POLYETHYLENE PIPES

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

MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"

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

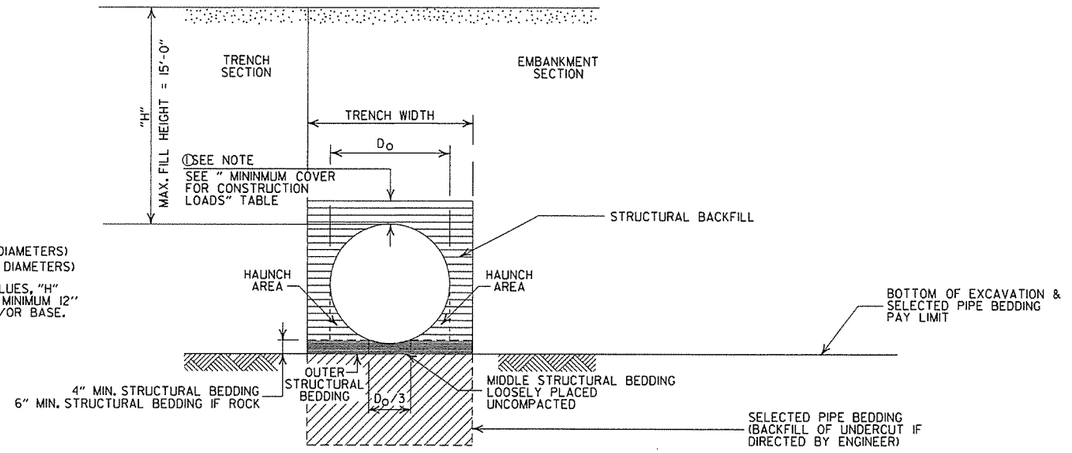
①NOTE:
18" MIN. (18" - 30" DIAMETERS)
24" MIN. (36" - 48" DIAMETERS)

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO AASHTO M294, TYPE S. INSTALLATION SHALL 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.)
Ø = 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

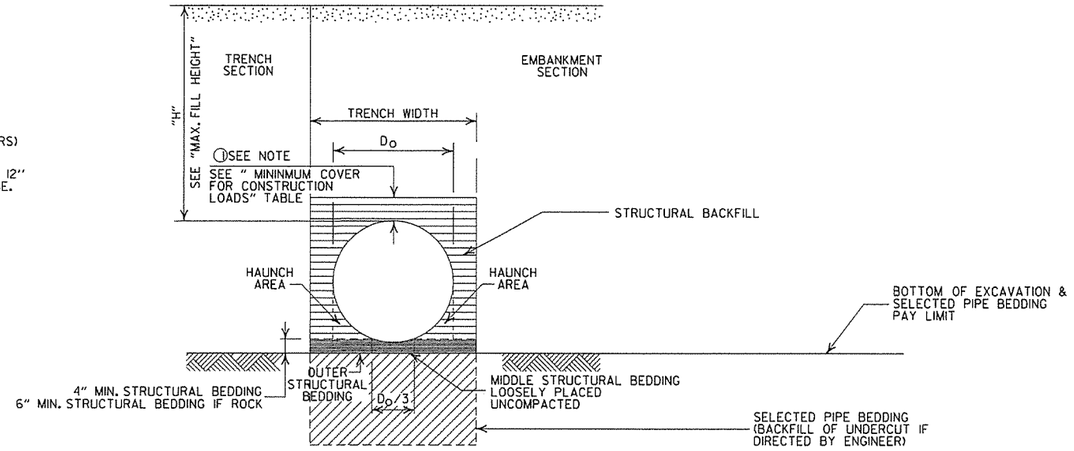
PIPE DIAMETER	"H"
18"	45'-0"
24"	45'-0"
30"	40'-0"
36"	40'-0"

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

MINIMUM COVER FOR CONSTRUCTION LOADS

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

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



TYPE 2 EMBANKMENT AND TRENCH INSTALLATIONS

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

CONSTRUCTION SEQUENCE

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

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASTM F949, CELL CLASS 12454. INSTALLATION SHALL 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

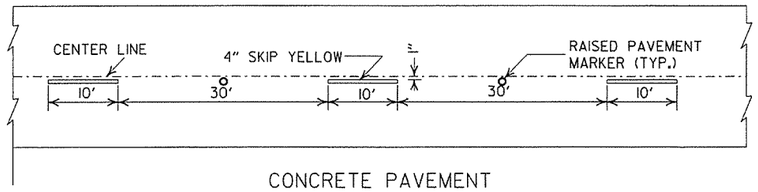
= UNDISTURBED SOIL

DATE	REVISION	DATE FILMED
12-15-11	REV GENERAL NOTES & MINIMUM COVER NOTE; DELETED SM3 MATERIAL	
11-17-10	ISSUED	

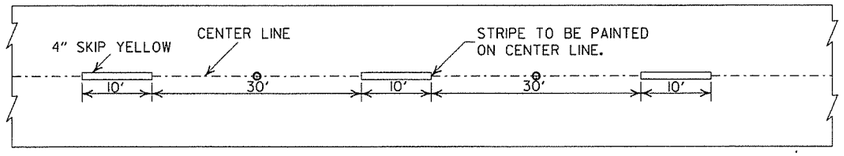
ARKANSAS STATE HIGHWAY COMMISSION

PLASTIC PIPE CULVERT (PVC F949)

STANDARD DRAWING PCP-2

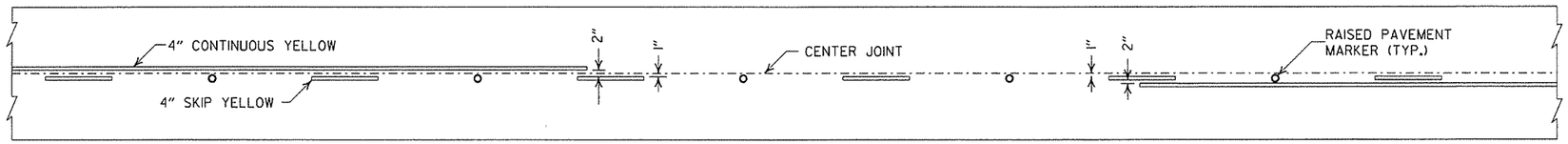


CONCRETE PAVEMENT

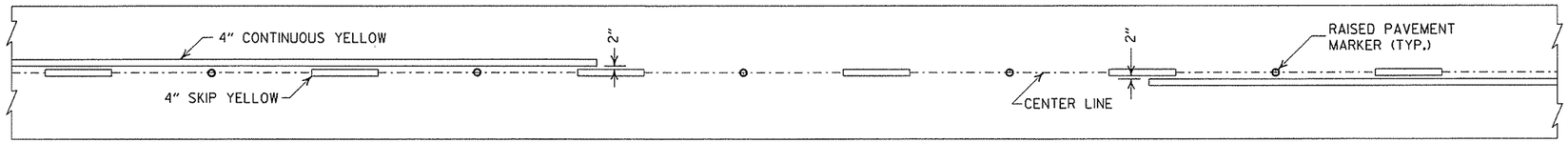


ASPHALT PAVEMENT

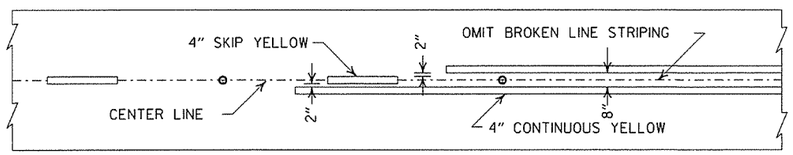
BROKEN LINE STRIPING



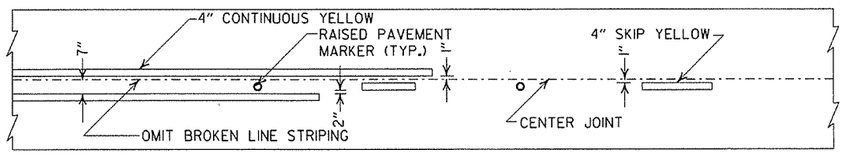
SOLID LINE STRIPING ON CONCRETE PAVEMENT



SOLID LINE STRIPING ON ASPHALT PAVEMENT

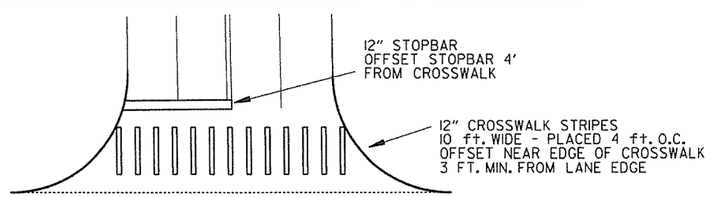


ASPHALT PAVEMENT



CONCRETE PAVEMENT

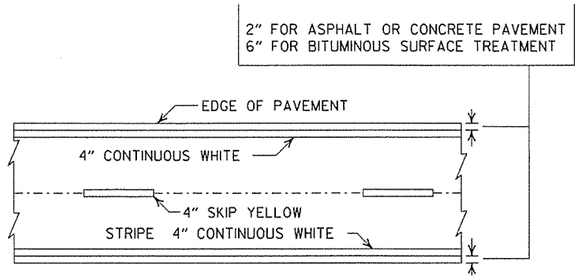
STRIPING AT ADJACENT NO PASSING LANES



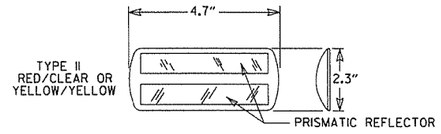
CROSSWALK AND STOPBAR DETAILS

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

DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

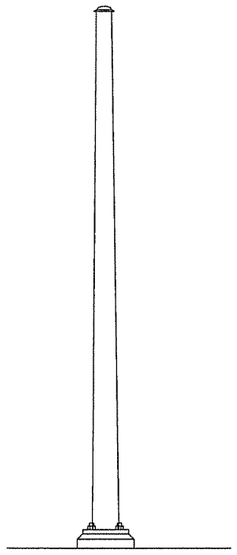
USE FATIGUE CATEGORY II.

CONSTRUCTION SPECIFICATIONS: ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2003 EDITION) WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

BASE WIND SPEED: 90 MPH

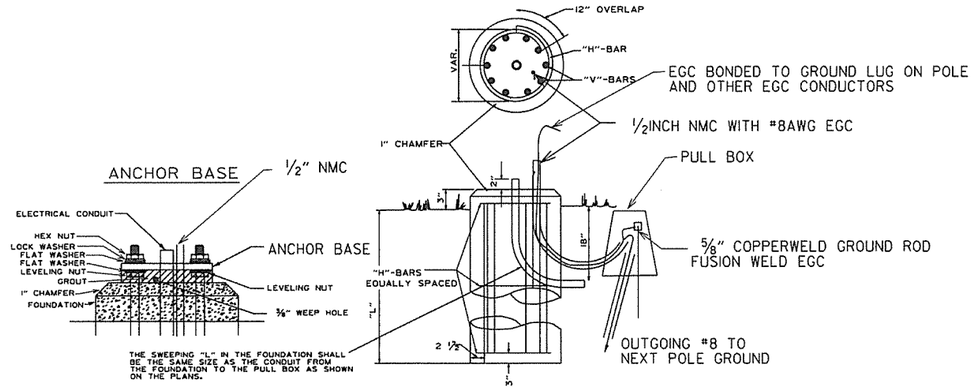
STEEL MEMBERS CONSIDERED MAIN LOAD CARRYING MEMBERS WITH A THICKNESS GREATER THAN ½" SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST SPECIFIED IN SUBSECTION 807.05 OF THE STANDARD SPECIFICATIONS.

THE GROUND ROD SHALL BE FUSION WELDED TO A IC/#8 A.W.G. SOLID COPPER GROUND WIRE. ATTACHMENT TO THE PRIMARY GROUND MAY BE BY AN APPROVED CLAMP. THE ROD IS TO BE LOCATED IN THE CONCRETE PULL BOX PAID FOR SEPARATELY AS SHOWN ON THE PLANS.



ANTENNA POLE

NOTE: COMMUNICATION CABLE SHIELD SHALL BE TIED TO GROUND AT ONLY ONE POINT (MASTER CABINET). THE SHIELD SHALL BE MAINTAINED CONTINUOUS (THROUGH ALL SPLICES). PLEASE REFER TO TESTING PROCEDURES IN SPECIAL PROVISIONS.



TYPICAL FOUNDATION DETAILS

POLE FOUNDATION MINIMUM DIMENSIONS AND STEEL REINFORCING.

POLE HEIGHT	FOUNDATION DIAMETER	DEPTH 'L'	VERTICAL	HORIZONTAL	TIE SPACING
20.0'	30"	5'-6"	12-#7	#4	5 SP @ 12"
25.0'	30"	6'-0"	12-#7	#4	6 SP @ 11"
30.0'	30"	6'-6"	12-#7	#4	6 SP @ 12"
35.0'	30"	7'-0"	12-#7	#4	7 SP @ 11"
40.0'	30"	7'-6"	12-#7	#4	7 SP @ 12"
45.0'	36"	8'-6"	13-#8	#4	8 SP @ 12"
50.0'	36"	9'-6"	13-#8	#4	9 SP @ 12"
55.0'	36"	10'-0"	13-#8	#4	10 SP @ 11"
60.0'	36"	10'-6"	13-#8	#4	10 SP @ 12"
65.0'	36"	11'-0"	13-#8	#4	12 SP @ 10 ½"
70.0'	36"	11'-6"	13-#8	#4	11 SP @ 12"
75.0'	42"	13'-0"	18-#8	#4	14 SP @ 10 ½"
80.0'	42"	13'-6"	18-#8	#4	13 SP @ 12"
85.0'	42"	14'-6"	18-#8	#4	14 SP @ 12"
90.0'	42"	15'-0"	18-#8	#4	18 SP @ 9 ½"

ALL CONCRETE SHALL BE CLASS "S" WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH F'C=3500 PSI. CONCRETE SHALL BE POURED IN THE DRY AND ALL EXPOSED CORNERS CHAMFERED ¾" UNLESS NOTED OTHERWISE.

ALL REINFORCING STEEL SHALL CONFORM TO AASHTO M31 OR M53, GRADE 40 (YIELD STRENGTH=40,000 PSI).

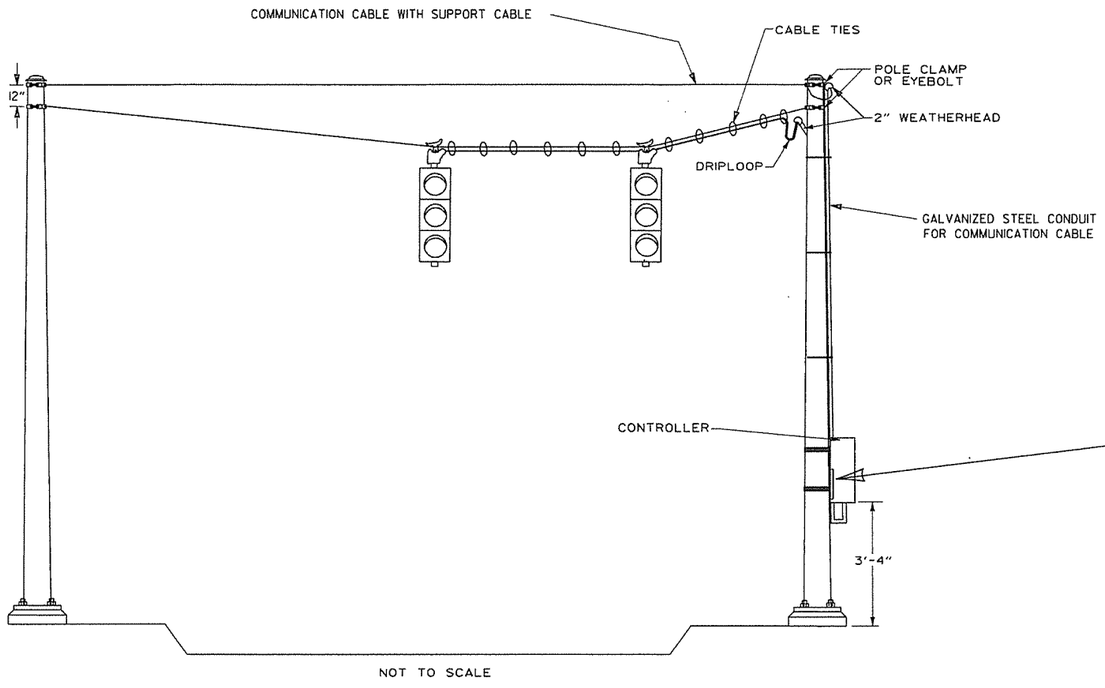
PROVIDE 3" CLEAR TIES. DETAIL 3" TO FIRST TIE AT TOP OF SHAFT.

DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
5-21-09	REVISED GROUNDING	
7-31-08	REVISED GROUNDING	
4-18-08	REVISED AASHTO NOTES	
4-17-08	REVISED TO 2001 AASHTO STANDARDS	
9-6-00	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

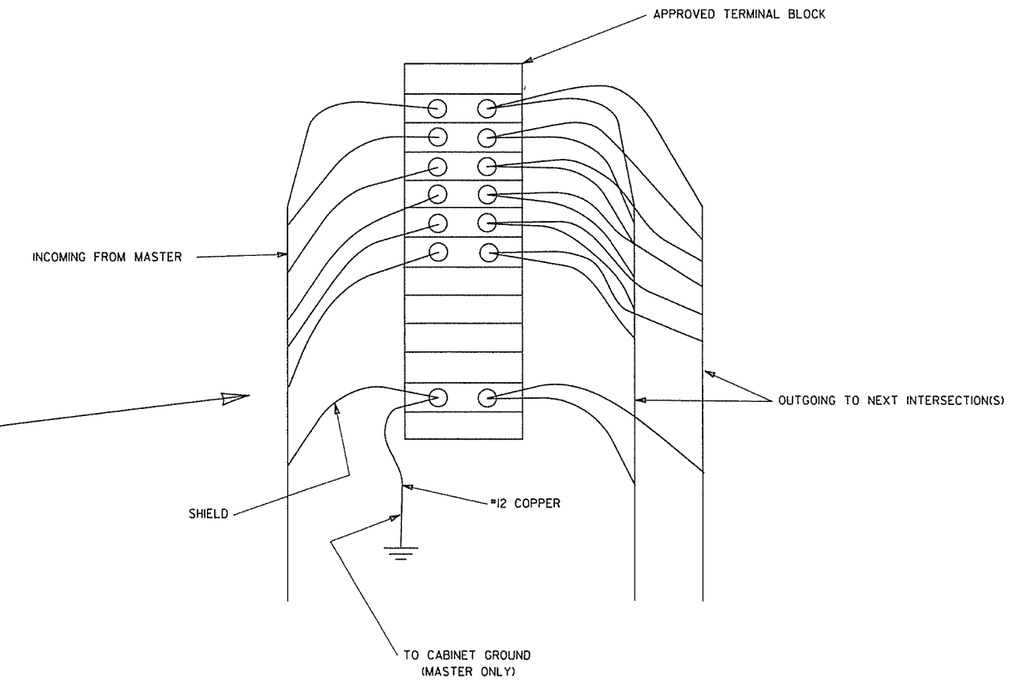
ANTENNA POLE

STANDARD DRAWING SD-1



COMMUNICATION CABLE CROSSING BETWEEN SPAN WIRE POLES

NOTE: COMMUNICATION CABLE SHIELD SHALL BE TIED TO GROUND AT ONLY ONE POINT (MASTER CABINET). THE SHIELD SHALL BE MAINTAINED CONTINUOUS (THROUGH ALL SPLICES). PLEASE REFER TO TESTING PROCEDURES IN SPECIAL PROVISIONS.



TYPICAL WIRING DIAGRAM FOR COMMUNICATION CABLE

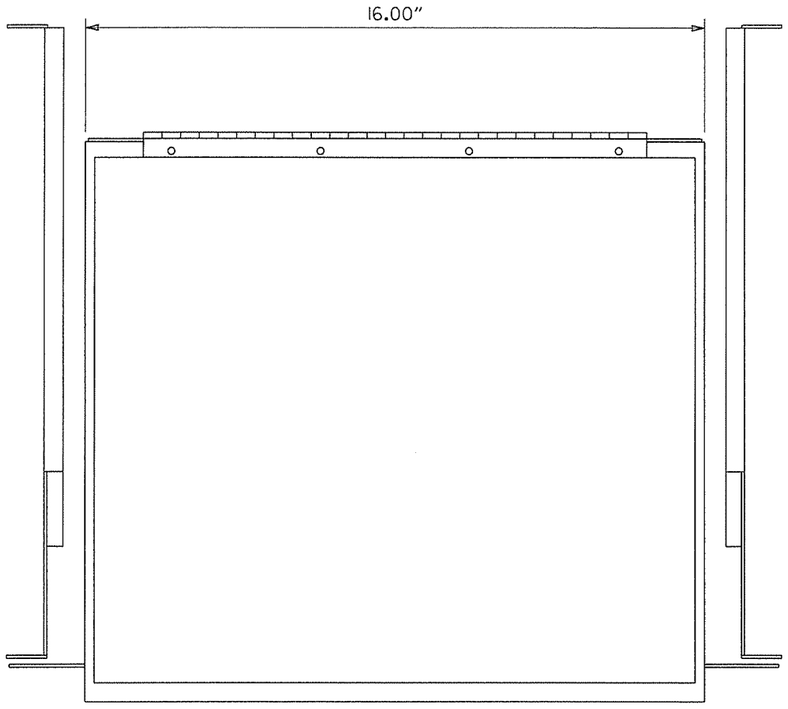
DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
12-27-99	REVISED NOTES	
11-18-98	REVISED NOTES	
3-21-92	ISSUED	

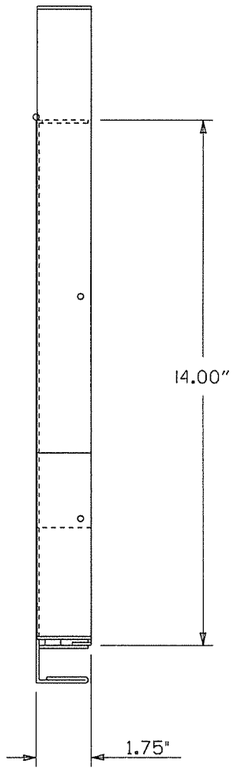
ARKANSAS STATE HIGHWAY COMMISSION

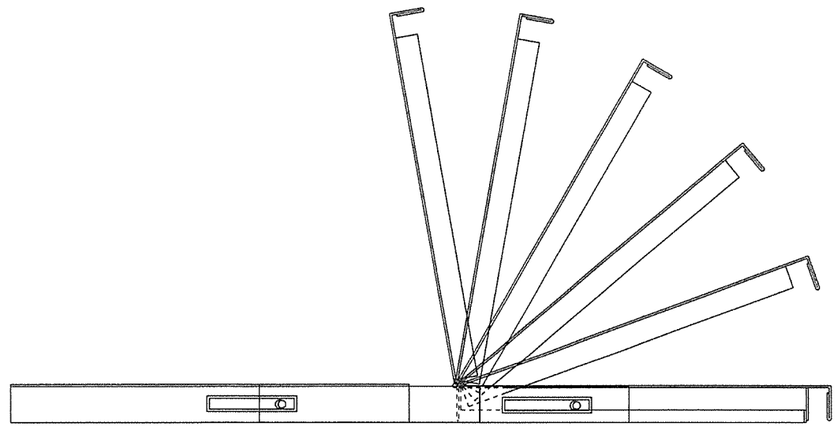
SPAN WIRE INSTALLATION WITH COMMUNICATION CABLE CROSSING

STANDARD DRAWING SD-2

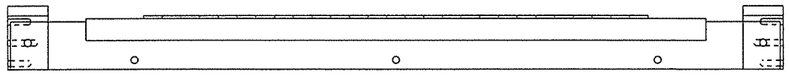
DRAWER PLAN VIEW



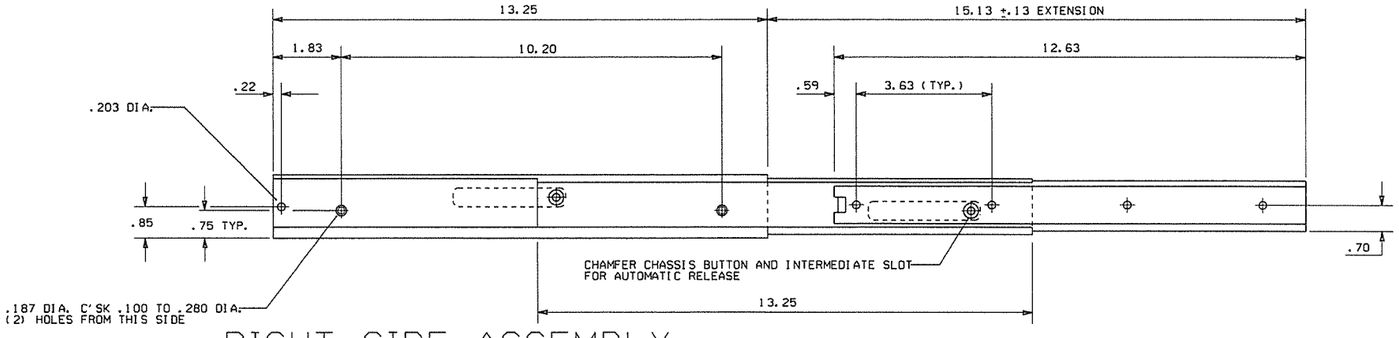




NOTES:
1. RIGHT HAND SLIDE SHOWN, LEFT SLIDE OPPOSITE.
2. GENERAL DEVICES (CC3002-99-0102) OR EQUAL AND CONTAINS (1) RIGHT HAND SLIDE ASSEMBLY, (1) LEFT HAND SLIDE ASSEMBLY.
3. ALL HARDWARE NECESSARY TO FASTEN SLIDE ASSEMBLY TO UNDERSIDE OF CONTROLLER SHELF SHALL BE INCLUDED.



FRONT VIEW



RIGHT SIDE ASSEMBLY

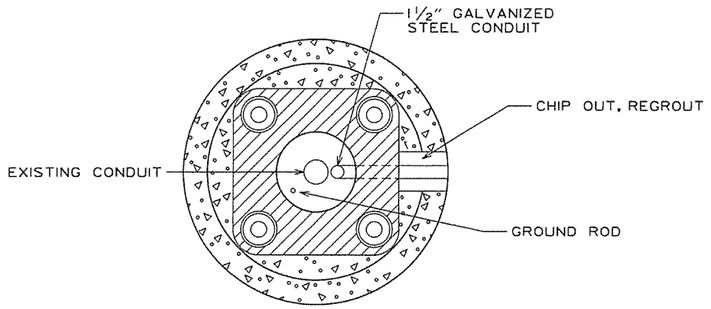
9-12-13	ISSUED AS STANDARD DRAWING	
6-15-05	ISSUED	
DATE	REVISION	DATE FILM

ARKANSAS STATE HIGHWAY COMMISSION

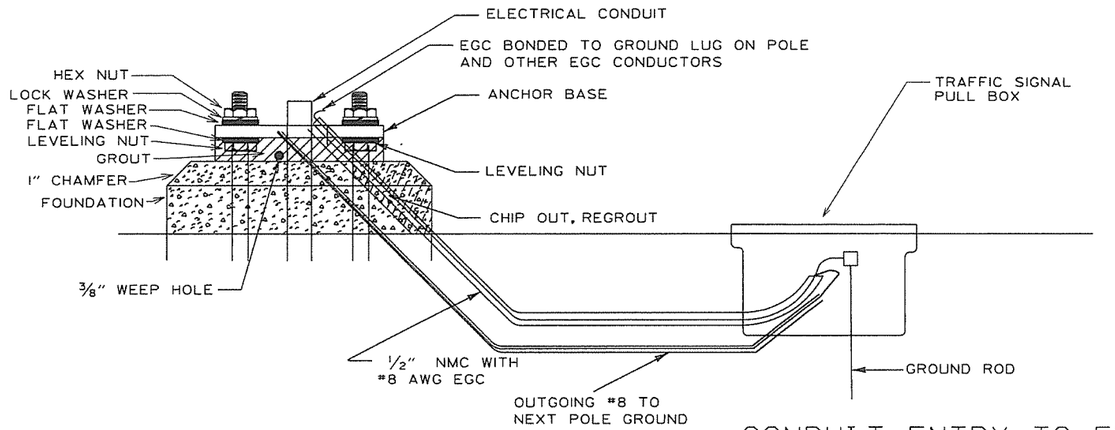
CONTROLLER CABINET
UTILITY DRAWER

STANDARD DRAWING SD-5

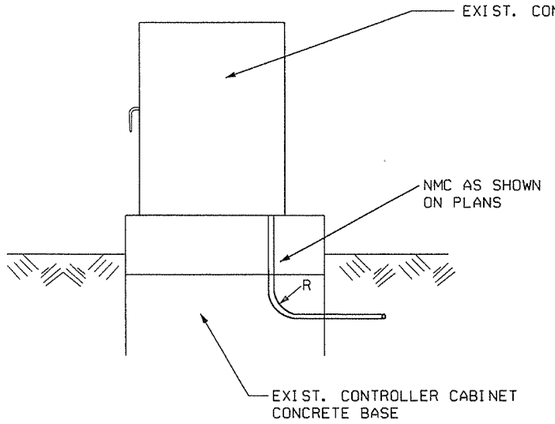
CONDUIT ENTRY TO EXISTING POLE BASE



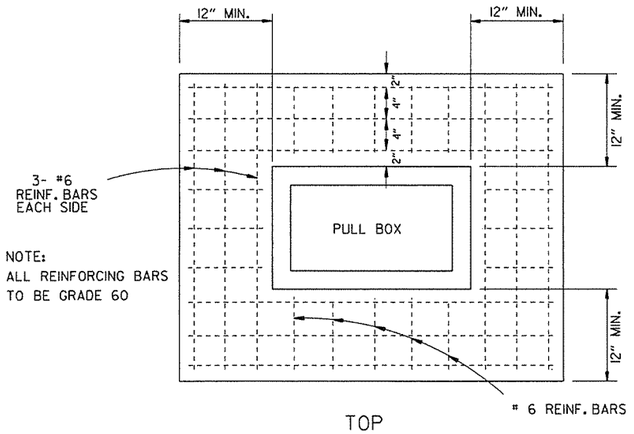
ANCHOR BASE



CONDUIT ENTRY TO EXISTING CONTROLLER CABINET

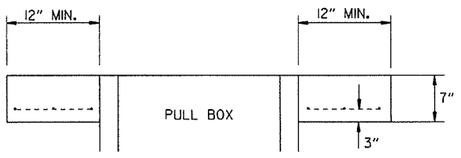


NOTE: ENTRY TO CABINET SHALL BE THROUGH A CUT IN THE BASE SUFFICIENT TO PROVIDE ADEQUATE CONDUIT RADIUS FOR ITEM.



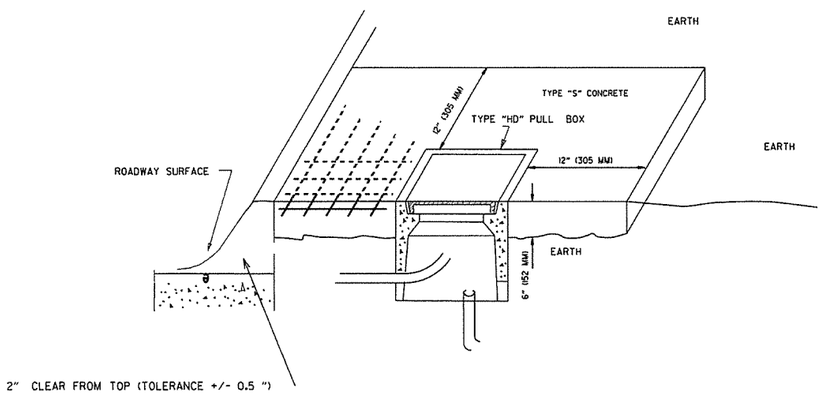
NOTE:
ALL REINFORCING BARS TO BE GRADE 60

TOP



ELEVATION

TYPE "HD" CONCRETE PULL BOX DETAIL



NOTE: ALL TYPE 1 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.

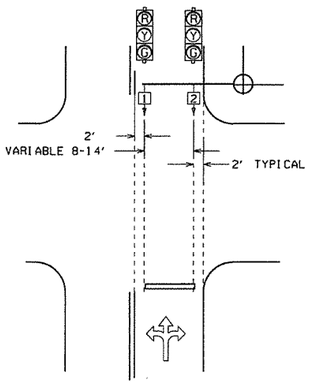
DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
5-21-09	REVISED GROUNDING	
7-31-08	ADDED & REVISED CONDUIT ENTRY	
6-23-04	REVISED CLEARANCE AT CURB ENTRY	
1-4-02	ADDED REINFORCING TO BOX APRON	
7-2-01	REVISED	
12-27-99	REVISED NOTES	
11-18-98	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

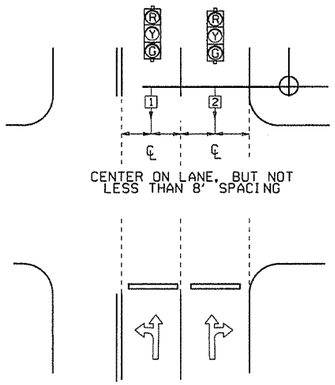
HEAVY DUTY PULL BOX

STANDARD DRAWING SD-6

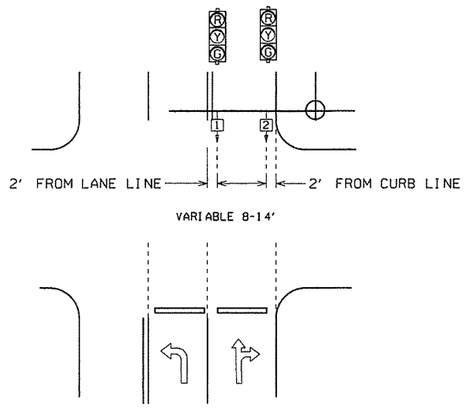
(A)



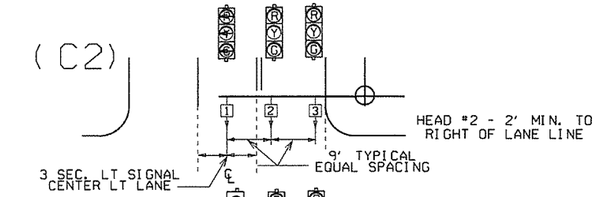
(B)



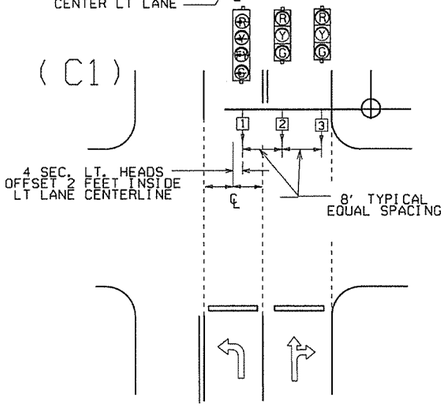
(C)



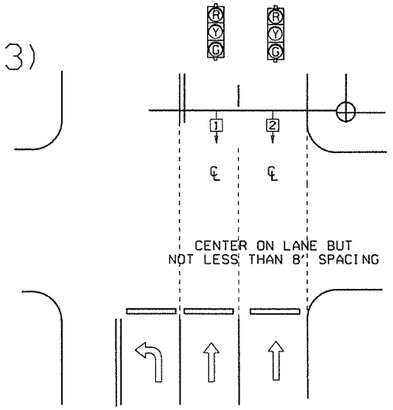
(C2)



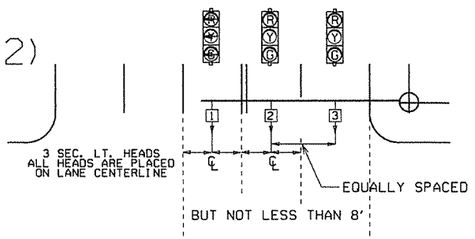
(C1)



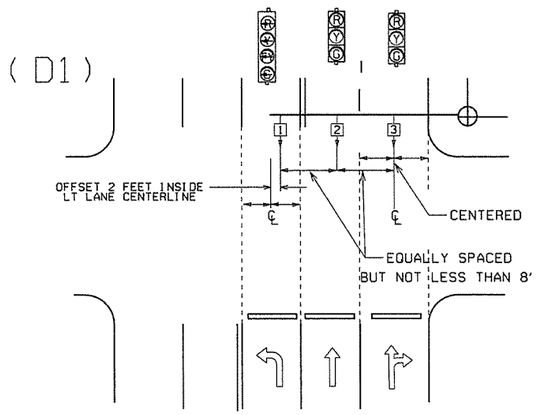
(C3)



(D2)

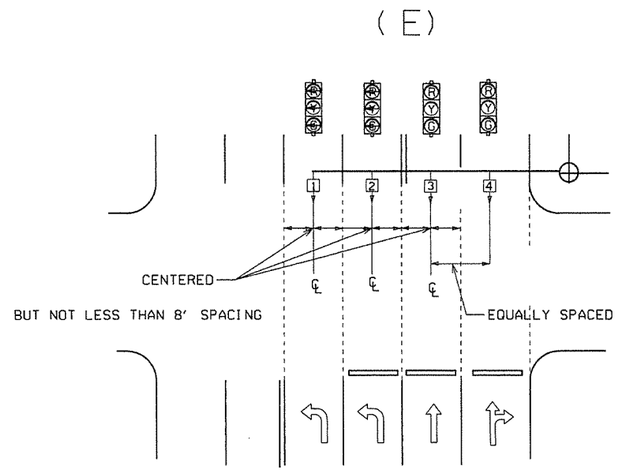


(D1)



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.

9-12-13	ISSUED AS STANDARD DRAWING	
3-11-10	2009 MUTCD	
12-9-99	ISSUED	
DATE	REVISION	DATE FILM

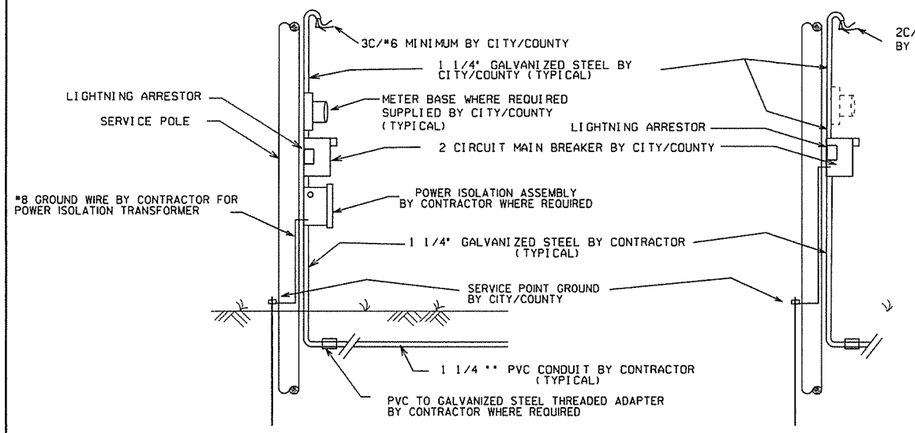
ARKANSAS STATE HIGHWAY COMMISSION

SIGNAL HEAD PLACEMENT

STANDARD DRAWING SD-8

MAIN BREAKER NOT NEAR CONTROLLER CABINET SECONDARY REQUIRED

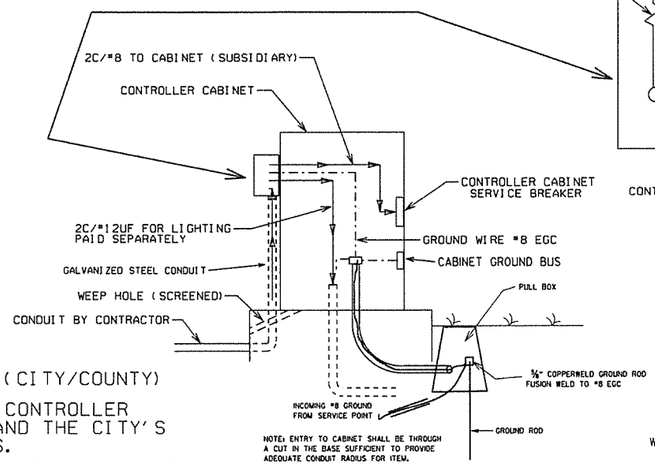
WITH POWER ISOLATION ASSEMBLY

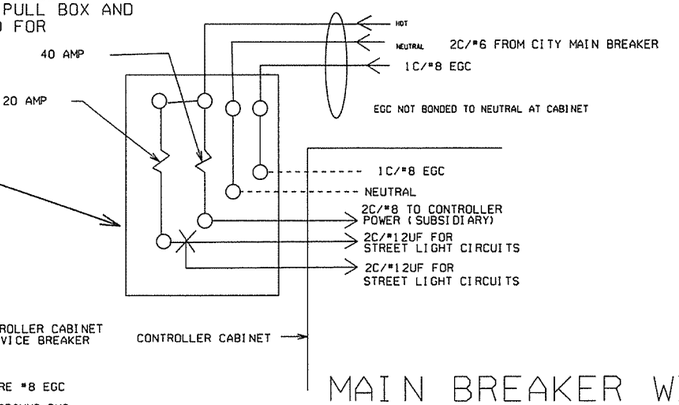


WITHOUT POWER ISOLATION ASSEMBLY

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.

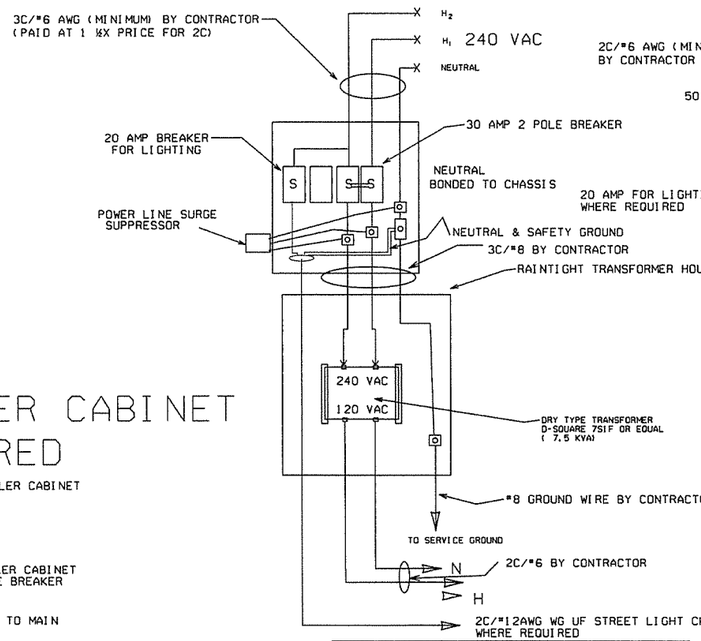
1. ALL SITUATIONS: ELECTRICAL SERVICE SHALL BE PROVIDED BY THE CITY/COUNTY TO A SERVICE POLE WITH EXTERNAL RAINTIGHT BREAKER (MAIN BREAKER) AT A MUTUALLY ACCEPTABLE POINT WITHIN THE RIGHT-OF-WAY. SERVICE POINT INCLUDES GALVANIZED STEEL CONDUIT TO A POINT 18" BELOW GROUND LINE, TWO CIRCUIT MAIN BREAKER, 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.

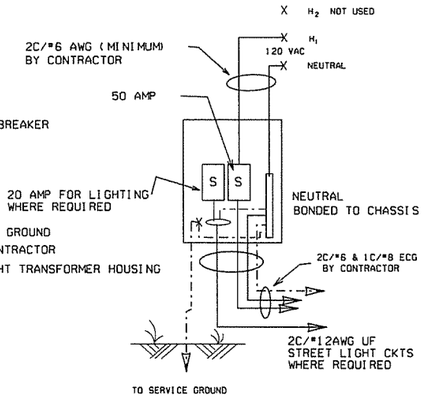
3. MAIN BREAKER NEAR CONTROLLER CABINET: ALL COMPONENTS OF THE SERVICE POINT WITH THE EXCEPTION OF THE WIRE AND WIRING ABOVE THE MAIN BREAKER IS FURNISHED AND INSTALLED BY THE CONTRACTOR. WIRING FROM MAIN BREAKER INCLUDING CONNECTION TO THE UTILITY, IS THE RESPONSIBILITY OF THE CITY/COUNTY. IF METER 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

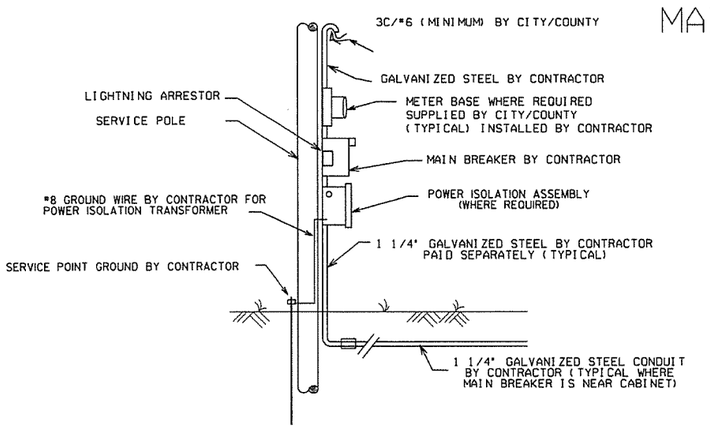


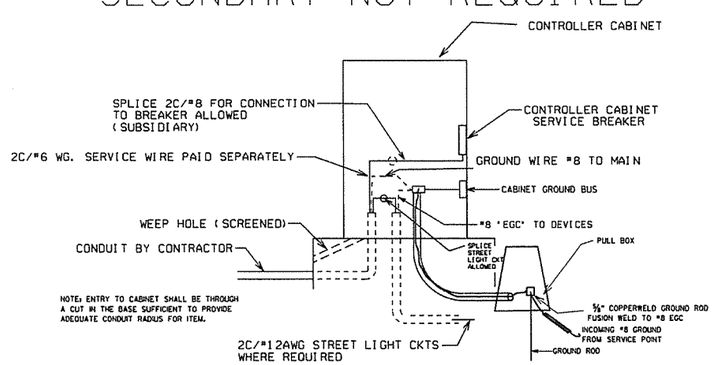
WITHOUT POWER ISOLATION ASSEMBLY
2 CIRCUIT MAIN BREAKER



NOTE: ELECTRICAL GROUND CONDUCTOR (EGG) 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.

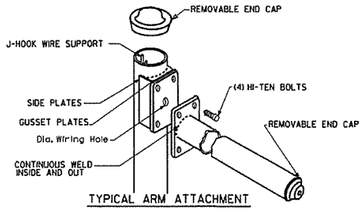
4. POLE/MAST ARM CAP -- POLE AND MAST ARMS CAPS SHALL BE PROVIDED, FABRICATED OF EITHER STEEL OR CAST ALUMINUM.

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).

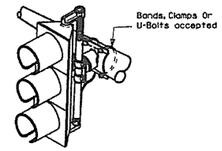
6. POLE/MAST ARM TAPER AND SLOPE - AVERAGE TAPER OF SIGNAL ARMS AND POLE SHALL BE 0.125 TO 0.15 INCHES PER FT.

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.

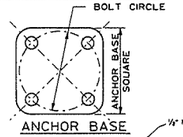
7. NUT COVERS - EACH POLE SHALL INCLUDE A BOLT DOWN NUT COVER FOR EACH ANCHOR BOLT.



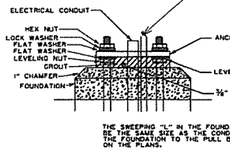
TYPICAL ARM ATTACHMENT

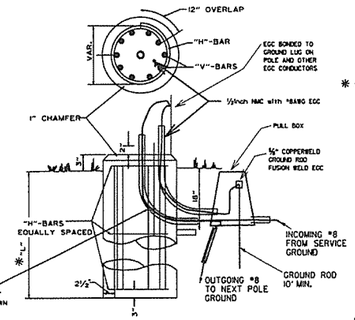


NOTE: THE SIGNAL SHALL BE CONNECTED TO THE MAST ARM BY BRACKETING AS DIRECTED BY THE ENGINEER.



ANCHOR BASE



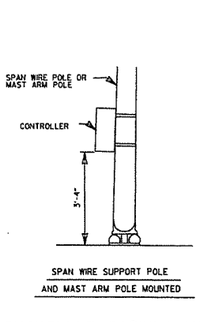


THE GROUND ROD SHALL BE FUSION WELDED TO A 1C/#8 A.W.G. SOLID COPPER GROUND WIRE. ATTACHMENT TO THE PRIMARY GROUND MAY BE BY AN APPROVED CLAMP. THE ROD IS TO BE LOCATED IN THE CONCRETE PULL BOX.

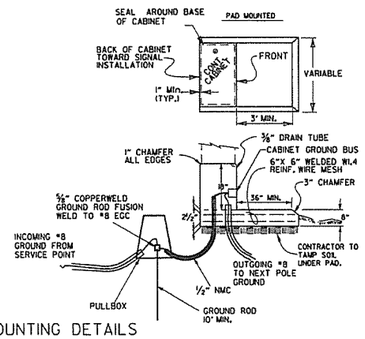
TYPICAL FOUNDATION DETAILS

POLE FOUNDATION MINIMUM DIMENSIONS AND STEEL REINFORCING. ALL REINFORCING STEEL SHALL BE GRADE 40 MIN.

ARM LENGTH	FDN. DIAMETER	DEPTH "L" *	STEEL VERT.	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.

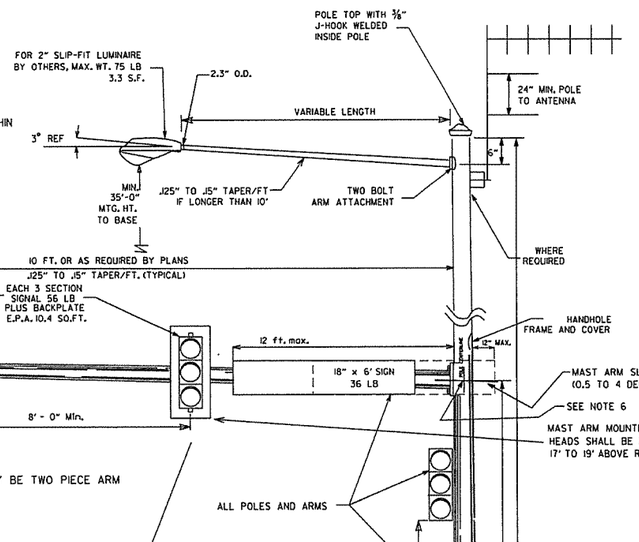
THE CONTRACTOR MAY BE REQUIRED TO ALTER THE FLASHING DISPLAY DURING THE TEMPORARY FLASH PERIOD, AT THE TIME INTERSECTION IS PLACED IN PERMANENT OPERATION, THE FLASH SEQUENCE SHALL THEN BE RETURNED TO THAT INDICATED ON THE PLAN SHEETS. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THESE ALTERATIONS 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.



DATE	REVISION	DATE FILM
9-12-13	ISSUED AS STANDARD DRAWING	
7-21-11	REVISED VMD, SIGNAL HEADS	
5-21-09	REVISED GROUNDING	
7-31-08	REVISED GROUNDING	
4-25-08	ADDED VIBRATORY MITIGATION DEVICE & NOTES	
4-18-08	REVISED AASHTO NOTES	
4-17-08	REVISED TO 2001 AASHTO STANDARDS	
10-12-04	REVISED CABINET ORIENTATION	
6-23-04	REVISED	
5-5-04	REV. NOTE 3/AASHTO REQUIREMENTS	
6-4-03	REV. NOTES & POLE MAST ARM SLOPE	
4-1-03	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 ONE - 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	65 MPH e	65 MPH Ls (FT) MINIMUM	65 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.			N.C.		
0° 30′	N.C.			N.C.			N.C.			N.C.			N.C.			N.C.			N.C.		
0° 45′	N.C.			N.C.			R.C.			0.022			0.023			0.025			0.028		
1° 00′	N.C.			R.C.			0.021			0.026			0.030			0.033	250		0.037	275	350
1° 15′	N.C.			0.021			0.026			0.032			0.037	250		0.041			0.046		
1° 30′	N.C.			0.025	175		0.031	200		0.037	225		0.043			0.048			0.054		
1° 45′	N.C.			0.028			0.036			0.043			0.049			0.055			0.062		
2° 00′	R.C.			0.031			0.040			0.048			0.055			0.062			0.070		
2° 15′	R.C.			0.034			0.045		300	0.053			0.061			0.069	265		0.078	300	
2° 30′	0.021			0.037			0.049			0.058			0.067			0.075	280		0.085	315	400
2° 45′	0.023			0.040		250	0.053			0.063			0.072			0.081	300		0.091	335	
3° 00′	0.025			0.043			0.057			0.067	230		0.077	260		0.087	315		0.096	350	
3° 15′	0.027	150		0.046	185		0.061			0.072	245		0.082	275		0.090	325	400	0.098	360	450
3° 30′	0.029			0.049	190		0.065	205		0.076	255		0.086	285		0.095	340		0.100	360	
3° 45′	0.031			0.051	200		0.069	215		0.080	265		0.090	295	400	0.097	345				
4° 00′	0.033			0.056	210		0.072	225		0.083	270		0.093	305		0.099	350				
4° 30′	0.037			0.061	215		0.078	240		0.087	280		0.096	315							
5° 00′	0.040			0.066	220		0.083	250		0.091	295	400	0.098	320							
5° 30′	0.043			0.070	225		0.088	260		0.094	300										
6° 00′	0.046			0.074	230		0.092	270		0.096	305										
6° 30′	0.050			0.078	235		0.095	280	350	0.100	315										
7° 00′	0.053			0.081	250		0.098	285													
7° 30′	0.056			0.084	250		0.099	290													
8° 00′	0.058			0.087	250	300	0.100	290													
8° 30′	0.061			0.089	250																
9° 00′	0.063			0.094	250																
10° 00′	0.068	160		0.097	250																
11° 00′	0.072	170		0.099	250																
12° 00′	0.076	175		0.100	250																
13° 00′	0.080	180																			
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	300																		
20° 00′	0.097	215																			
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 = 4° 15′ | D MAX = 3° 30′

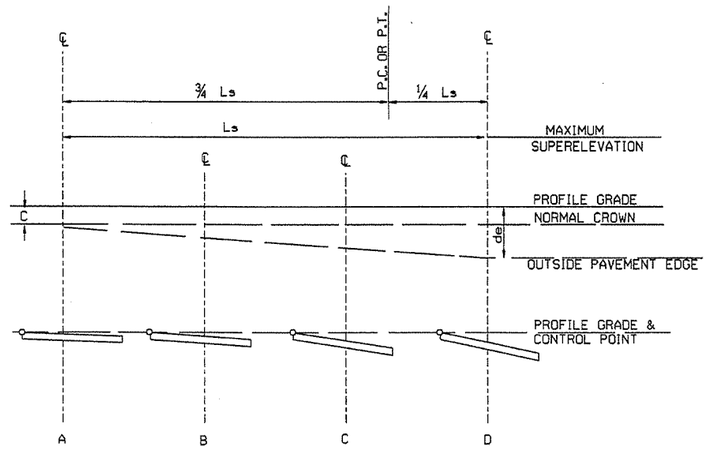
GENERAL NOTES

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

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

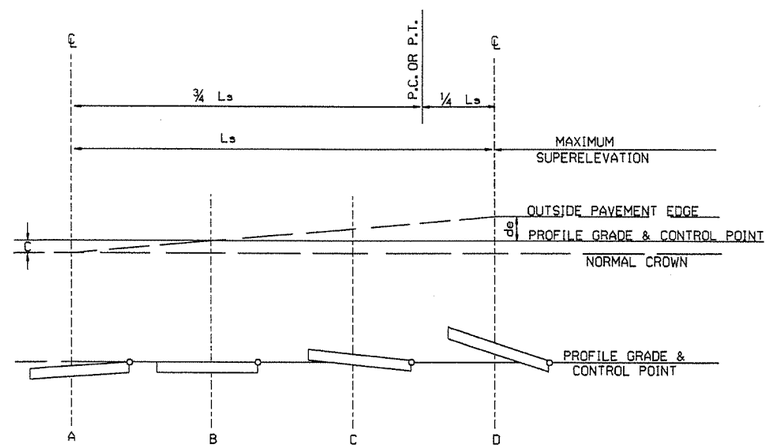
ABBREVIATIONS

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



ONE-WAY TRAFFIC
INSIDE LANE

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



ONE-WAY TRAFFIC
OUTSIDE LANE

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

DATE	REVISION	DATE FILMED
01-09-87	ISSUED	578-1-15-87

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPERELEVATION FOR ONE-WAY TRAFFIC

STANDARD DRAWING SE-1

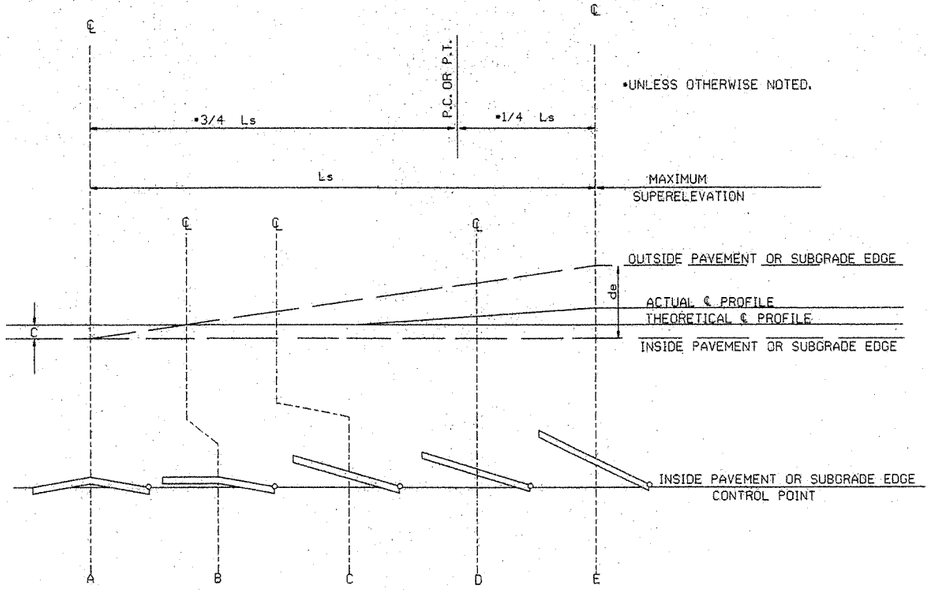
SUPERELEVATION TABLE FOR TWO - WAY TRAFFIC

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		
1° 15′	N.C.			R.C.			0.026			0.032			0.037			0.046		
1° 30′	N.C.			0.021			0.031			0.037			0.043			0.054		
1° 45′	N.C.			0.025			0.036			0.043			0.049			0.062		
2° 00′	R.C.			0.028	175		0.040			0.048			0.055			0.070		
2° 15′	R.C.			0.031			0.045			0.053			0.061			0.078	300	
2° 30′	0.021			0.034			0.049			0.058			0.067			0.085	315	350
2° 45′	0.023			0.037			0.053			0.063			0.072			0.091	335	
3° 00′	0.025			0.040			0.057			0.067	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			0.049			0.069	215		0.080	265		0.090	295				
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							
6° 00′	0.046			0.070	190		0.092	270		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													
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.

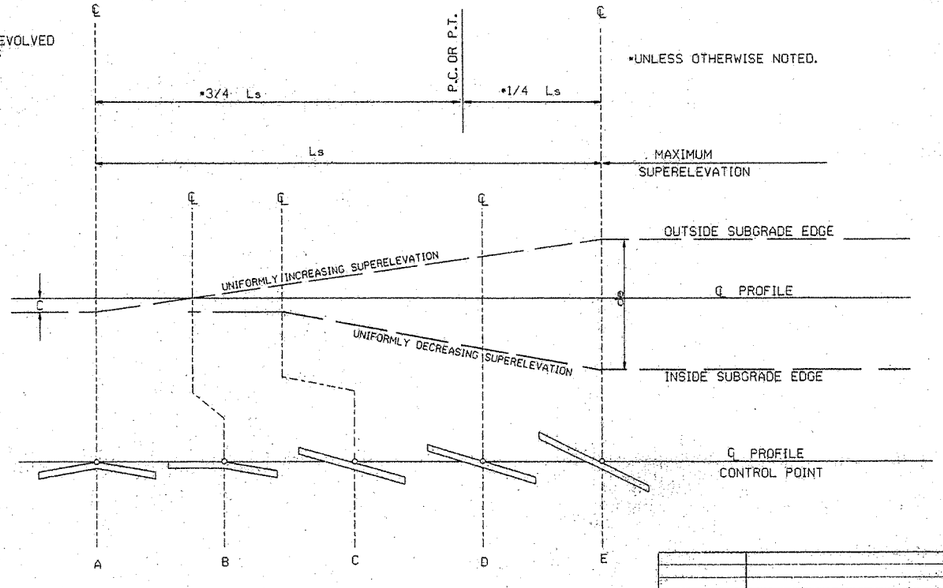
GENERAL NOTES

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

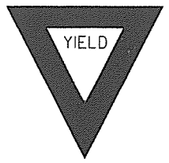
STANDARD DRAWING SE-2

FILE STDSE2.DGN

R1-1

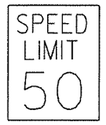
STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

R1-2



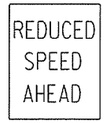
STD. 36"X36"X36"
EXPWY. 48"X48"X48"
FWY. 60"X60"X60"

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"

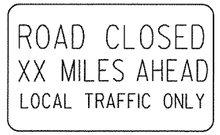
R5-1

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

RII-2

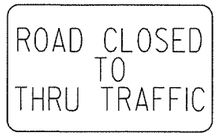
48"X30"

RII-3A



60"X30"

RII-4

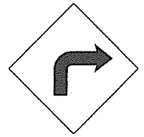


60"X30"

RSP-1

48"X30"

WI-1



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

WI-2

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

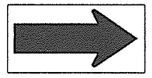
WI-3

STD. 48"X48"

WI-4

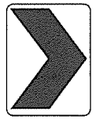
STD. 48"X48"

WI-6



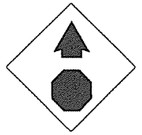
STD. 48"X24"
SPECIAL 60"X30"

WI-8



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

W3-1

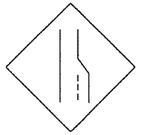


STD. 36"X36"
SPECIAL 48"X48"

W3-2

STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1

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"

WI3-1

STD. 24"X24"

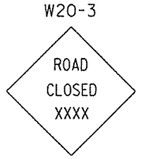
W20-1

STD. 48"X48"

W20-2

STD. 48"X48"

W20-3



STD. 48"X48"

W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

W20-7a

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

W21-2

STD. 30"X30"
SPECIAL 36"X36"

W21-5

STD. 30"X30"
SPECIAL 36"X36"

W24-1

STD. 36"X36"

WI-4b

STD. 48"X48"

R56-1

STD. 18"X18"

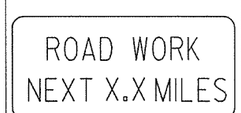
W8-11

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	½ MILE
1000 FT	¾ MILE
1500 FT	1 MILE
	AHEAD

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.
2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.
3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION, AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.
- 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ. FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.
- 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN. WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-3.
6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.
7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE (1) FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE PADS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.
8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT. HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.
10. R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

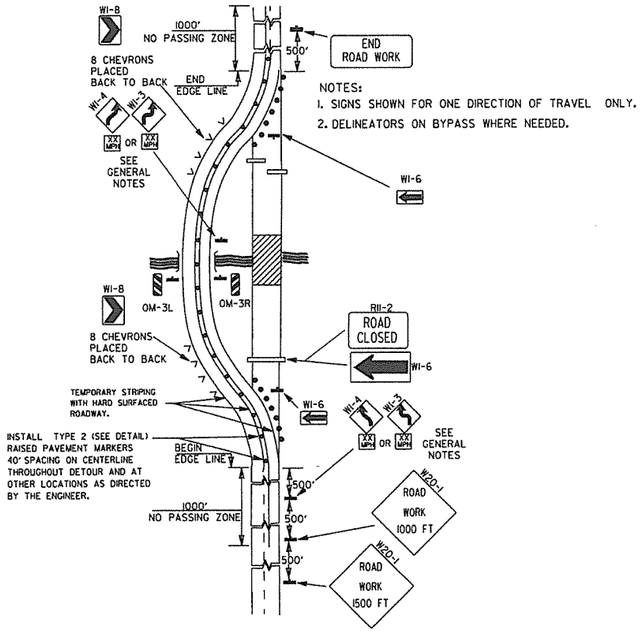
- NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY 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

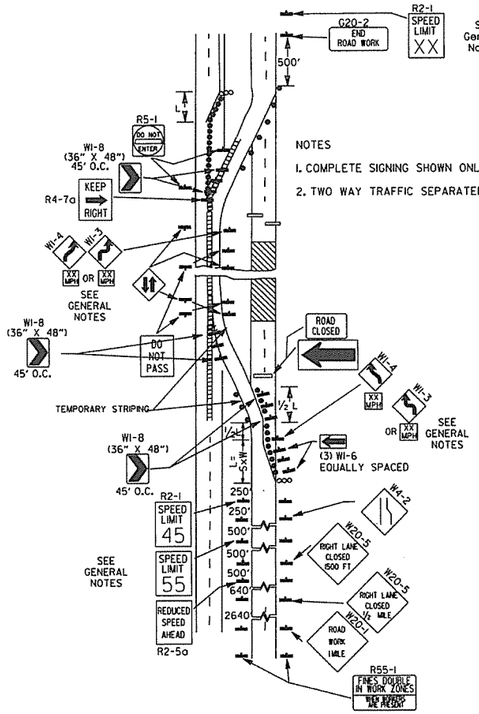
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



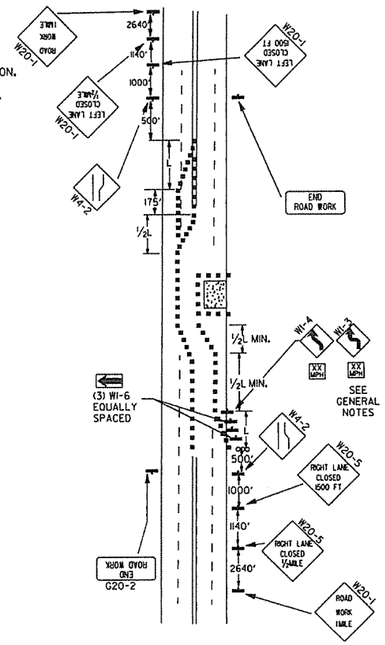
NOTES:
1. SIGNS SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. DELINEATORS ON BYPASS WHERE NEEDED.

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

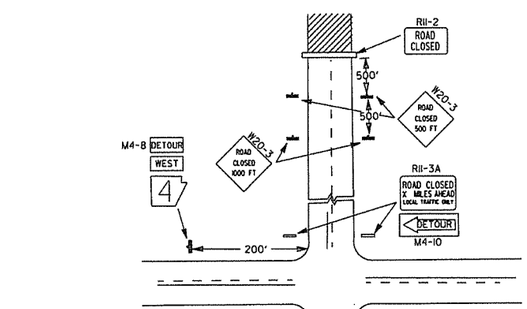


NOTES
1. COMPLETE SIGNING SHOWN ONLY IN CROSSOVER DIRECTION.
2. TWO WAY TRAFFIC SEPARATED WITH POSITIVE BARRIER.

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

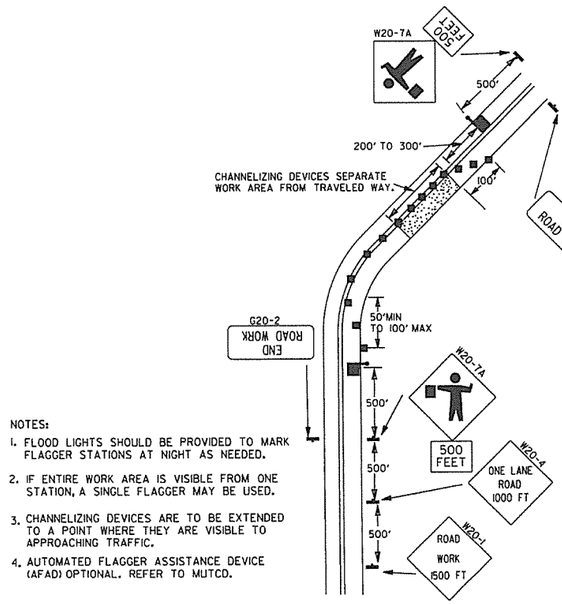


(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



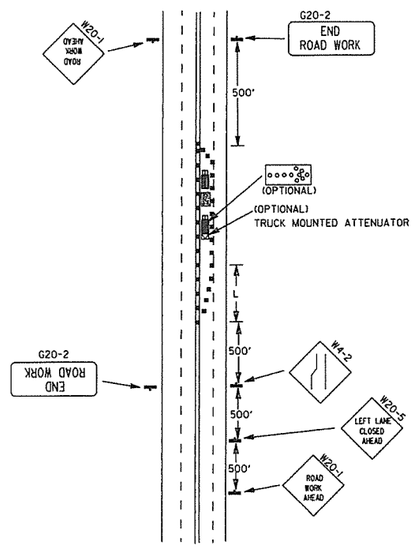
NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

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



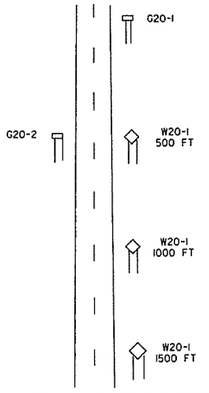
NOTES:
1. FLOOD LIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.
2. IF ENTIRE WORK AREA IS VISIBLE FROM ONE STATION, A SINGLE FLAGGER MAY BE USED.
3. CHANNELIZING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
4. AUTOMATED FLAGGER ASSISTANCE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

(E) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON 2-LANE HIGHWAY WHERE ONE LANE IS CLOSED AND FLAGGING IS PROVIDED.

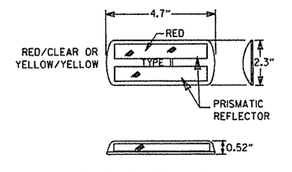


(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

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



TYPICAL ADVANCE WARNING SIGN PLACEMENT



DETAIL OF RAISED PAVEMENT MARKERS

TAPER FORMULAE:

L=SXW FOR SPEEDS OF 45MPH OR MORE.

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

WHERE:
L= MINIMUM LENGTH OF TAPER.
S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED.
W= WIDTH OF OFFSET.

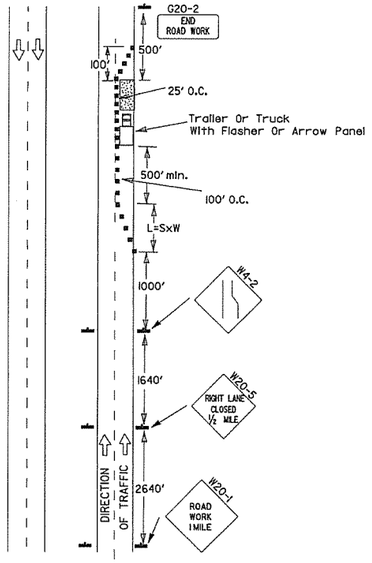
GENERAL NOTES:
1. ADVISORY SPEED POSTED ON WI-3 OR WI-4 CURVE WARNING SIGNS TO BE DETERMINED AT SITE. USE WI-4 WHEN SPEED IS GREATER THAN 30MPH AND WI-3 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE R2-5A 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	

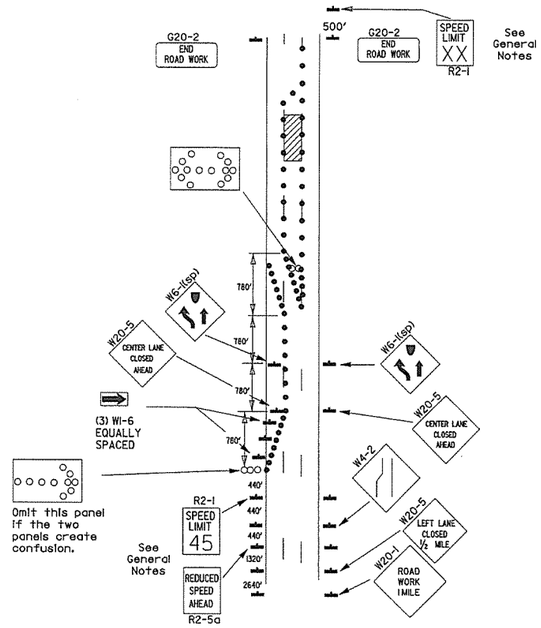
ARKANSAS STATE HIGHWAY COMMISSION

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.



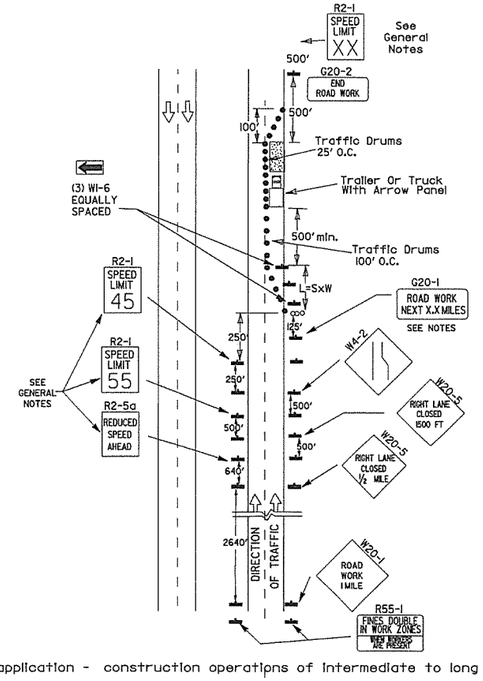
(B) Typical application - 3-lane oneway roadway where center lane is closed.

KEY:

- ○○○ Arrow Panel (If Required)
- ■ Channelizing Device
- ● Traffic drum

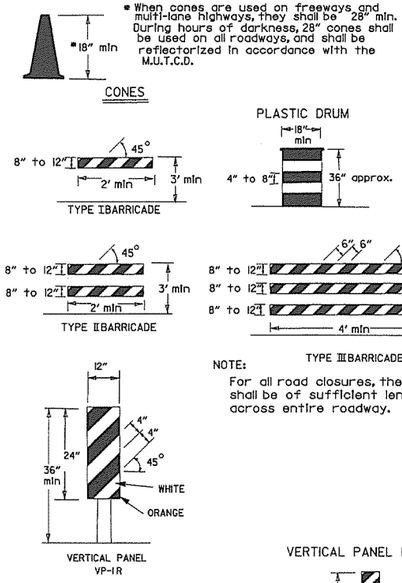
GENERAL NOTES:

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.



(C) Typical application - construction operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

Channelizing devices



NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.

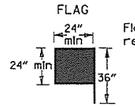
TRAFFIC CONTROL DEVICES FOR VERTICAL PAVEMENT DIFFERENTIALS

VERTICAL DIFFERENTIAL	LOCATIONS	TRAFFIC CONTROL
1" to 3"	Centerline, lane lines	W8-11
1" to 3"	Edge of shoulder	W8-9
Greater than 3"	Lane lines	Standard lane closure required
Greater than 3"	Edge of traveled lane	*RSP-1 and vertical panels, drums or concrete barrier
Greater than 3"	Edge of shoulder	*Vertical panels, drums or concrete barrier

* When shown on the plans concrete barrier will be used.

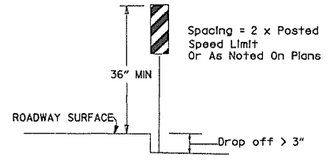
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

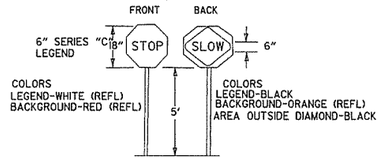


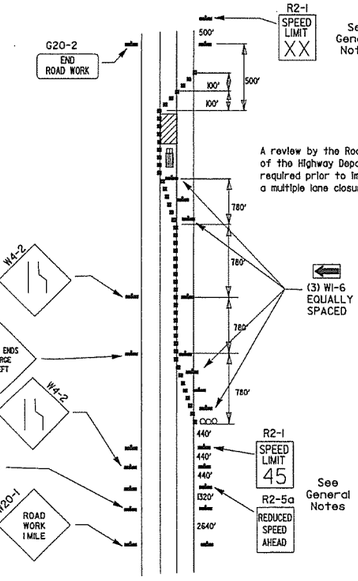
Flag shall be of good grade red material

VERTICAL PANEL PLACEMENT



STOP SLOW PADDLE

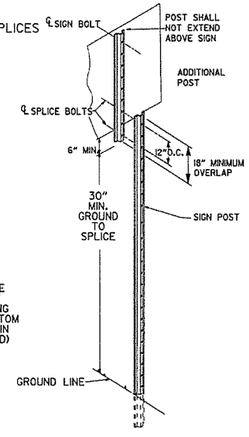




A review by the Roadway Design Division of the Highway Department will be required prior to implementing a multiple lane closure.

(D) Typical application - closing multiple lanes of a multilane highway.

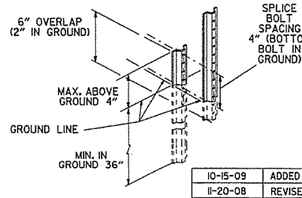
DETAIL OF SPLICES



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

NORMAL INSTALLATIONS WILL REQUIRE 1/4" DIA. BOLTS TO MOUNT SIGNS TO POST AND 5/16" DIA. BOLTS TO ASSEMBLE THE VARIOUS POST SUPPORTS. EACH OF THESE BOLTS SHALL BE CARRIAGE BOLTS.

SIGN POSTS SHALL BE PAINTED GREEN; SIGNS SHALL NOT BE PAINTED, AND ALL SIGN POSTS SHALL BE PLUMB.



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	

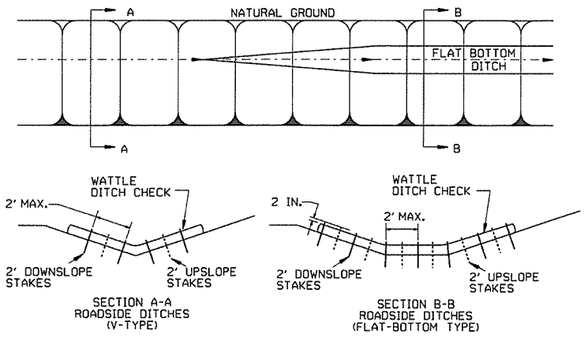
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

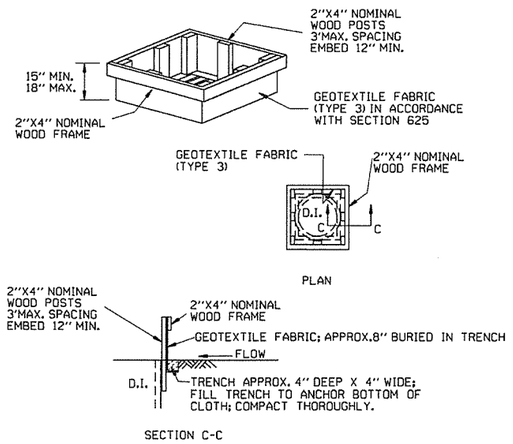
STANDARD DRAWING TC-3

GENERAL NOTES

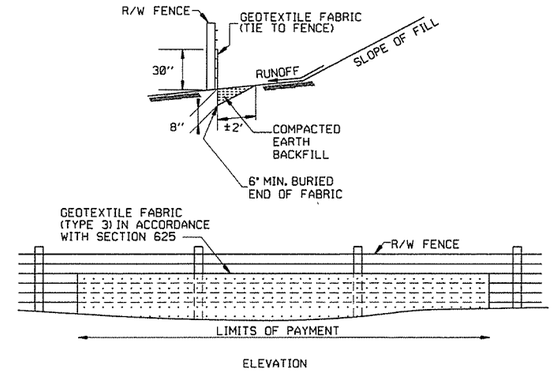
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.



WATTLE DITCH CHECK (E-1)



DROP INLET SILT FENCE (E-7)



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

GENERAL NOTES

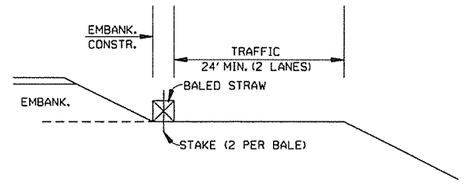
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST, OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

GENERAL NOTES

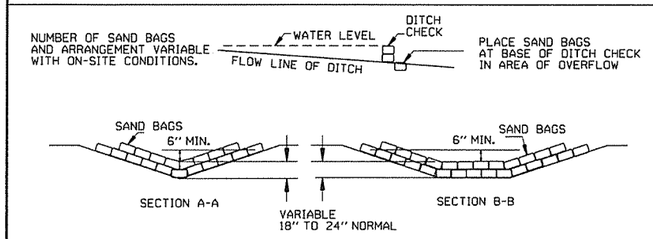
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.

2. NO GAPS SHALL BE LEFT BETWEEN BALES.

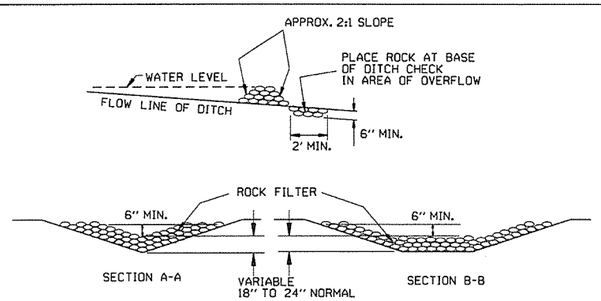
3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.



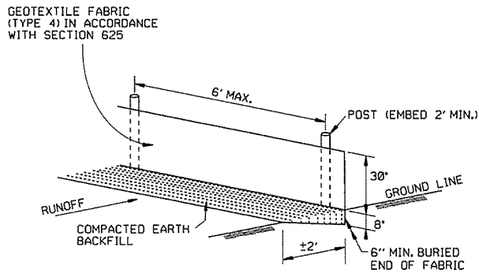
BALED STRAW FILTER BARRIER (E-2)



SAND BAG DITCH CHECK (E-5)



ROCK DITCH CHECK (E-6)



SILT FENCE (E-11)

GENERAL NOTES

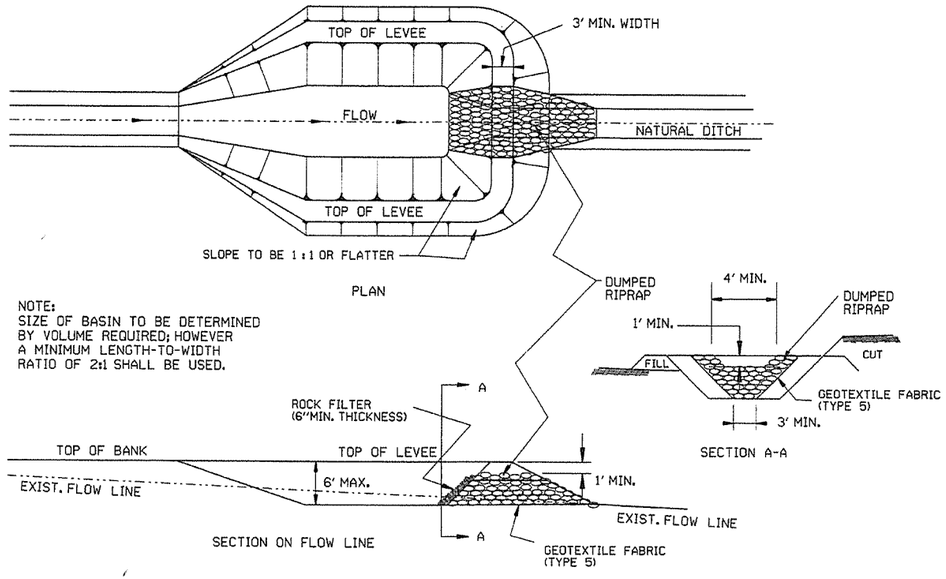
GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.

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

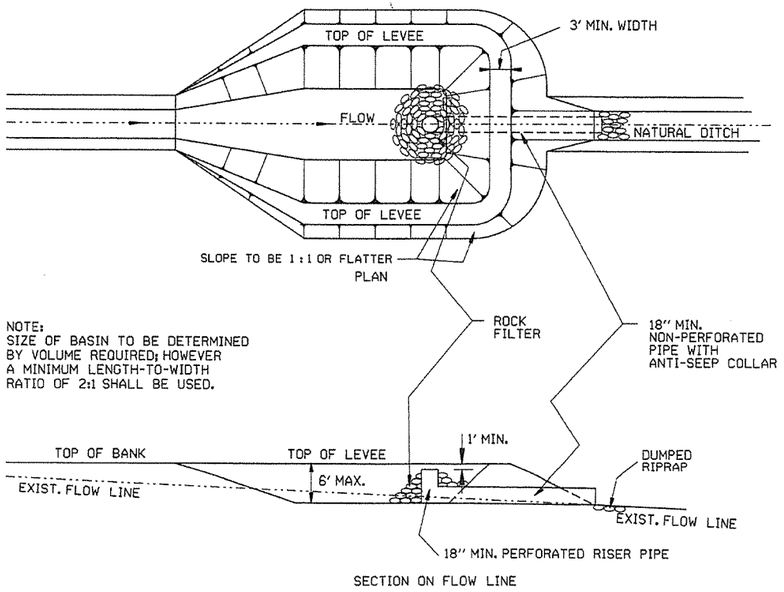
ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

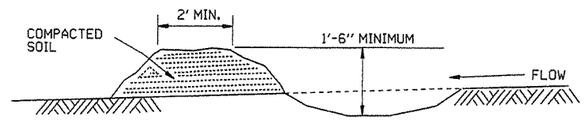
STANDARD DRAWING TEC-1



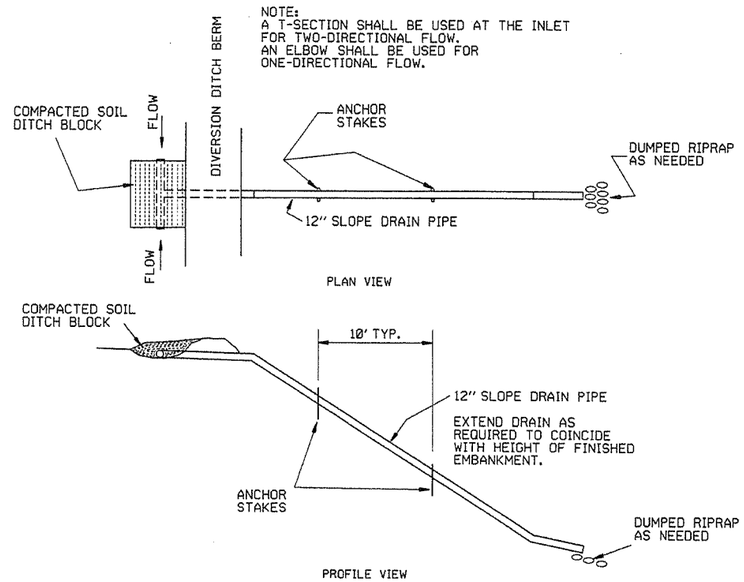
SEDIMENT BASIN WITH RIPRAP OUTLET (E-9)



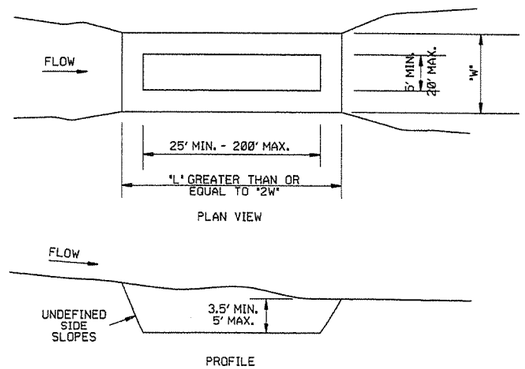
SEDIMENT BASIN WITH PIPE OUTLET (E-10)



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

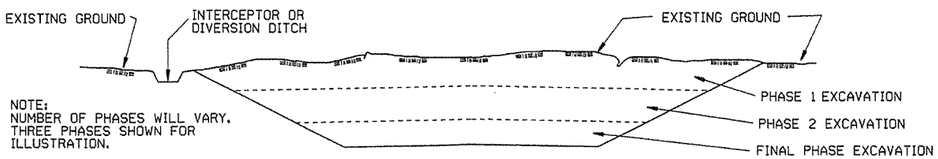
STANDARD DRAWING TEC-2

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



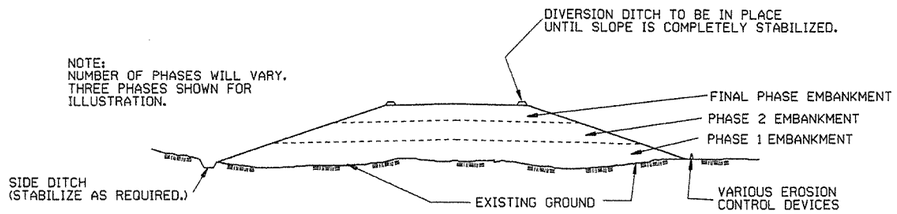
GENERAL NOTE

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.

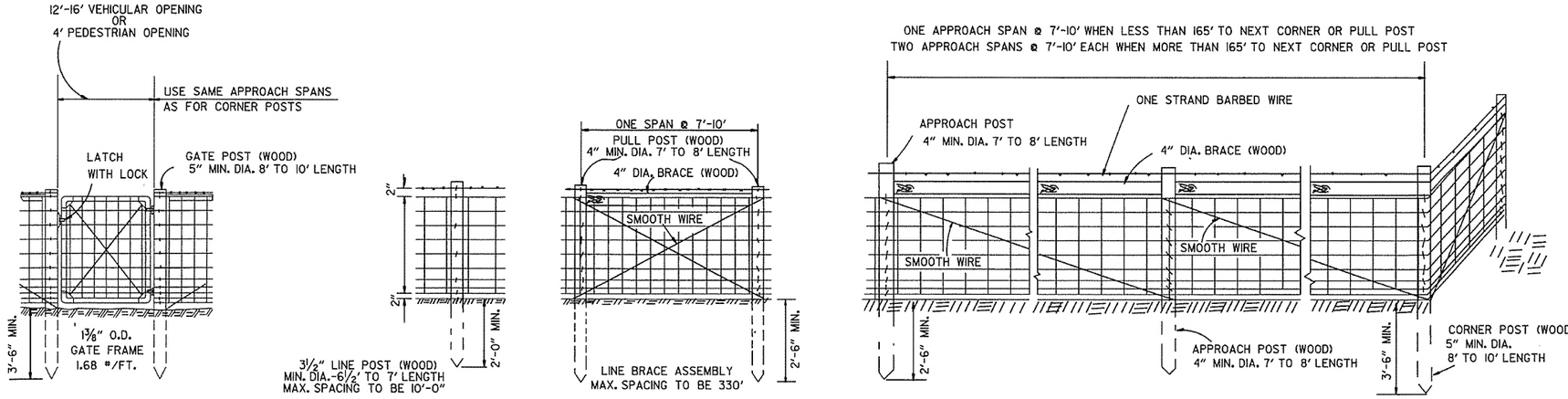
DATE	REVISION	FILMED
11-03-94	CORRECTED SPELLING	
6-2-94	Drawn & Issued	6-2-94

ARKANSAS STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

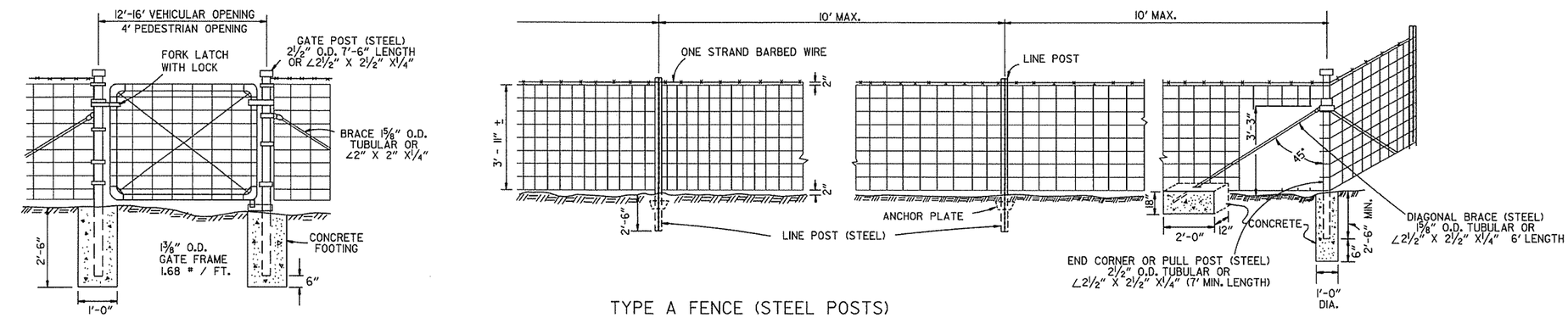
STANDARD DRAWING TEC-3

stdtec3.dgn

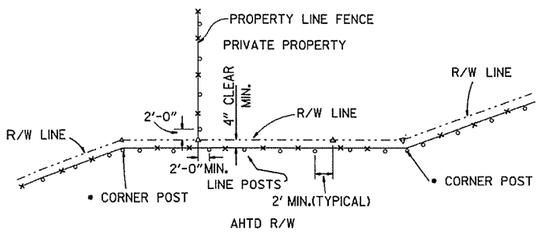


NOTE: STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.

TYPE A FENCE (WOOD POSTS)



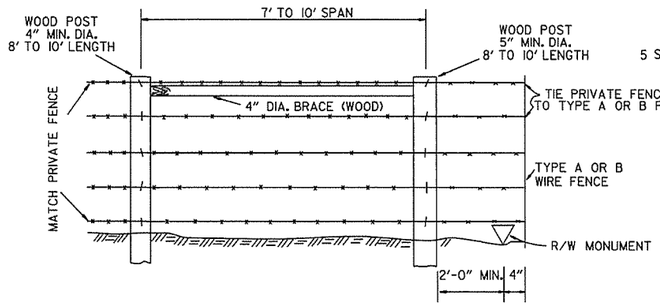
TYPE A FENCE (STEEL POSTS)



•NOTE: RIGHT-OF-WAY MONUMENTS SHALL NOT BE DISTURBED BY FENCE CONSTRUCTION. CORNER POSTS SHALL BE CONSTRUCTED 2' FROM THE RIGHT-OF-WAY MONUMENT OR AS DIRECTED BY THE ENGINEER.

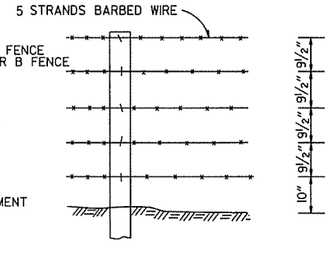
△ - R/W MONUMENTS
○ - FENCE POSTS

RIGHT-OF-WAY FENCE LOCATION



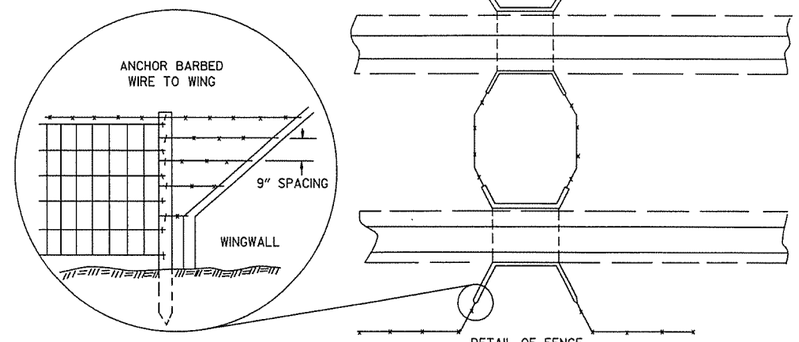
WHERE EXISTING PRIVATE FENCE CONSISTS OF STEEL POSTS, USE END POST ASSEMBLY AS SHOWN WITH TYPE A FENCE OR OTHER END POST ASSEMBLY AS APPROVED BY THE ENGINEER.

PRIVATE FENCE TERMINAL INSTALLATION



SPACING AND SIZE OF POSTS FOR TYPE B FENCE SHALL BE THE SAME AS TYPE A FENCE.

TYPE B FENCE



DETAIL OF FENCE CONSTRUCTION AT LARGE CULVERTS (5' IN HEIGHT AND OVER)

GENERAL NOTES:

STEEL LINE POSTS SHALL BE GALVANIZED, 7 FT. IN LENGTH.

TUBULAR END, CORNER, PULL, OR DIAGONAL BRACES MUST CONFORM TO THE DIMENSIONS AND WEIGHTS SPECIFIED ON STANDARD DRAWING WF-3 (CHAIN LINK).

THE CONTRACTOR SHALL FURNISH AT LEAST 25% OF WOOD LINE POSTS OF 7' LENGTHS IN ORDER TO PROVIDE SUFFICIENT SET IN SOFT GROUND OR SMALL DEPRESSIONS.

GATE HINGES AND LATCHES WITH LOCKS TO BE OF A TYPE APPROVED BY THE ENGINEER. DRIVEWAY GATES, EITHER SINGLE 12' OR 16' OR DOUBLE 6' TO 8' OPENINGS OF THE SAME TYPE AS THE PEDESTRIAN GATE, SHALL BE INSTALLED ON THE RIGHT SIDE OF EACH THROUGH LANE ROAD AT LARGE CULVERTS OR BRIDGE CROSS FENCE FOR USE BY MAINTENANCE EQUIPMENT. LOCATION OF GATES TO BE SHOWN ON THE PLANS OR AS DESIGNATED BY THE ENGINEER.

AT STREAM CROSSINGS THE FENCE SHALL NOT BE CONSTRUCTED ACROSS LARGE STREAMS. WHERE CLEARANCE IS SUFFICIENT FROM THE TOP OF BANK TO THE BRIDGE STRUCTURE, A CROSS CONNECTION SHALL BE CONSTRUCTED BETWEEN THE FENCE ON EACH SIDE OF THE ROAD. WHERE THE CLEARANCE IS NOT SUFFIEICNT, THE FENCE SHALL BE TERMINATED WITH CROSS CONNECTIONS AND END POSTS ADJACENT TO THE BRIDGE ABUTMENTS OR CULVERT WINGWALLS.

SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE "WESTERN UNION METHOD" AS DESCRIBED AS FOLLOWS: THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD": AS DESCRIBED AS FOLLOWS: THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND THE PROJECTING WIRE A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

DATE	REVISION	DATE FILMED
8-22-02	REVISED GENERAL NOTES	
10-18-96	REVISED ASTM REF. TO AASHTO	
11-22-95	REVISED R-O-W LOCATION DETAIL	
6-2-94	ADDED CORNER POST NOTE	6-2-94
8-5-93	REVISED R-O-W LOCATION DETAIL	8-5-93
10-1-92	ADDED STAPLE NOTE	
8-2-90	REV'D PULL POST LENGTH	
11-30-89	DELETED CLASS CONC.	
7-15-88	ADDED SPLICE NOTES	
7-15-88	ADDED HEIGHT DIMENSION	
4-3-87	REVISED VARIOUS NOTES	
	AND GENERAL NOTES	
11-1-84	MAX. POST SPACING	
1-4-83	MIN. DIA. LINE POST	
10-2-72	REVISED & REDRAWN	

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE
TYPE A AND B

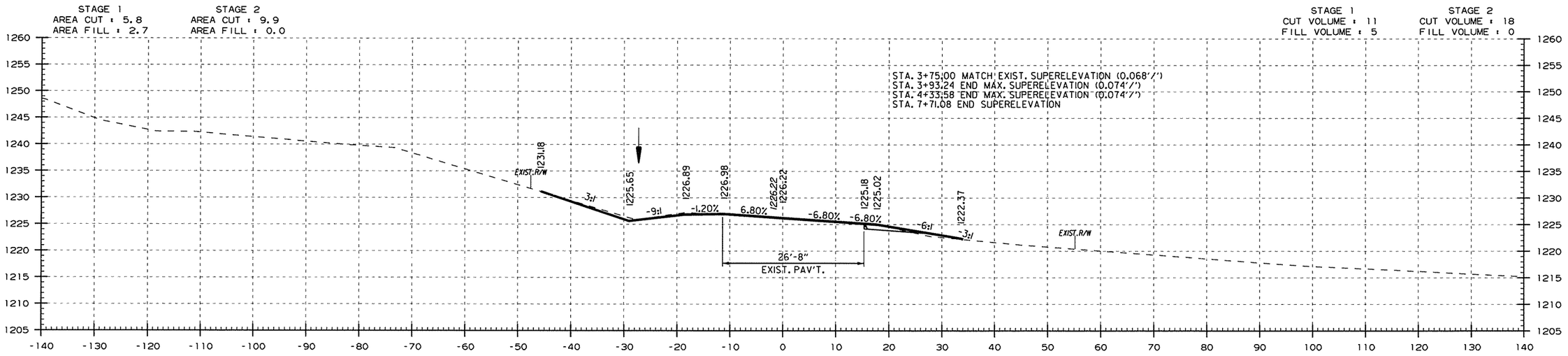
STANDARD DRAWING WF-1

Crafton, Tull & Associates Inc.

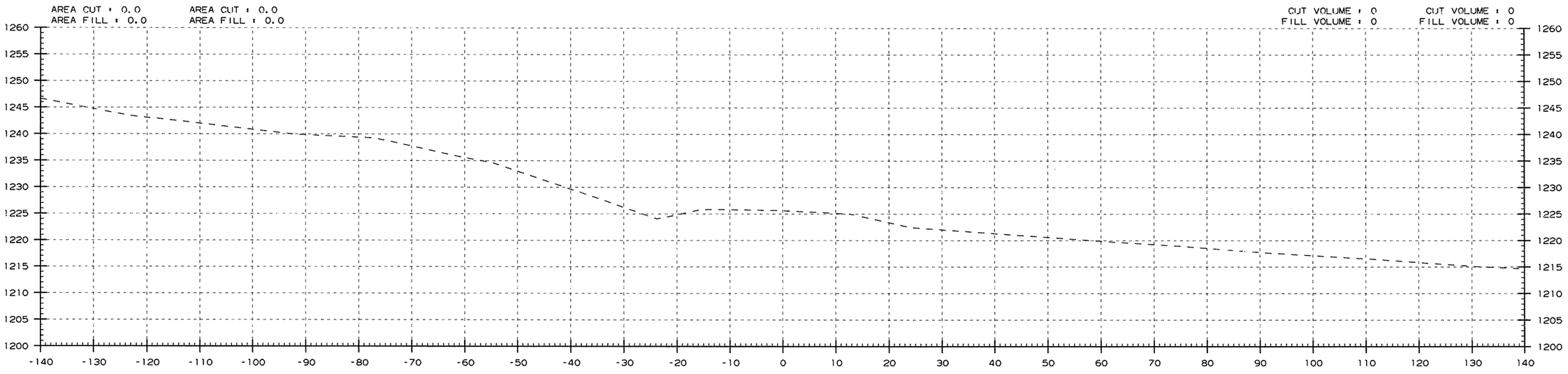
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	75	97

(2) JOHNSON MILL BLVD. - CROSS SECTIONS



3+75.00 BEGIN JOB BB0412



2+75.00

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Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	76	97

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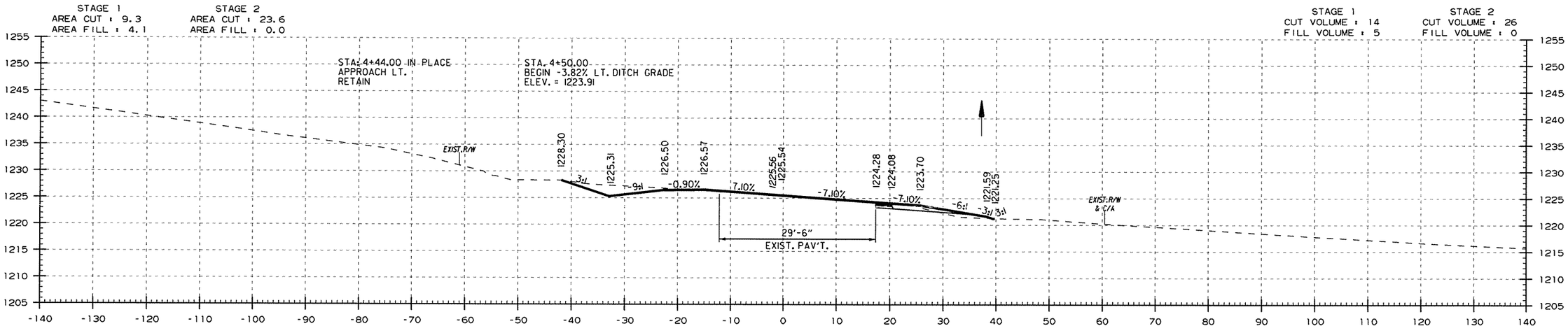

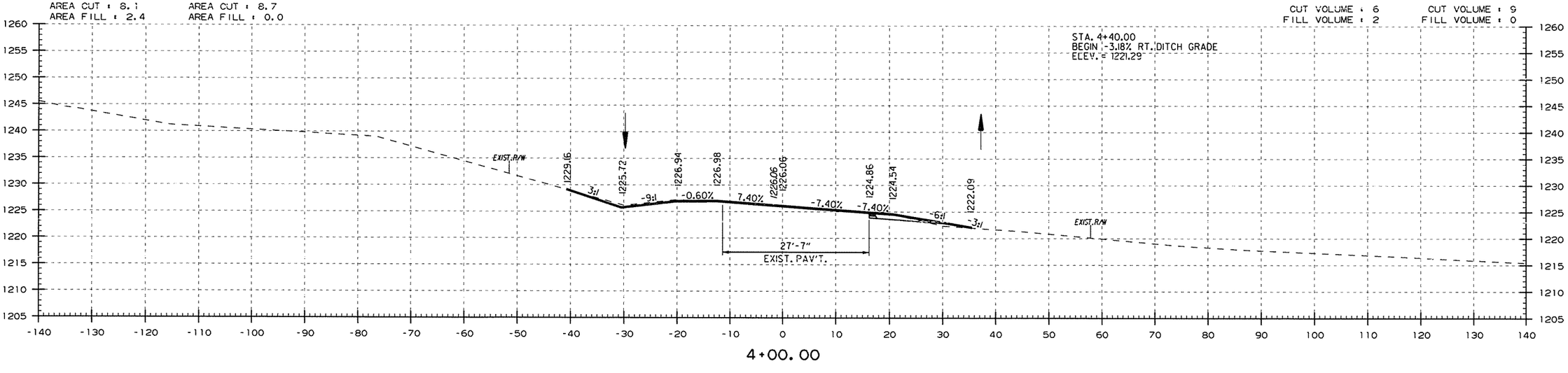

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MODEL: CROSS SECTIONS

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	77	97

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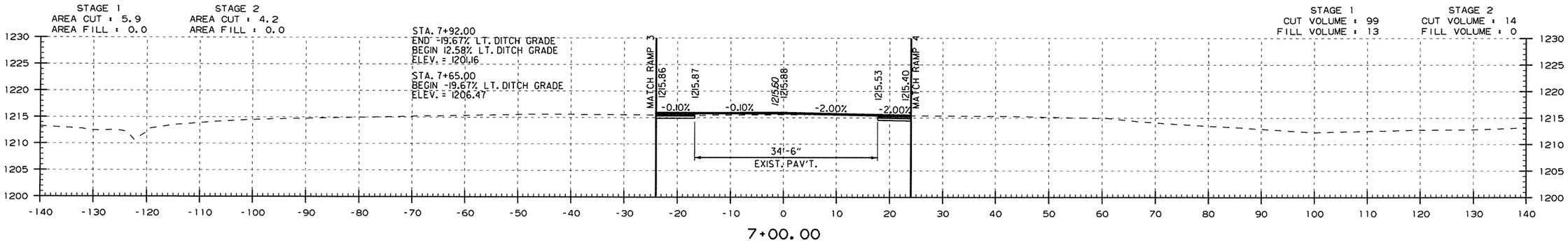

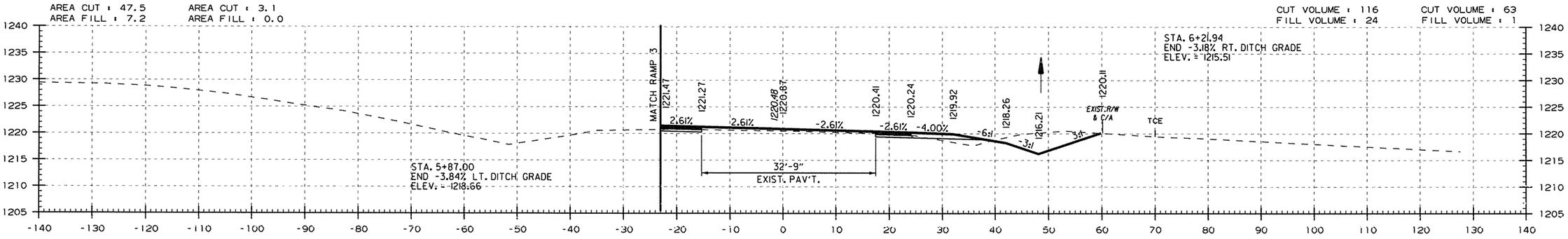

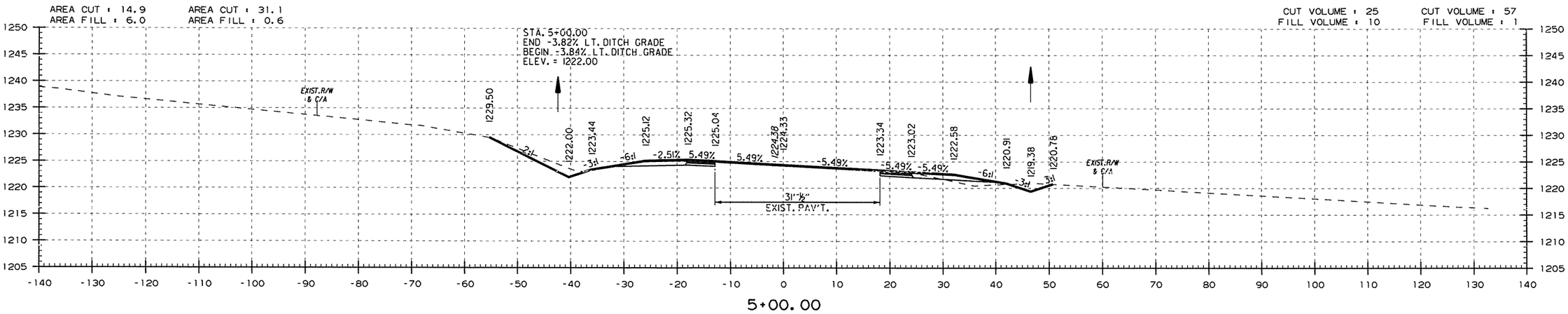

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Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

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JOB NO.		BB0412	78	97

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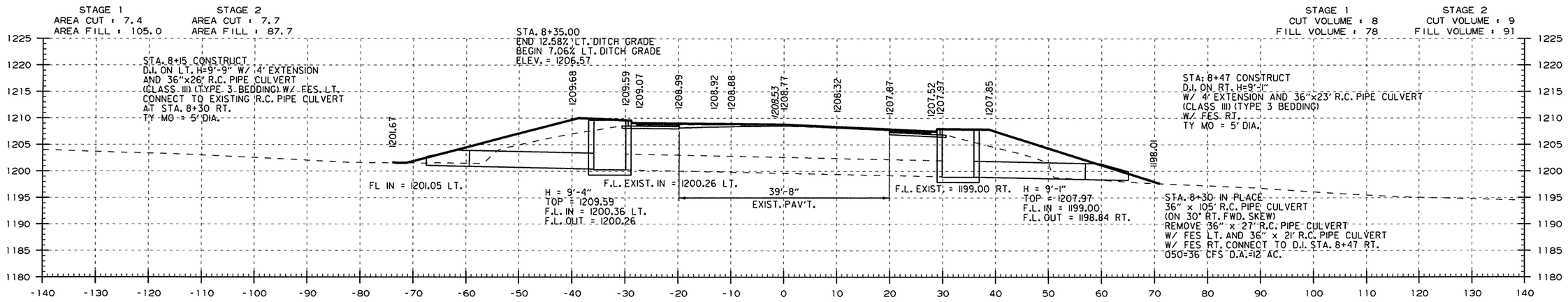
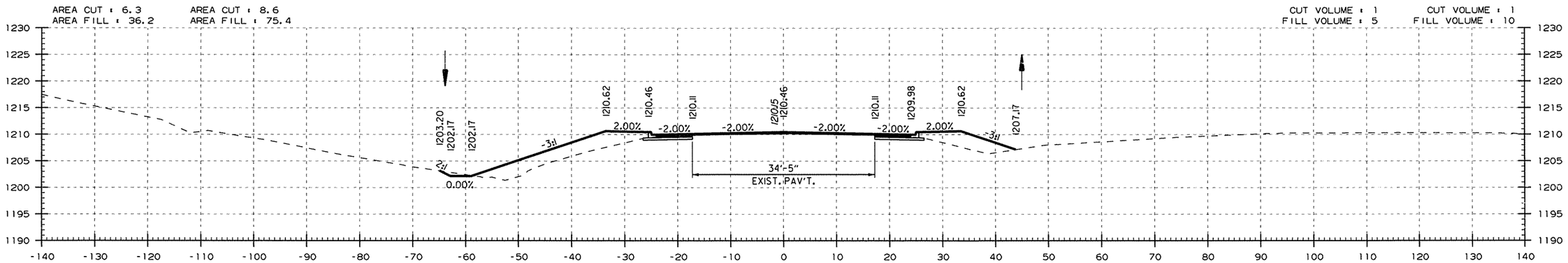
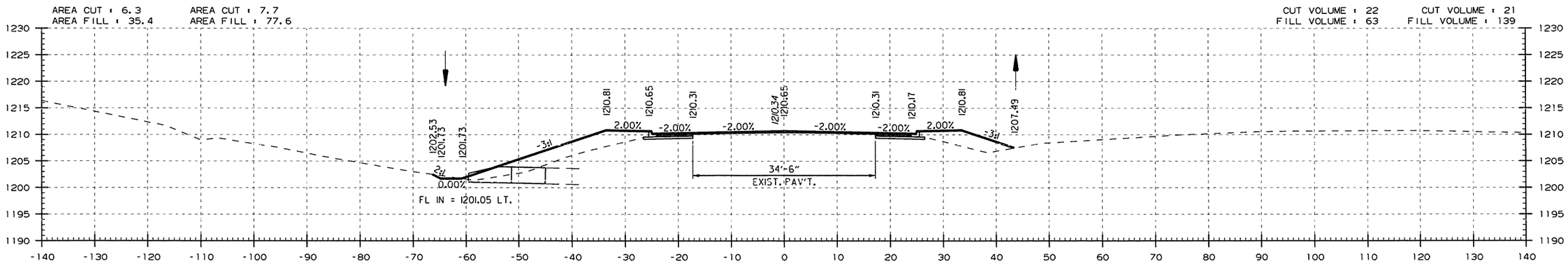


8+30.00 30° RT FWD SKEW



8+00.00



7+96.51

JOHNSON MILL STA. 7+96.51 TO STA. 8+30.00

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Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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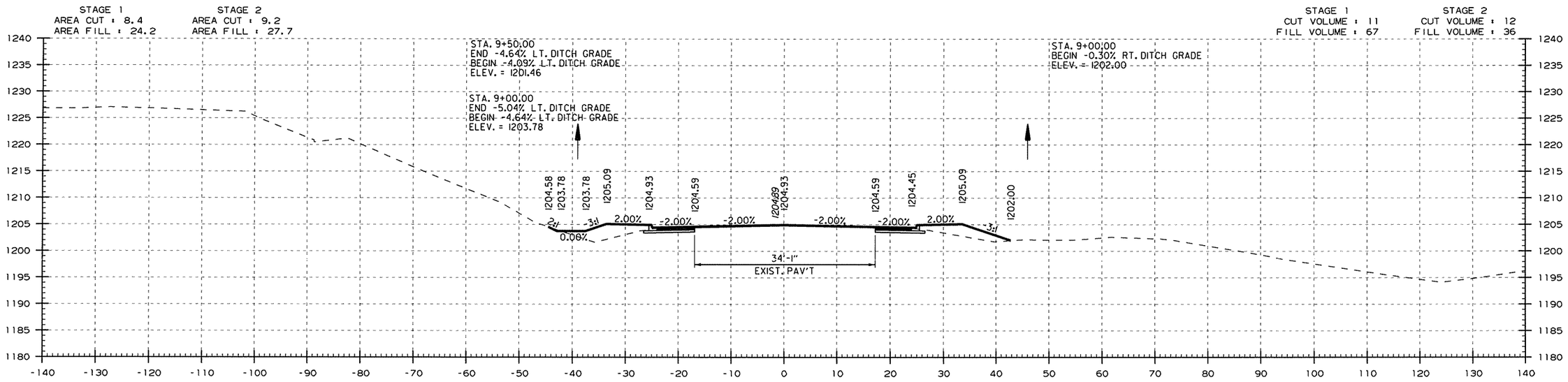
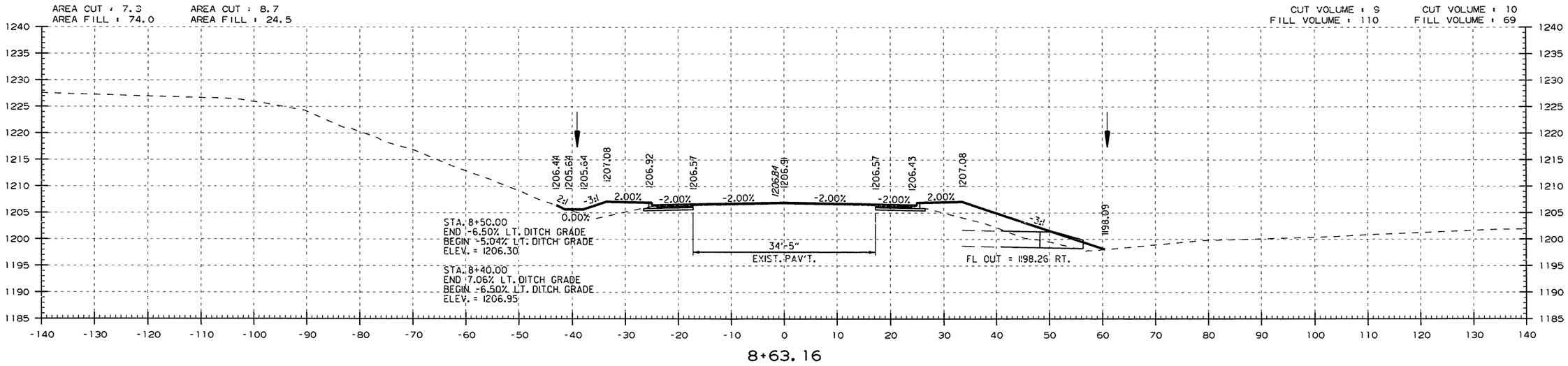


9+00.00



8+63.16

JOHNSON MILL STA. 8+63.16 TO STA. 9+00.00

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Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

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6	ARK.			
JOB NO.		BB0412	80	97

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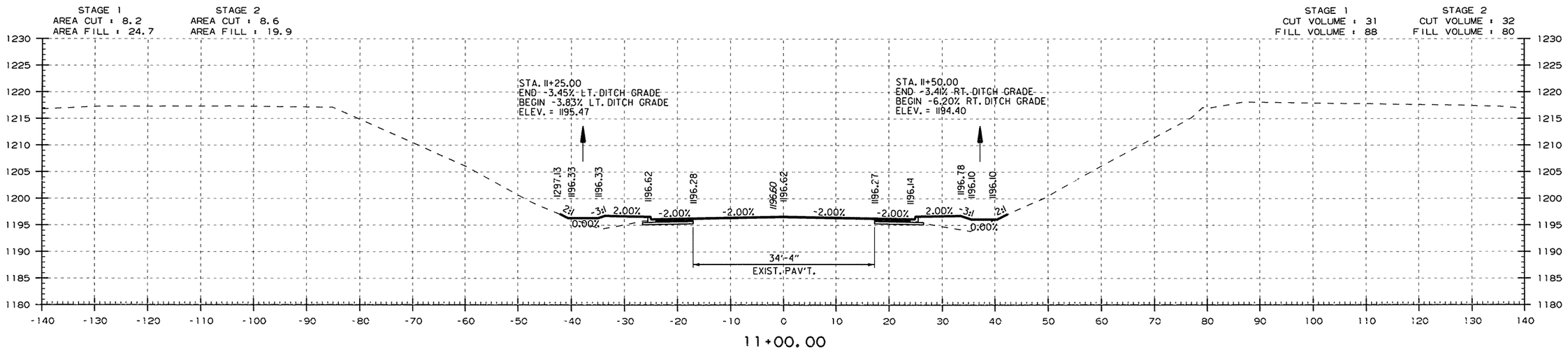

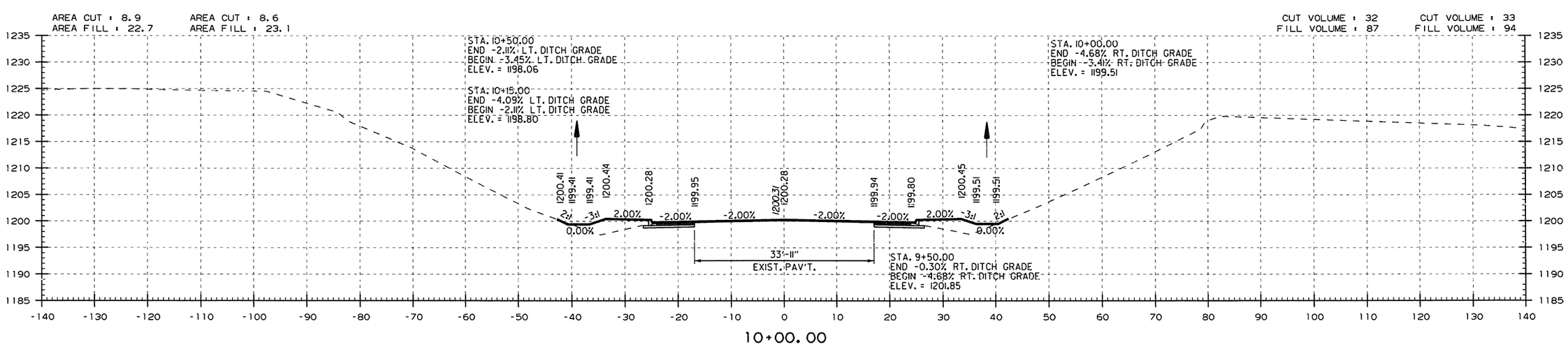

JOHNSON MILL STA. 10+00.00 TO STA. 11+00.00

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Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	81	97
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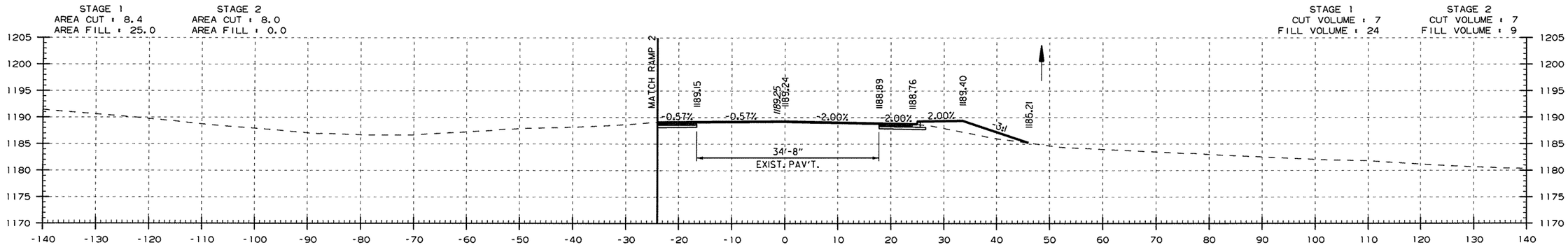
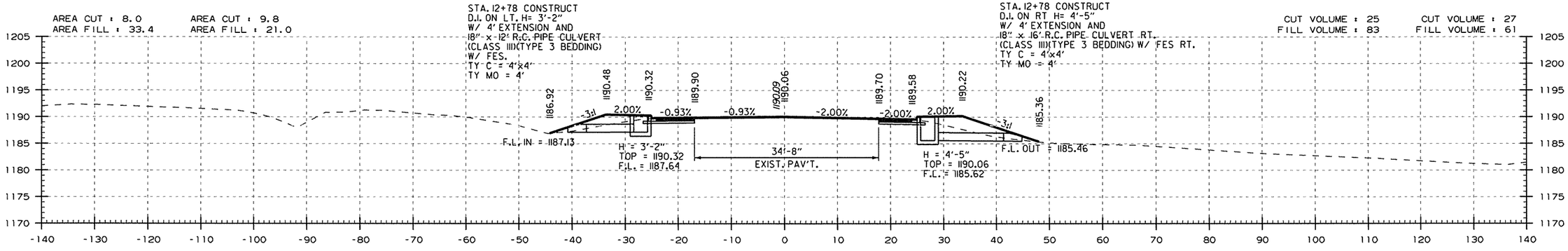
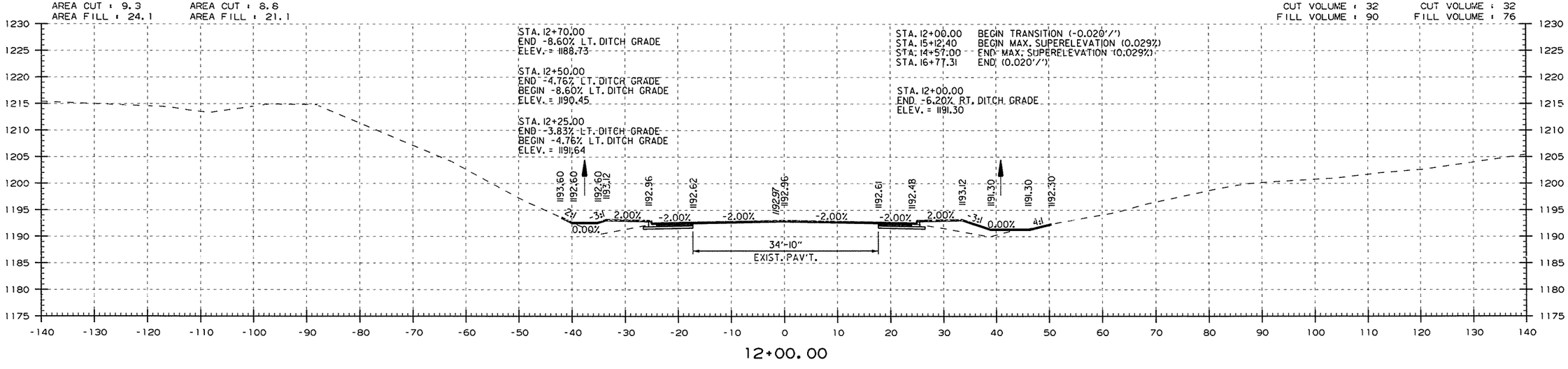


13+00.00



12+78.00



12+00.00

JOHNSON MILL STA. 12+00.00 TO STA. 13+00.00

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MODEL: CROSS SECTIONS

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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JOB NO.		BB0412	82	97

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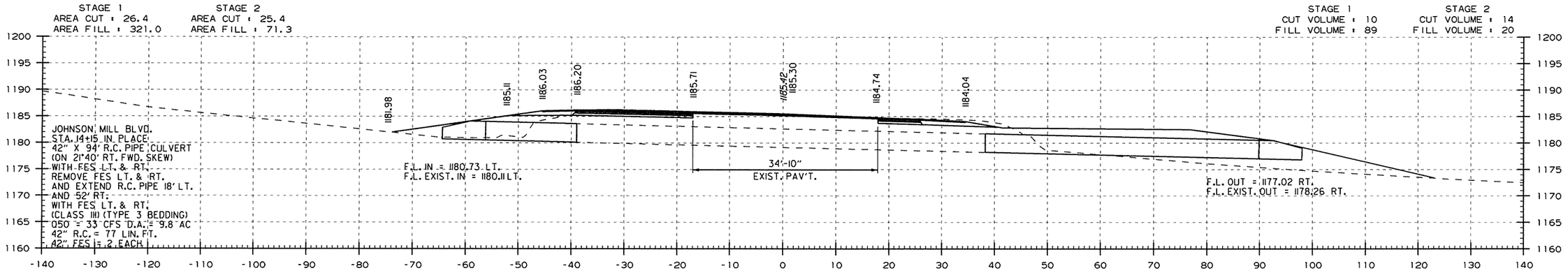
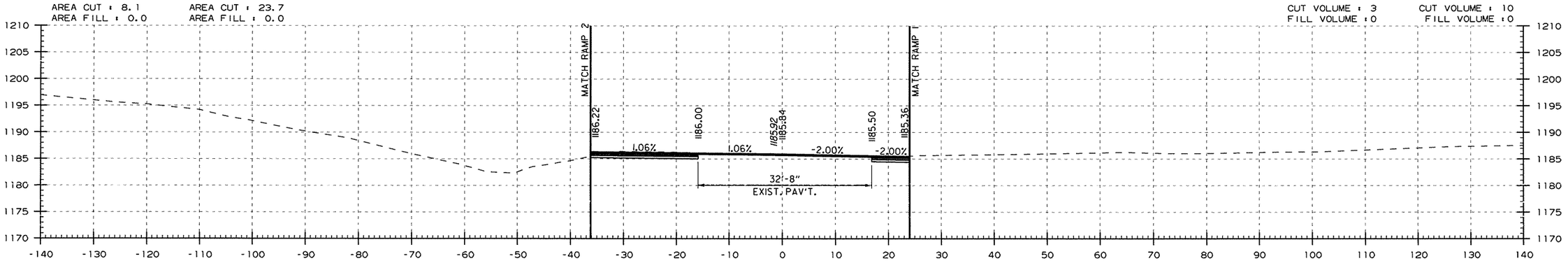
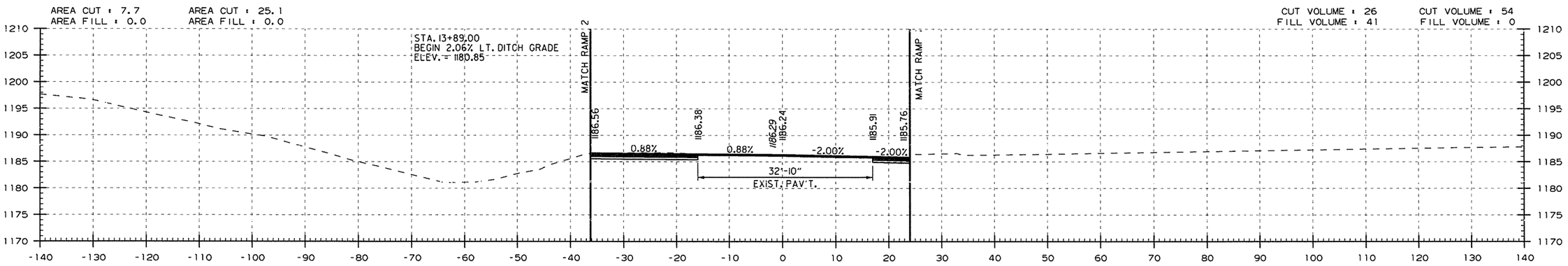


14+15.00 21°40' RT FWD SKEW



14+00.00



13+88.64

JOHNSON MILL STA. 13+88.64 TO STA. 14+15.00

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Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	83	97

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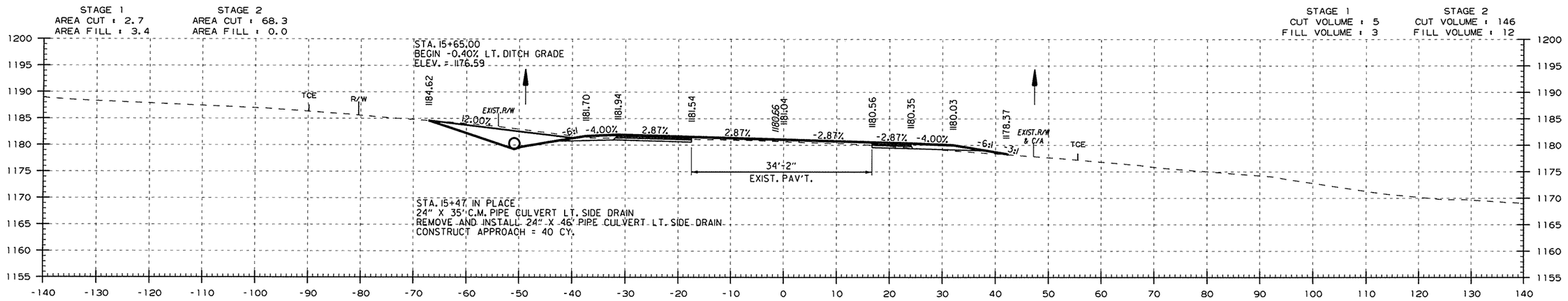

JOHNSON MILL STA. 14+52.71 TO STA. 15+47.00

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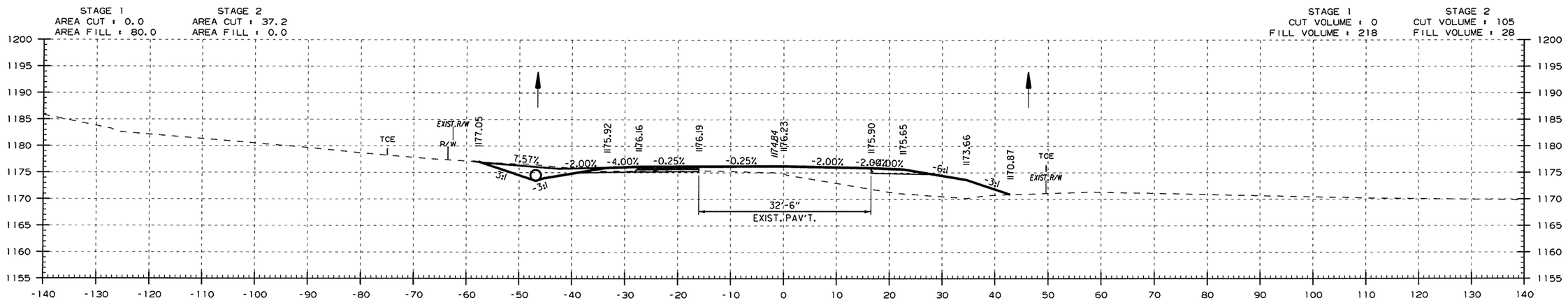
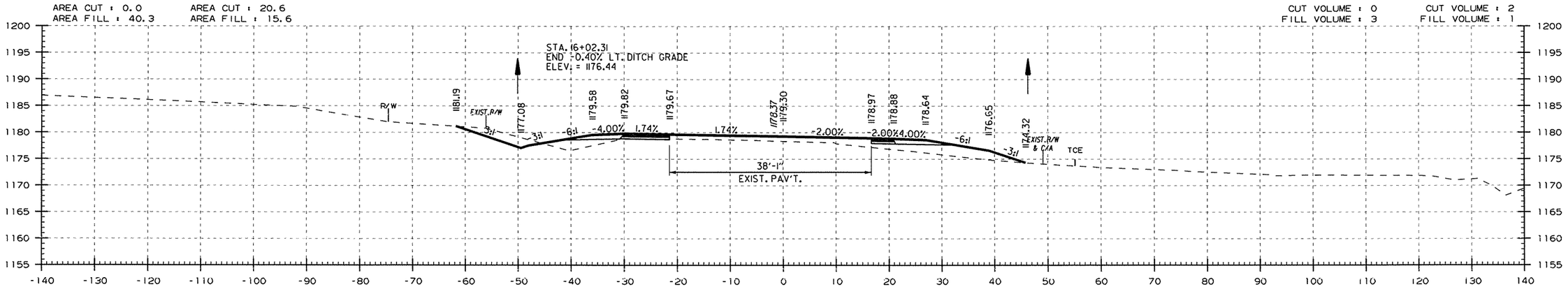
Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	84	97

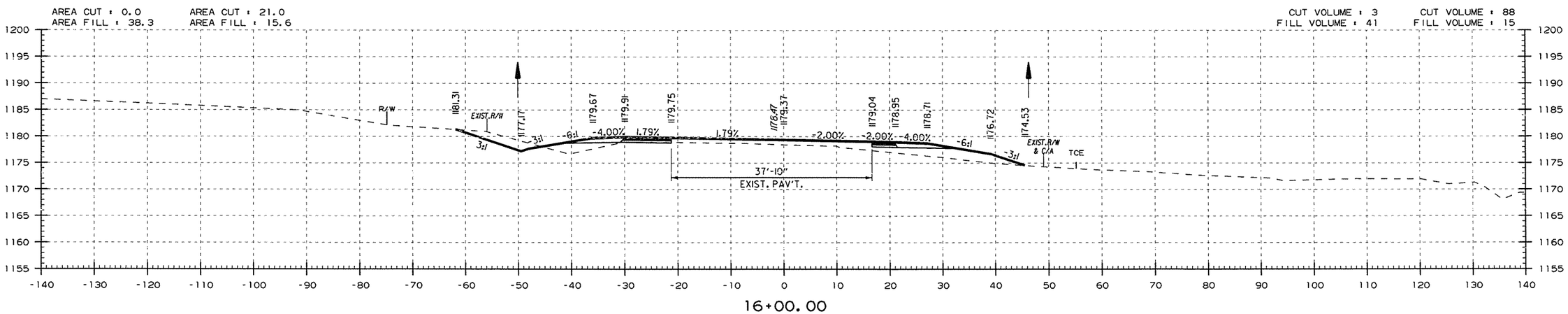
(2) JOHNSON MILL BLVD. - CROSS SECTIONS



17+00.00



16+02.29



16+00.00

JOHNSON MILL STA. 16+00.00 TO STA. 17+00.00

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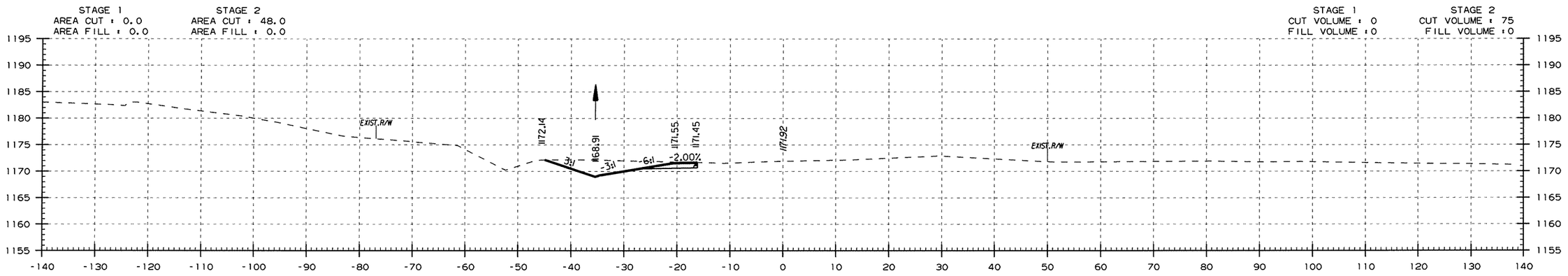
Crafton, Tull & Associates Inc.

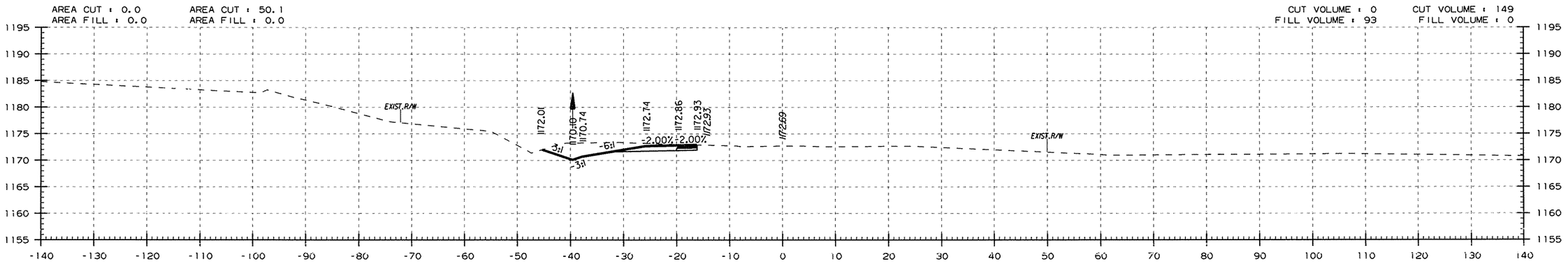
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	85	97

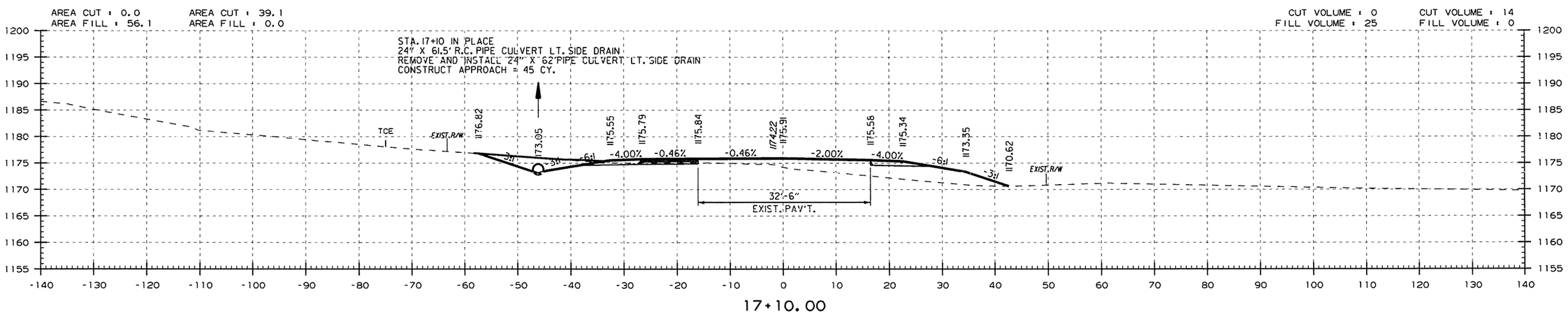
(2) JOHNSON MILL BLVD. - CROSS SECTIONS



18+41.23 END JOB BB0412



18+00.00



17+10.00

JOHNSON MILL STA. 17+10.00 TO STA. 18+41.23

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PLOTTED: 9/4/2013 08:30 SCALE: 20:1

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	86	97

(2) JOHNSON MILL BLVD. - CROSS SECTIONS

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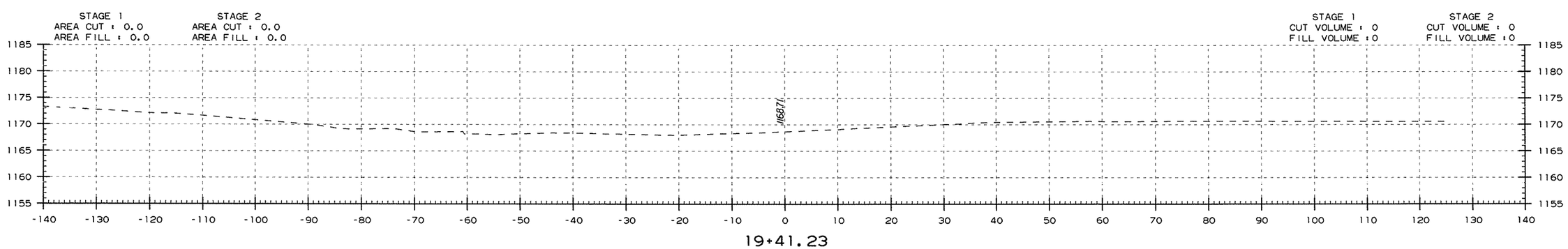

19+41.23

JOHNSON MILL STA. 19+41.23 TO STA. 19+41.23

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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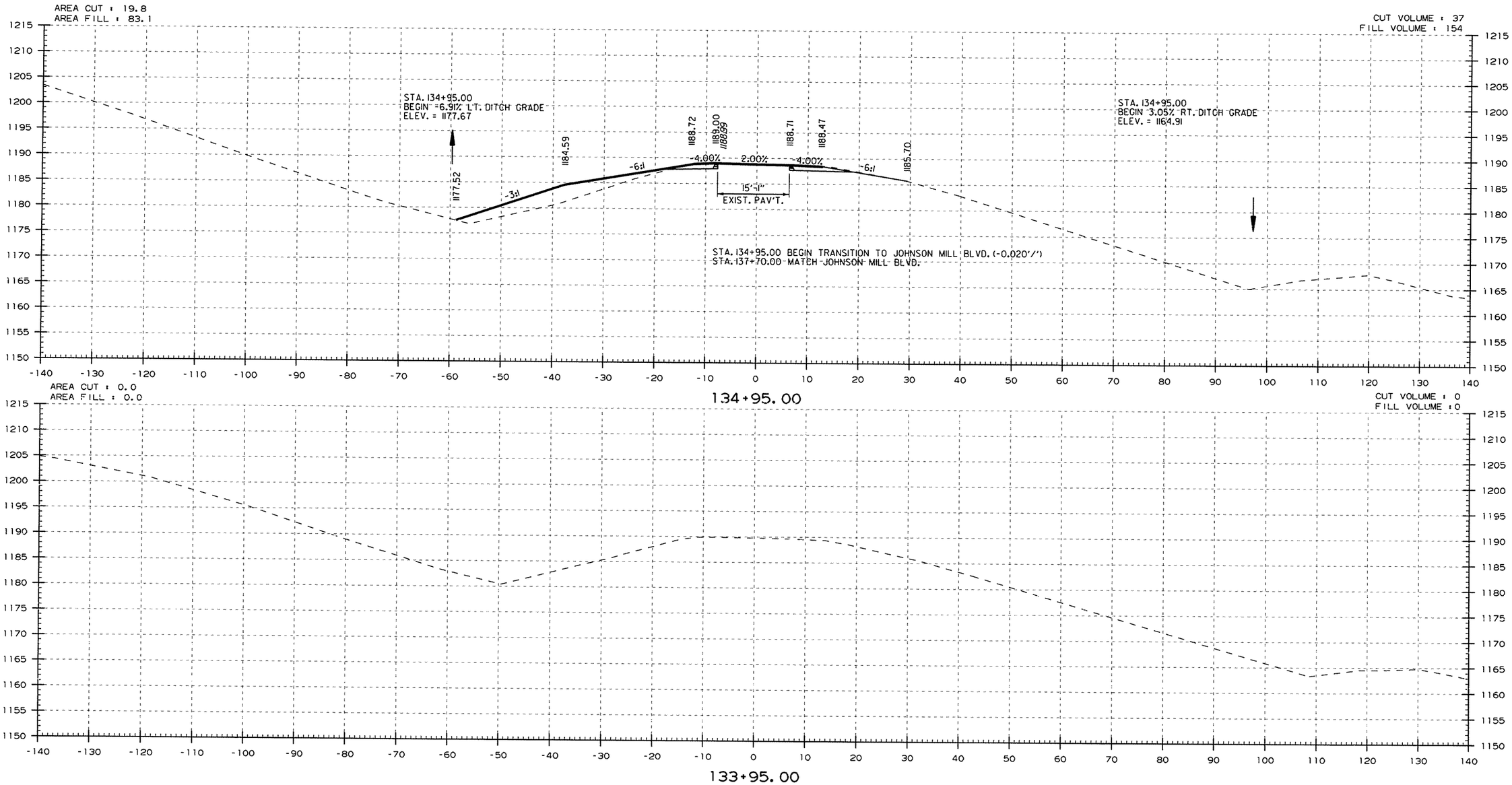
				JOB NO.		BB0412	87	97

(2) RAMP 1 - CROSS SECTIONS



RAMP 1 STA. 133+95.00 TO STA. 134+95.00

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Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
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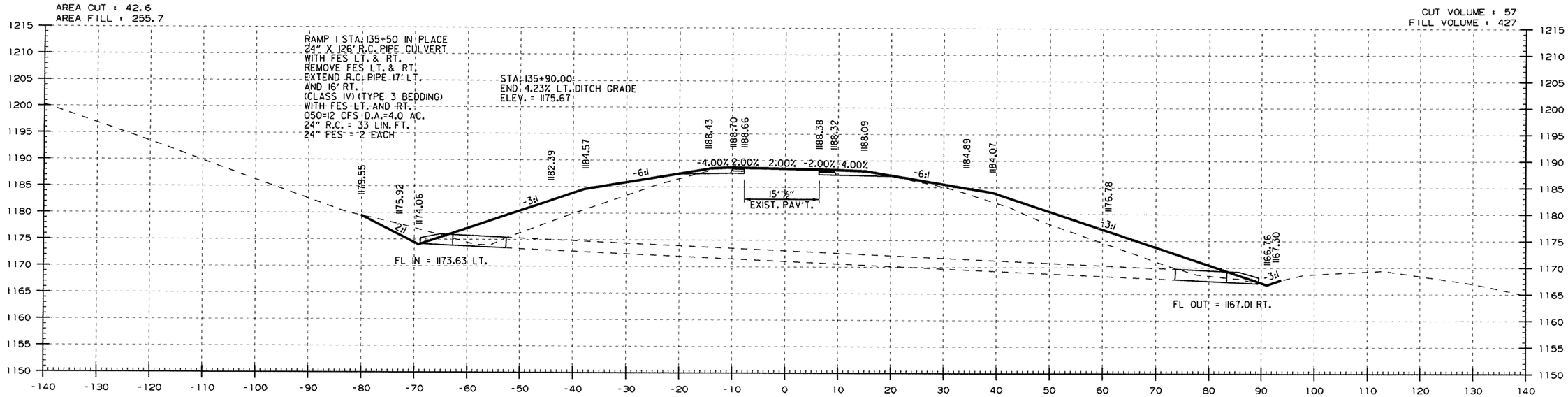
				JOB NO.		BB0412	88	97

(2) RAMP 1 - CROSS SECTIONS



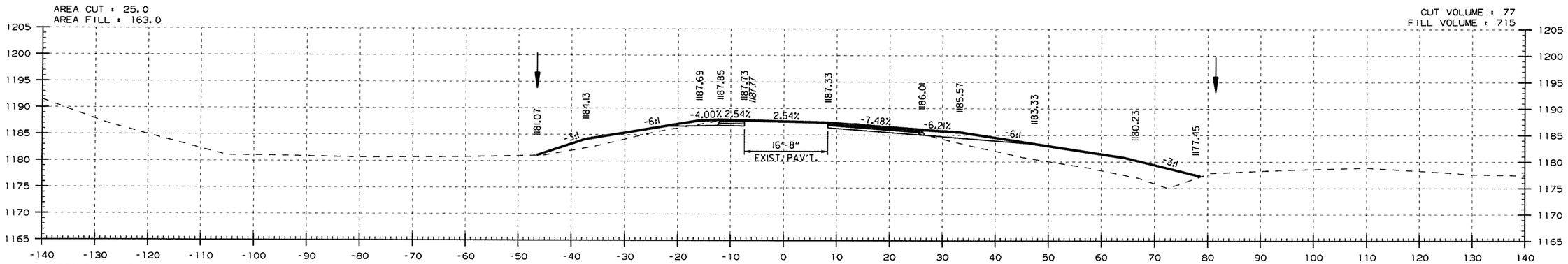
RAMP 1 STA. 135+00.00 TO STA. 135+50.00

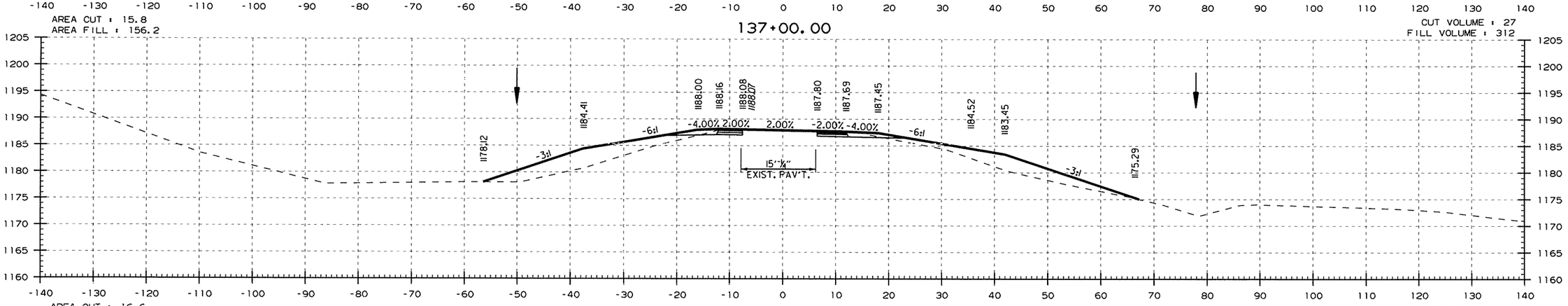
USER: jd5103
DESIGN FILE: G:\2103302.Gr1hsSprRd\TRANSP\dgn\xsect\BB0412 xsect.dgn MODEL: CROSS SECTIONS
PLOTTED: 9/4/2013 08:30 SCALE: 20:1

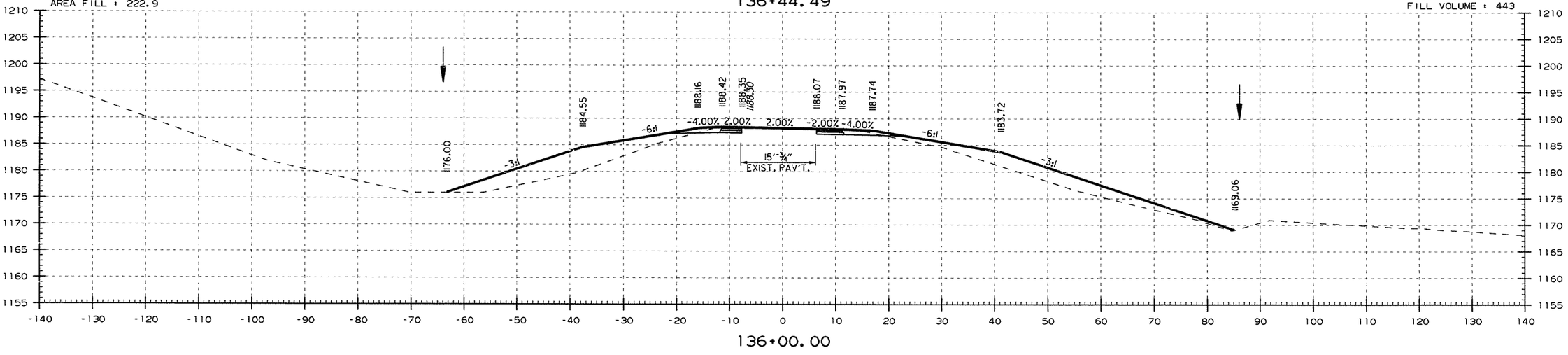
Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	89	97

(2) RAMP I - CROSS SECTIONS







RAMP I STA. 136+00.00 TO STA. 137+00.00

USER: jd503
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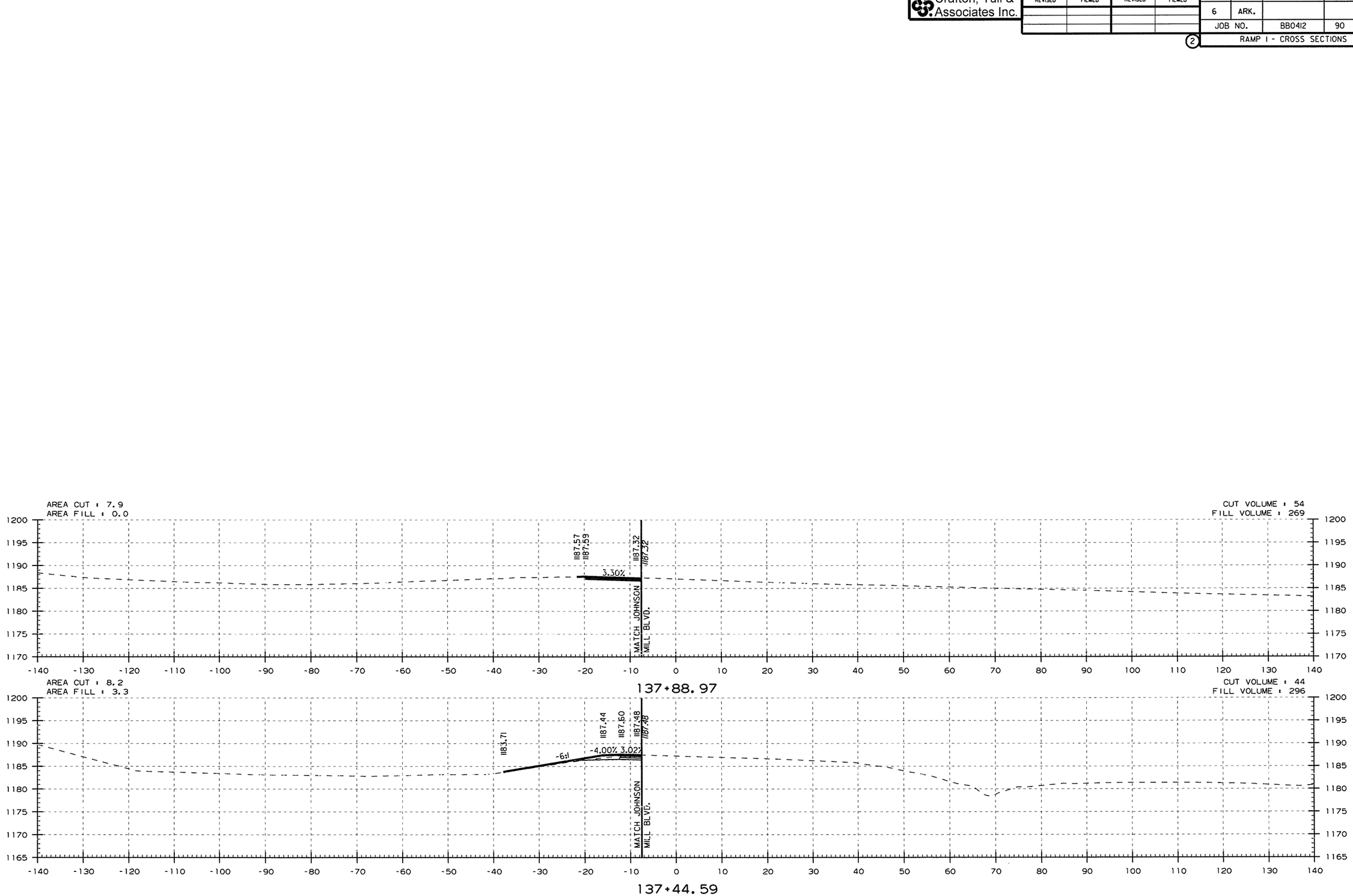
PLOTTED: 5/4/2013 08:31
SCALE: 20:1
MODEL: CROSS SECTIONS

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	90	97

(2) RAMP 1 - CROSS SECTIONS



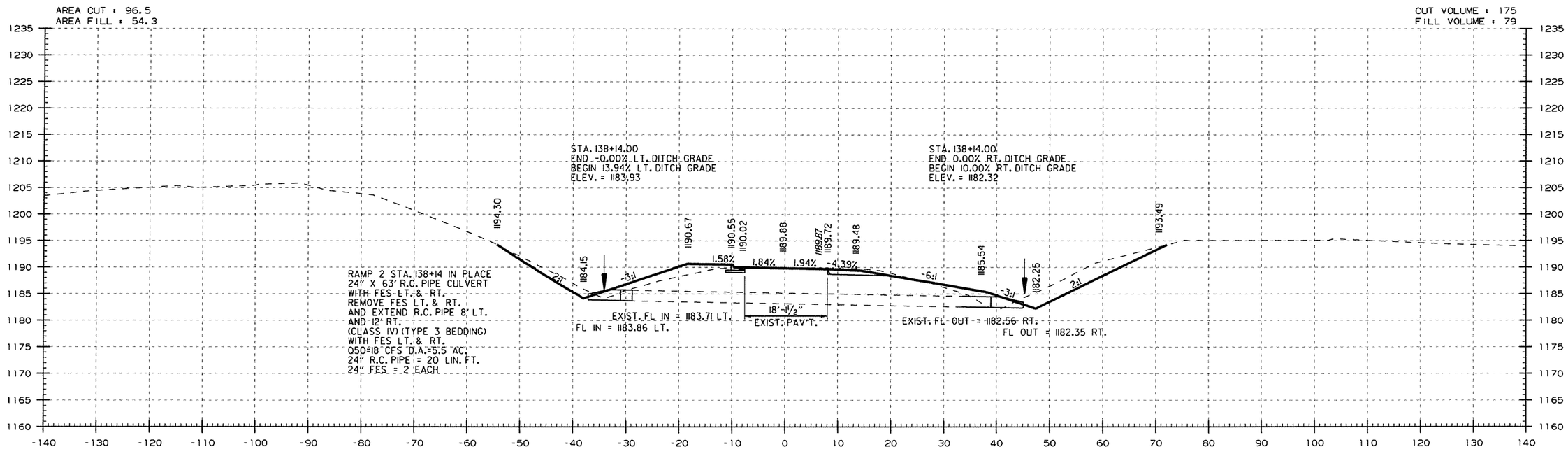
RAMP 1 STA. 137+88.97 TO STA. 137+88.97

USER: jd5103
DESIGN FILE: G:\2103302_Grths\Spr\Rd\TRANSP\dgn\xsect\BB0412 xsect.dgn MODEL: CROSS SECTIONS
PLOTTED: 9/4/2013 08:31 SCALE: 20:1

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	91	97

(2) RAMP 2 - CROSS SECTIONS



RAMP 2 STA. 137+38.24 TO STA. 138+11.80

USER: jd5103
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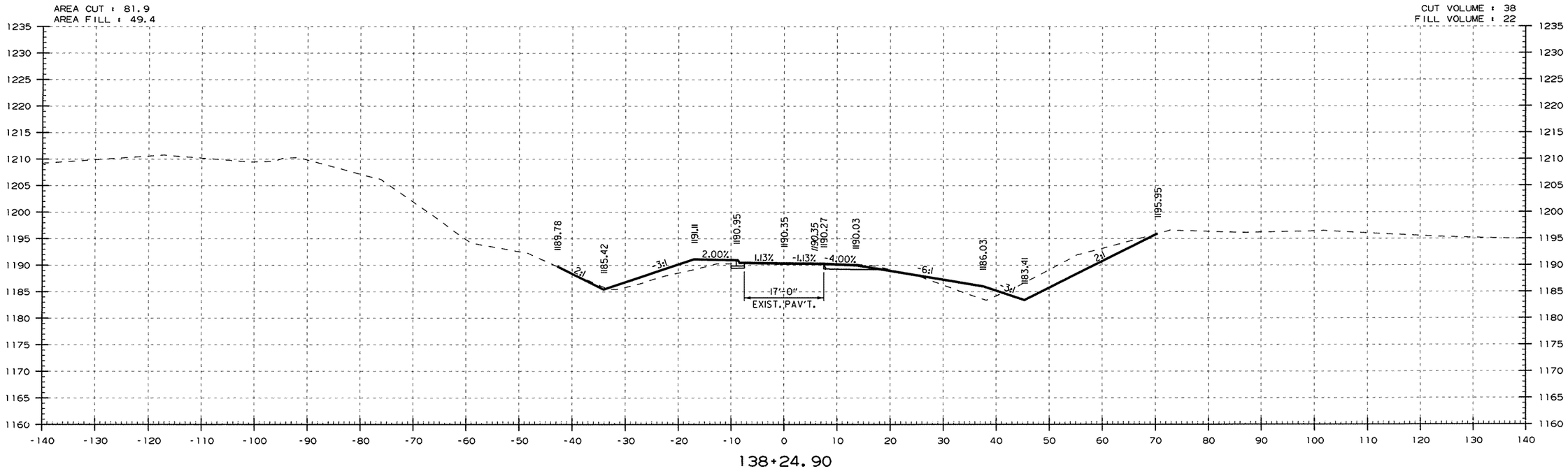
PLOTTED: 9/4/2013 08:31
SCALE: 20:1
MODEL: CROSS SECTIONS

Crafton, Tull & Associates Inc.

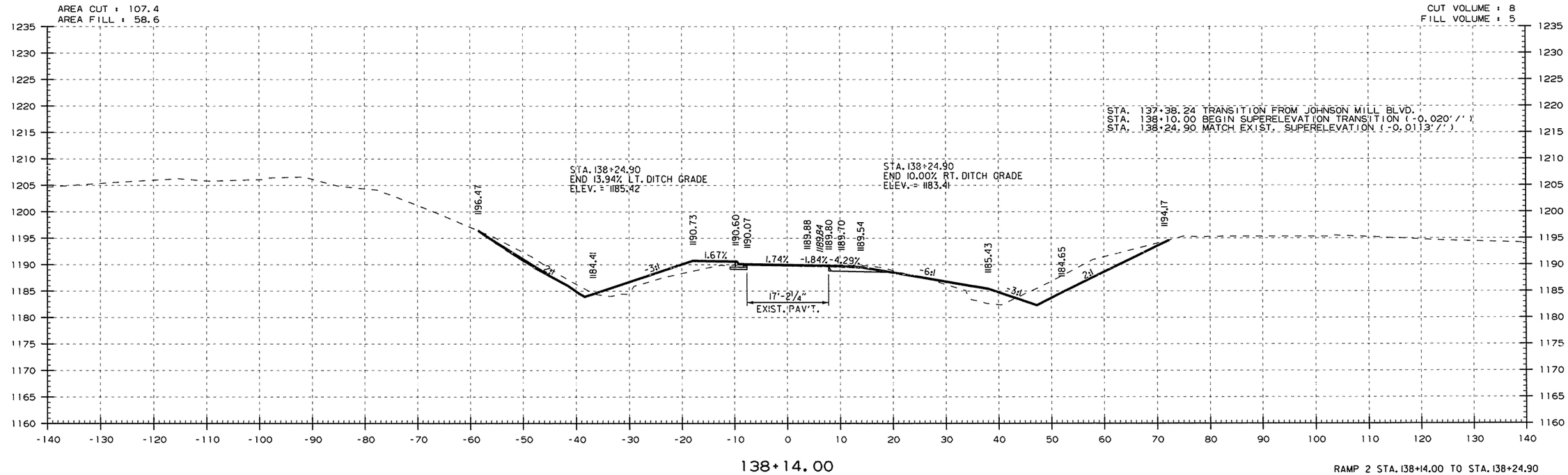
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	92	97

(2) RAMP 2 - CROSS SECTIONS



138+24.90



138+14.00

RAMP 2 STA. 138+14.00 TO STA. 138+24.90

USER: jd5103
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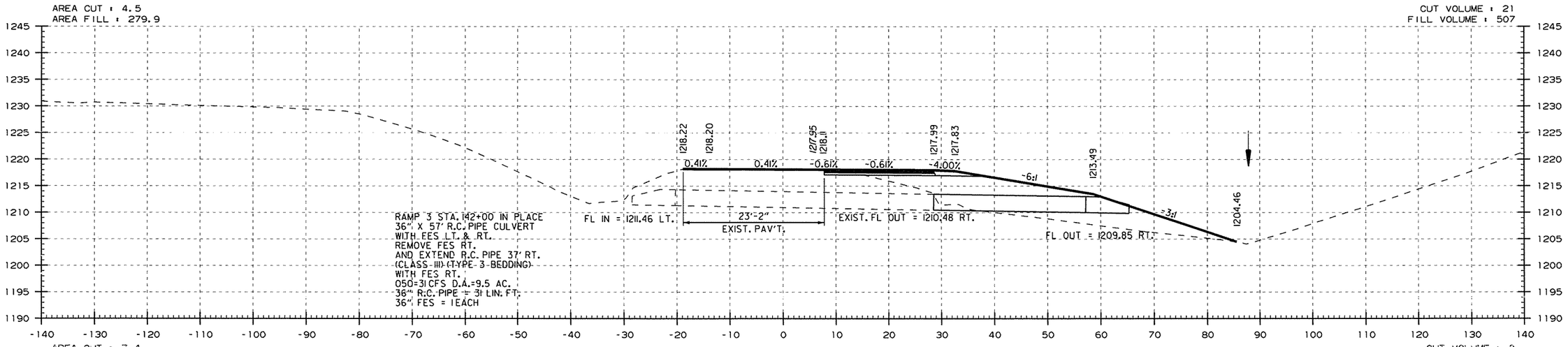
PLOTTED: 9/4/2013 08:31
SCALE: 20:1
MODEL: CROSS SECTIONS

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	93	97

(2) RAMP 3 - CROSS SECTIONS



RAMP 3 STA. 141+03.94 TO STA. 142+00.00

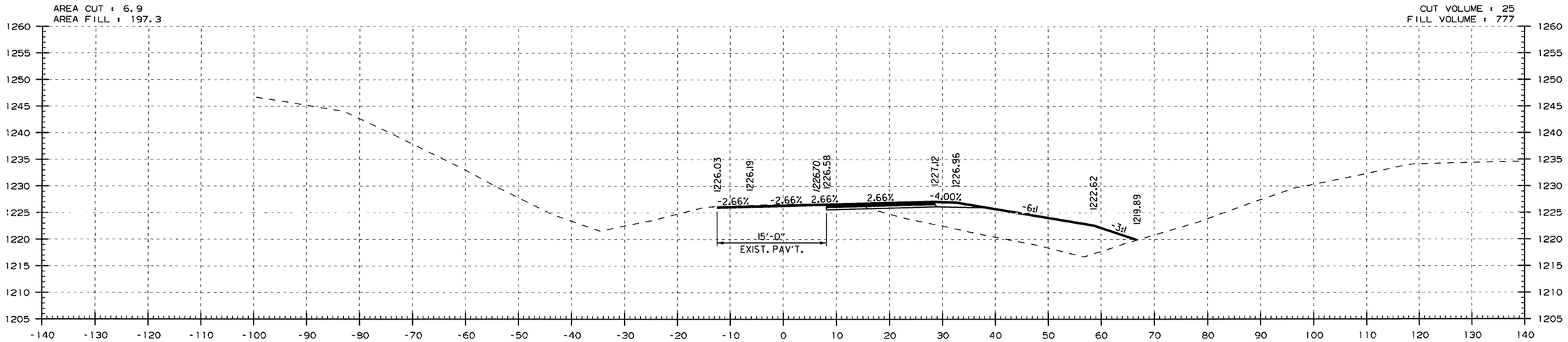
USER: jd503
DESIGN FILE: G:\2103302_Gr-tn-SprRd\TRANSP\dgn\xsect\BB0412 xsect.dgn
PLOTTED: 9/4/2013 08:31
SCALE: 20:1
MODEL: CROSS SECTIONS

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	94	97

(2) RAMP 3 - CROSS SECTIONS



RAMP 3 STA. 143+00.00 TO STA. 144+00.00

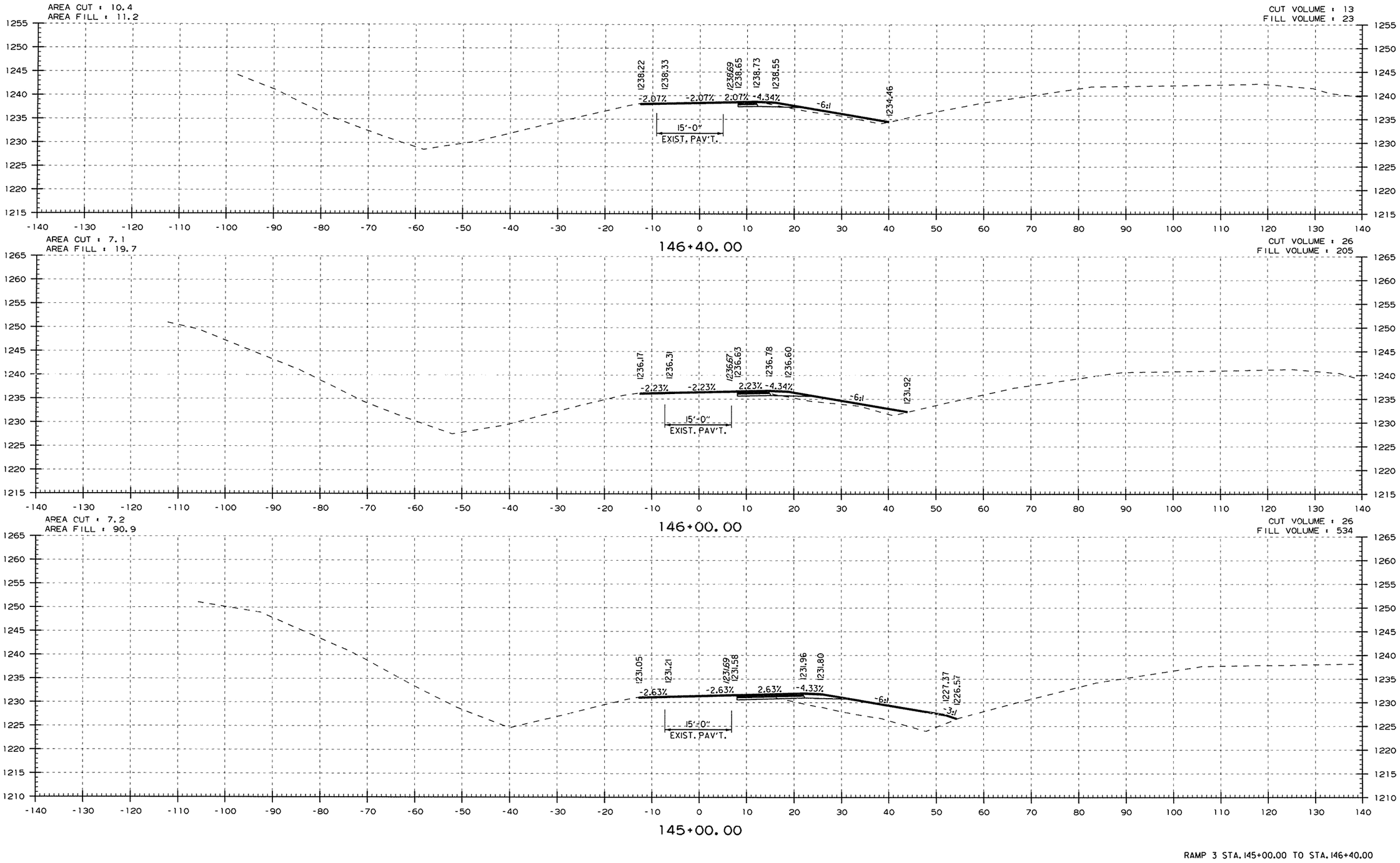
USER: jdsi03
DESIGN FILE: G:\2103302_Crafton\SpurRd\TRANSP\dgn\xsect\BB0412 xsect.dgn
PLOTTED: 9/4/2013 08:31
SCALE: 20:1
MODEL: CROSS SECTIONS

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	95	97

(2) RAMP 3 - CROSS SECTIONS



RAMP 3 STA. 145+00.00 TO STA. 146+40.00

USER: jdsl03
DESIGN FILE: G:\2103302.Grt+aSpr\Rd\TRANSP\dgn\xsect\BB0412 xsect.dgn
PLOTTED: 9/4/2013 08:31
SCALE: 20:1
MODEL: CROSS SECTIONS

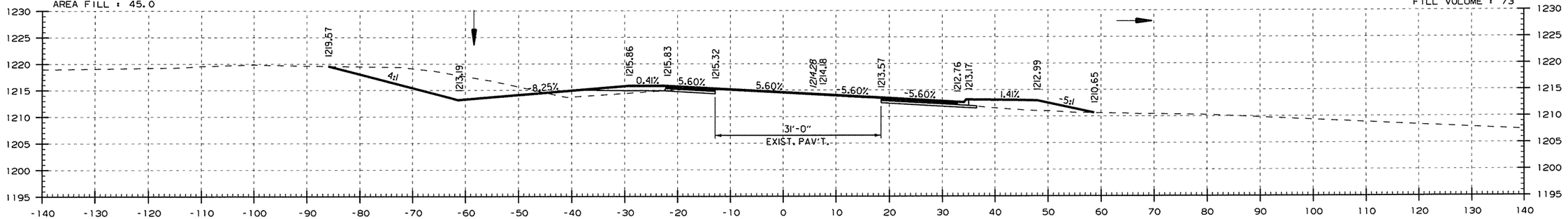
Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		BB0412	96	97

(2) RAMP 4 - CROSS SECTIONS

AREA CUT = 128.6
AREA FILL = 45.0

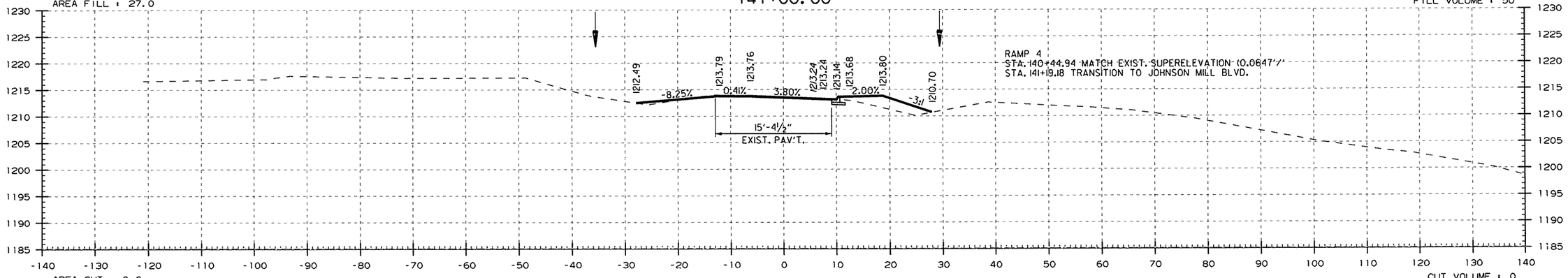
CUT VOLUME = 136
FILL VOLUME = 73



AREA CUT = 4.9
AREA FILL = 27.0

141+00.00

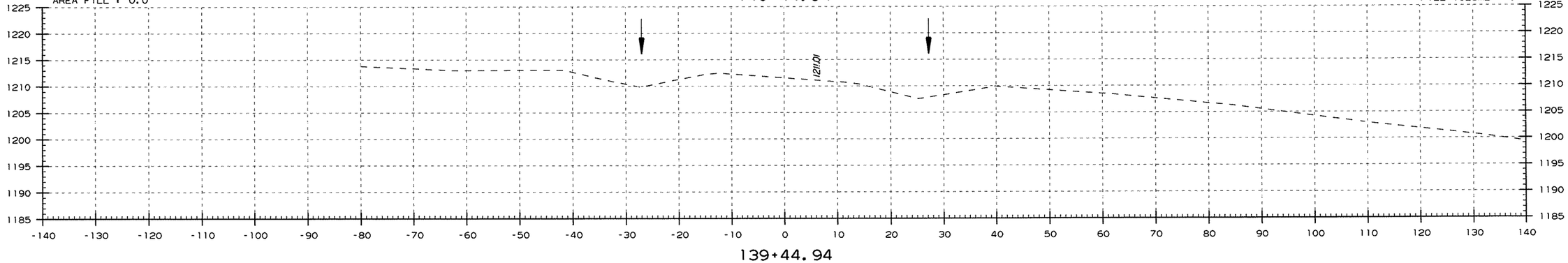
CUT VOLUME = 9
FILL VOLUME = 50



AREA CUT = 0.0
AREA FILL = 0.0

140+44.94

CUT VOLUME = 0
FILL VOLUME = 0



139+44.94

RAMP 4 STA. 139+44.94 TO STA. 141+00.00

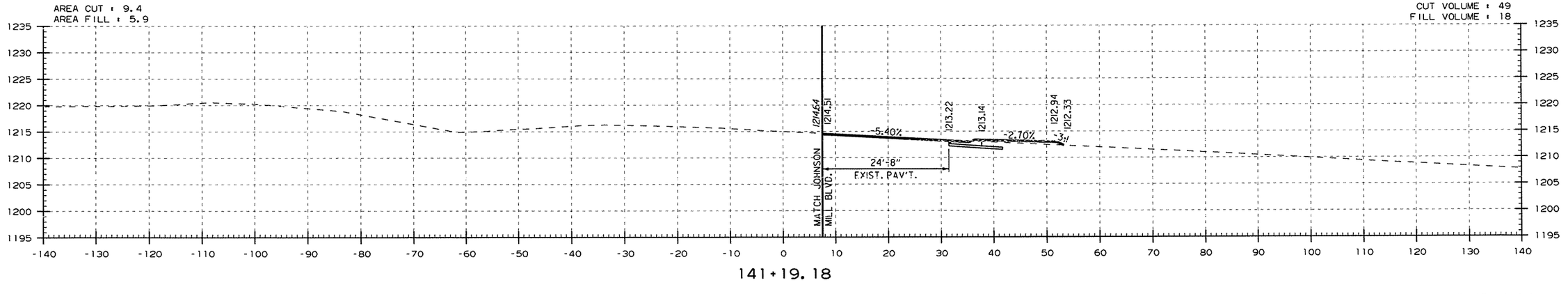
USER: jd5103
DESIGN FILE: G:\2103302.Gr+heSprRd\TRANSP\dgn\xsect\BB0412 xsect.dgn
PLOTTED: 9/4/2013 08:31
SCALE: 20:1
MODEL: CROSS SECTIONS

Crafton, Tull & Associates Inc.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED

FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
6	ARK.			
JOB NO.		BB0412	97	97

(2) RAMP 4 - CROSS SECTIONS



141+19.18

RAMP 4 STA. 141+19.18 TO STA. 141+19.18

USER: jd5103
DESIGN FILE: G:\2103302_Grths\SprRd\TRANSP\dgn\xsect\BB0412 xsect.dgn
PLOTTED: 9/4/2013 08:31
SCALE: 20:1
MODEL: CROSS SECTIONS