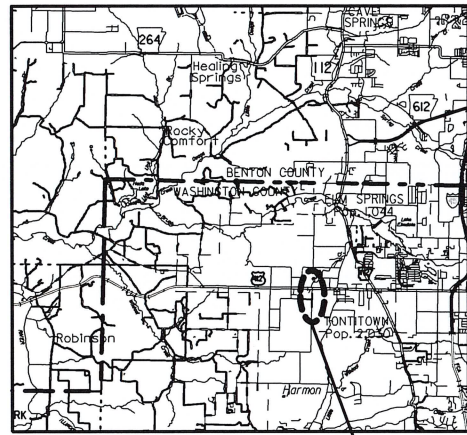


DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	1	29
HWY. 412/KLENC RD. INTERS. IMPVTS. (TONTITOWN) (S)						



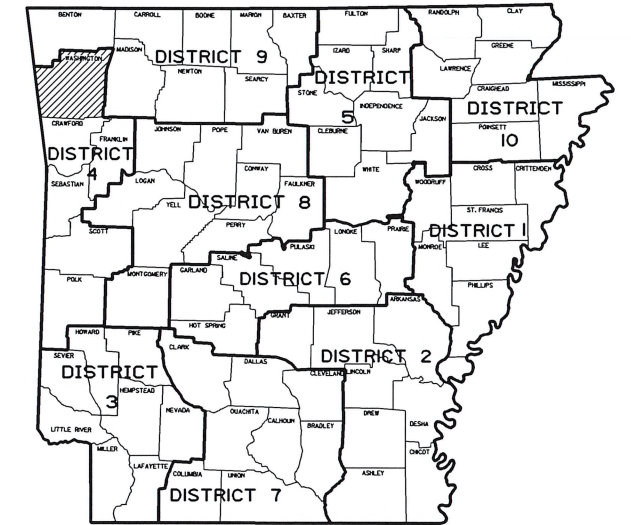
PROJECT LOCATION

VICINITY MAP

ARKANSAS DEPARTMENT OF TRANSPORTATION  
 CONSTRUCTION PLANS FOR STATE HIGHWAY

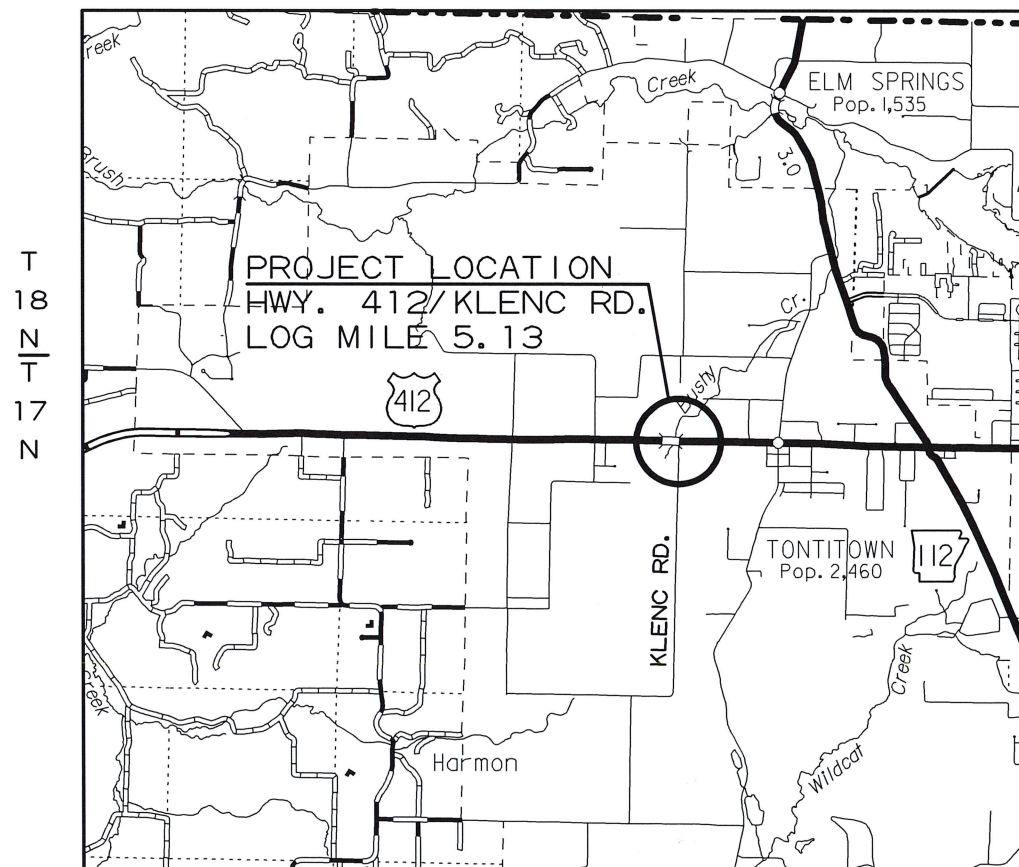
**HWY. 412 / KLENC RD.  
 INTERS. IMPVTS. (TONTITOWN) (S)**

WASHINGTON COUNTY  
 ROUTE 412 SECTION 2  
**JOB 040854**  
**FED. AID PROJ. STPU-0072(60)**



ARK. HWY. DIST. NO. 4

NOT TO SCALE R 31 W | R 30 W



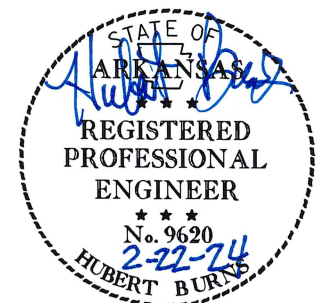
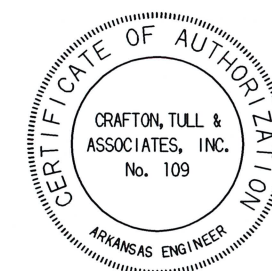
T 18 N | T 17 N

T 18 N | T 17 N

R 31 W | R 30 W

• DESIGN TRAFFIC DATA •

DESIGN YEAR	2044
2024 ADT	25,000
2044 ADT	36,000
2044 DHV	3,960
DIRECTIONAL DISTRIBUTION	60%
TRUCKS	13%
DESIGN SPEED	45 MPH



MID-POINT OF PROJECT  
 LAT. = N 36° 10' 36"  
 LONG. = W 94° 14' 45"

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	2	29
INDEX OF SHEETS & STANDARD DRAWINGS						



**INDEX OF SHEETS**

SHEET NO.	TITLE
1	TITLE SHEET
2	INDEX OF SHEETS AND STANDARD DRAWINGS
3	GOVERNING SPECIFICATIONS AND GENERAL NOTES
4	TYPICAL SECTIONS OF IMPROVEMENT
5 - 6	SPECIAL DETAILS
7	TEMPORARY EROSION CONTROL DETAILS
8	MAINTENANCE OF TRAFFIC DETAILS
9	PERMANENT PAVEMENT MARKING DETAILS
10 - 11	QUANTITIES
12	SUMMARY OF QUANTITIES AND REVISIONS
13	SURVEY CONTROL DETAILS
14 - 15	PLAN AND PROFILE SHEETS
16	SUMMARY OF TRAFFIC SIGNAL QUANTITIES
17	TRAFFIC SIGNAL NOTES
18	TRAFFIC SIGNAL STREET NAME SIGN
19	GROUNDING ARRAY DETAIL
20	PEDESTRIAN PUSH BUTTON PEDESTAL DETAIL
21 - 25	SIGNALIZATION PLAN SHEETS
26 - 29	CROSS SECTIONS

**ROADWAY STANDARD DRAWINGS**

DRWG.NO.	TITLE	DATE
CG-1	CURBING DETAILS	11-29-07
FES-1	FLARED END SECTION	10-18-96
FES-2	FLARED END SECTION	10-18-96
FPC-9E	DETAILS OF DROP INLETS (TYPE C)	08-22-02
FPC-9M	DETAILS OF DROP INLET (TYPE MO)	08-22-02
PCC-1	CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING	02-27-14
PM-1	PAVEMENT MARKING DETAILS	02-27-20
SD-5	CONTROLLER CABINET UTILITY DRAWER	09-12-13
SD-6	HEAVY DUTY PULL BOX	02-13-24
SD-8	SIGNAL HEAD PLACEMENT	12-08-16
SD-9	SERVICE POINT	11-07-19
SD-11	STEEL POLE WITH MAST ARM	02-13-24
TC-1	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	11-07-19
TC-2	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	05-20-21
TC-3	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	08-12-21
TEC-1	TEMPORARY EROSION CONTROL DEVICES	11-16-17
TEC-3	TEMPORARY EROSION CONTROL DEVICES	11-03-94
WR-1	WHEELCHAIR RAMPS NEW CONSTRUCTION AND ALTERATIONS	11-10-05

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
06-05-2024		6	ARK.	040854	3	29
GOVERNING SPECIFICATIONS & GENERAL NOTES						

**GOVERNING SPECIFICATIONS**

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

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
100-3	CONTRACTOR'S LICENSE
100-4	DEPARTMENT NAME CHANGE
102-2	ISSUANCE OF PROPOSALS
102-3	PREQUALIFICATION OF BIDDERS
103-2	CONTACT INFORMATION FOR MOTORIST DAMAGE CLAIMS
105-4	MAINTENANCE DURING CONSTRUCTION
107-2	RESTRAINING CONDITIONS
108-1	LIQUIDATED DAMAGES
108-2	WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
210-1	UNCLASSIFIED EXCAVATION
303-1	AGGREGATE BASE COURSE
306-1	QUALITY CONTROL AND ACCEPTANCE
400-1	TACK COATS
400-4	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
400-5	PERCENT AIR VOIDS FOR ACHM MIX DESIGNS
400-6	LIQUID ANTI-STRIP ADDITIVE
400-7	TRACKLESS TACK
404-3	DESIGN OF ASPHALT MIXTURES
409-2	ASPHALT LABORATORY FACILITY
410-1	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
410-2	DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS
410-4	EVALUATION OF ACHM SUBLOT REPLACEMENT MATERIAL
416-1	RECYCLED ASPHALT PAVEMENT
501-2	CEMENT
502-1	WELDED WIRE REINFORCEMENT
600-2	INCIDENTAL CONSTRUCTION
603-1	LANE CLOSURE NOTIFICATION
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
604-3	TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES (MASH)
621-1	FILTER SOCKS
633-1	CONCRETE WALKS, CONCRETE STEPS, AND HAND RAILING
634-1	CURBING
700-2	TRAFFIC CONTROL FACILITIES
802-4	CEMENT
JOB 040854	ACCESSIBLE PEDESTRIAN SIGNAL (APS)
JOB 040854	ACTUATED CONTROLLER
JOB 040854	ASSESSMENT OF WORKING DAYS - MAINTENANCE OF TRAFFIC
JOB 040854	BIDDING REQUIREMENTS AND CONDITIONS
JOB 040854	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 040854	BUY AMERICA - CONSTRUCTION MATERIALS
JOB 040854	CABINET DRAWER ASSEMBLY
JOB 040854	CARGO PREFERENCE ACT REQUIREMENTS
JOB 040854	COLD MILLING - COUNTY PROPERTY
JOB 040854	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 040854	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
JOB 040854	DESIGN OF ASPHALT MIXTURES-AGGREGATES
JOB 040854	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB 040854	ELECTRICAL CONDUCTORS FOR LUMINAIRES
JOB 040854	ELECTRICAL CONDUCTORS-IN-CONDUIT
JOB 040854	EXTENSION FOR PIPE CULVERTS
JOB 040854	FLEXIBLE BEGINNING OF WORK - CALENDAR DAY CONTRACT
JOB 040854	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 040854	HYBRID VIDEO/RADAR DETECTION SYSTEM
JOB 040854	LED COUNTDOWN PEDESTRIAN SIGNAL HEAD
JOB 040854	LED LUMINAIRE ASSEMBLY (BUG U0 TYPE)
JOB 040854	LED TRAFFIC SIGNAL HEAD
JOB 040854	LIQUIDATED DAMAGES PROCEDURE FOR BID LETTINGS
JOB 040854	MAINTENANCE OF TRAFFIC
JOB 040854	MANDATORY ELECTRONIC CONTRACT
JOB 040854	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL

NUMBER	TITLE
JOB 040854	OFF-SITE RESTRAINING CONDITIONS FOR INDIANA AND NORTHERN LONG-EARED BATS
JOB 040854	PERCENT AIR VOIDS AND NDESIGN FOR ACHM SURFACE MIX DESIGNS
JOB 040854	PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB 040854	PRICE ADJUSTMENT FOR FUEL
JOB 040854	PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT
JOB 040854	RETROREFLECTIVE BACKPLATES
JOB 040854	SERVICE POINT ASSEMBLY (TRAFFIC CONTROL DEVICES)
JOB 040854	SHORING FOR CULVERTS
JOB 040854	SITE USE (A+C METHOD) - CALENDAR DAY CONTRACT
JOB 040854	STREET NAME SIGN (MAST ARM MOUNTED)
JOB 040854	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 040854	UTILITY ADJUSTMENTS
JOB 040854	WARM MIX ASPHALT

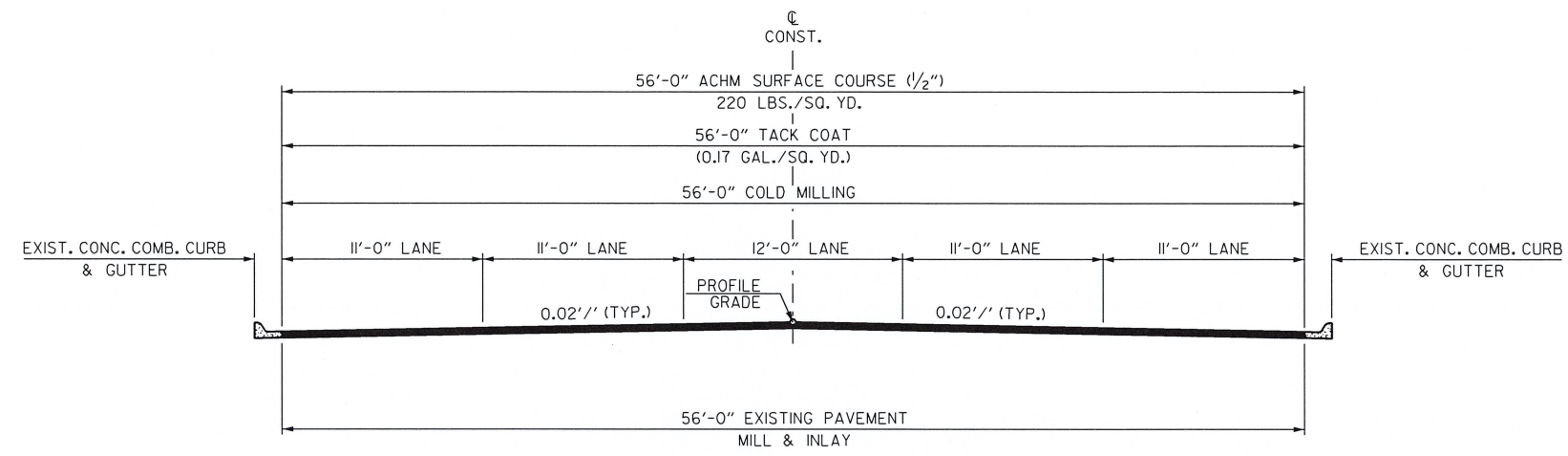
**GENERAL NOTES**

- GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
- ALL PIPE LINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.
- 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.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U. S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.
- ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
- ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO ENSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
- 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.
- THE SEQUENCE AS SHOWN ON THE MAINTENANCE OF TRAFFIC PLANS IS A GENERAL OUTLINE FOR THE CONSTRUCTION OF THIS PROJECT, AND IN NO WAY IS IT INTENDED TO COVER EVERY ITEM IN THE PROJECT. ITEMS NOT CRITICAL TO THE CONSTRUCTION SEQUENCE MAY BE CONSTRUCTED IN ANY STAGE AS APPROVED BY THE RESIDENT ENGINEER.
- ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
- THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.



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DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	4	29
TYPICAL SECTIONS OF IMPROVEMENT						



**5 LANE CURB & GUTTER INLAY  
HWY. 412**  
STA. 09+83.54 TO STA. 15+40.42

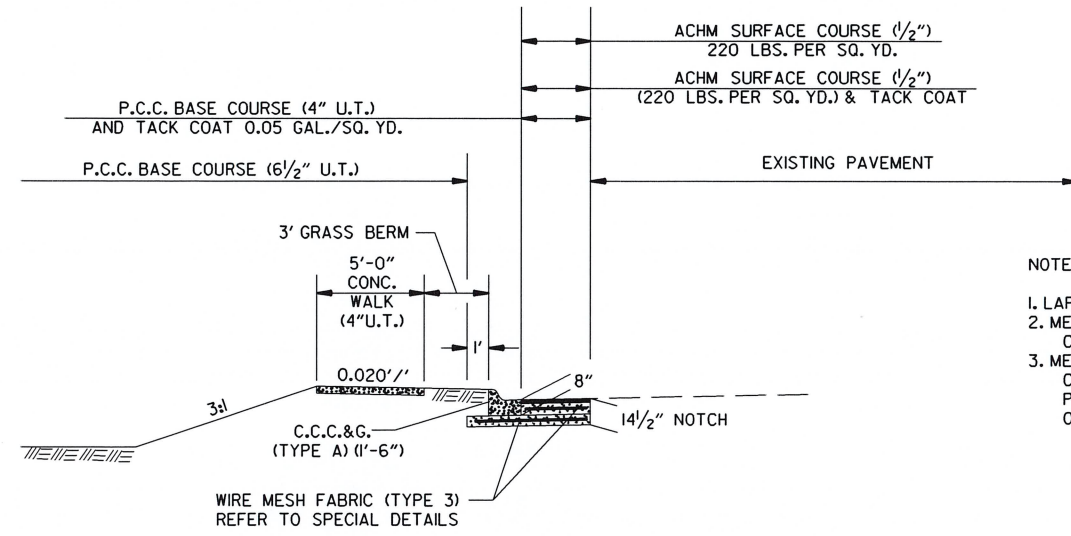
NOTES:

1. LONGITUDINAL JOINTS ARE TO BE PLACED PER TYPICAL SECTION IN ACCORDANCE WITH SECTION 410.07 UNLESS OTHERWISE APPROVED BY THE ENGINEER.
2. ALL CROSS SLOPES ARE TO MATCH EXISTING CROSS SLOPES UNLESS OTHERWISE APPROVED BY THE ENGINEER.

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	5	29
SPECIAL DETAILS						

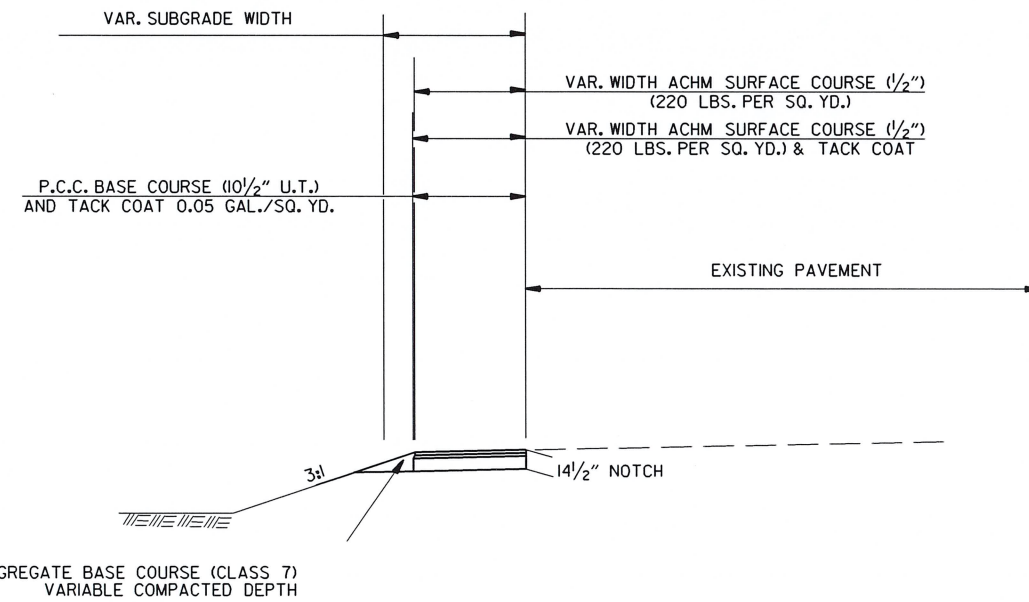
**NOTES:**

- PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FRONT OF THE CURB AND GUTTER, THE CONTRACTOR SHALL MAINTAIN 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.
- TRANSVERSE EXPANSION JOINTS SHALL BE PLACED IN CONCRETE WALKS AT 45' INTERVALS.



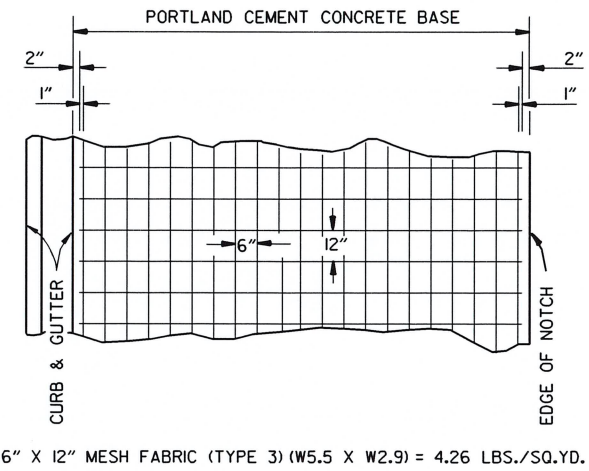
P.C.C. BASE WIDENING TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

**P.C.C. BASE WIDENING DETAIL**



ASPHALT WIDENING TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.

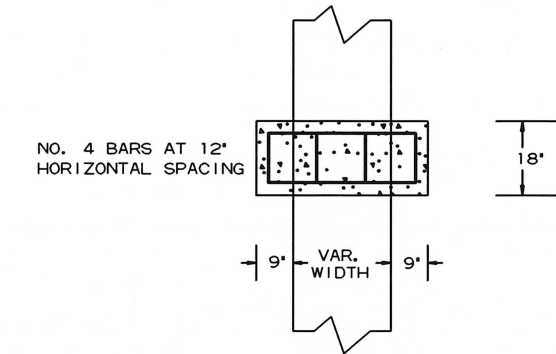
**P.C.C. BASE WIDENING DETAIL (OPEN SHOULDER)**



**NOTES:**

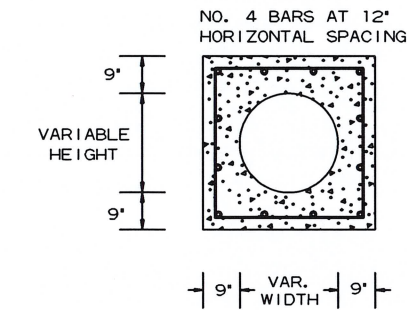
- LAP MESH FABRIC MIN. 12" LONGITUDINALLY AND MIN. 6" TRANSVERSELY.
- MESH FABRIC IS NOT REQUIRED WHEN WIDTH OF PORTLAND CEMENT CONCRETE BASE IS LESS THAN 12".
- MESH FABRIC (TYPE 3) WILL NOT BE PAID FOR DIRECTLY, BUT FULL COMPENSATION THEREFORE WILL BE CONSIDERED INCLUDED IN THE CONTRACT PRICE BID PER SQ. YD. FOR PORTLAND CEMENT CONCRETE BASE (3 1/2" U.T.) OR FOR PORTLAND CEMENT CONCRETE BASE (8" U.T.)

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

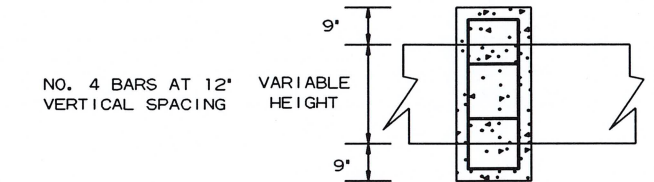


**TOP VIEW**

MIN 3" COVER



**FRONT VIEW**



**SIDE VIEW**

**PIPE EXTENSION REINFORCED CONCRETE COLLAR DETAIL**

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 SCALE: 1/20

KLENC RD. FACE OF CURB POINT TABLE			
POINT	STATION	OFFSET	ELEVATION
1	9+06.88	19.00' LT.	1278.72
2	9+71.87	82.92' LT.	1278.58
3	9+71.89	84.28' LT.	1278.58

NOTE: FACE OF CURB POINTS BASED ON KLENC RD. ALIGNMENT

KLENC RD. CURB GUTTER LINE POINT TABLE		
POINT	STATION	OFFSET
4	9+72.89	84.26' LT.
5	9+72.87	82.90' LT.
6	9+08.88	18.00' LT.

NOTE: CURB GUTTER LINE POINTS BASED ON KLENC RD. ALIGNMENT

N3°11'46"E

Ⓞ KLENC RD.

Ⓞ HWY. 412

KLENC RD. RADIUS POINT TABLE		
POINT	STATION	OFFSET
7	9+72.87	82.90' LT.
8	9+72.50	61.17' LT.
9	9+22.26	12.00' LT.
10	8+16.88	12.53' LT.

NOTE: RADIUS POINTS BASED ON KLENC RD. ALIGNMENT

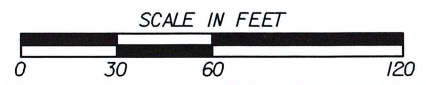
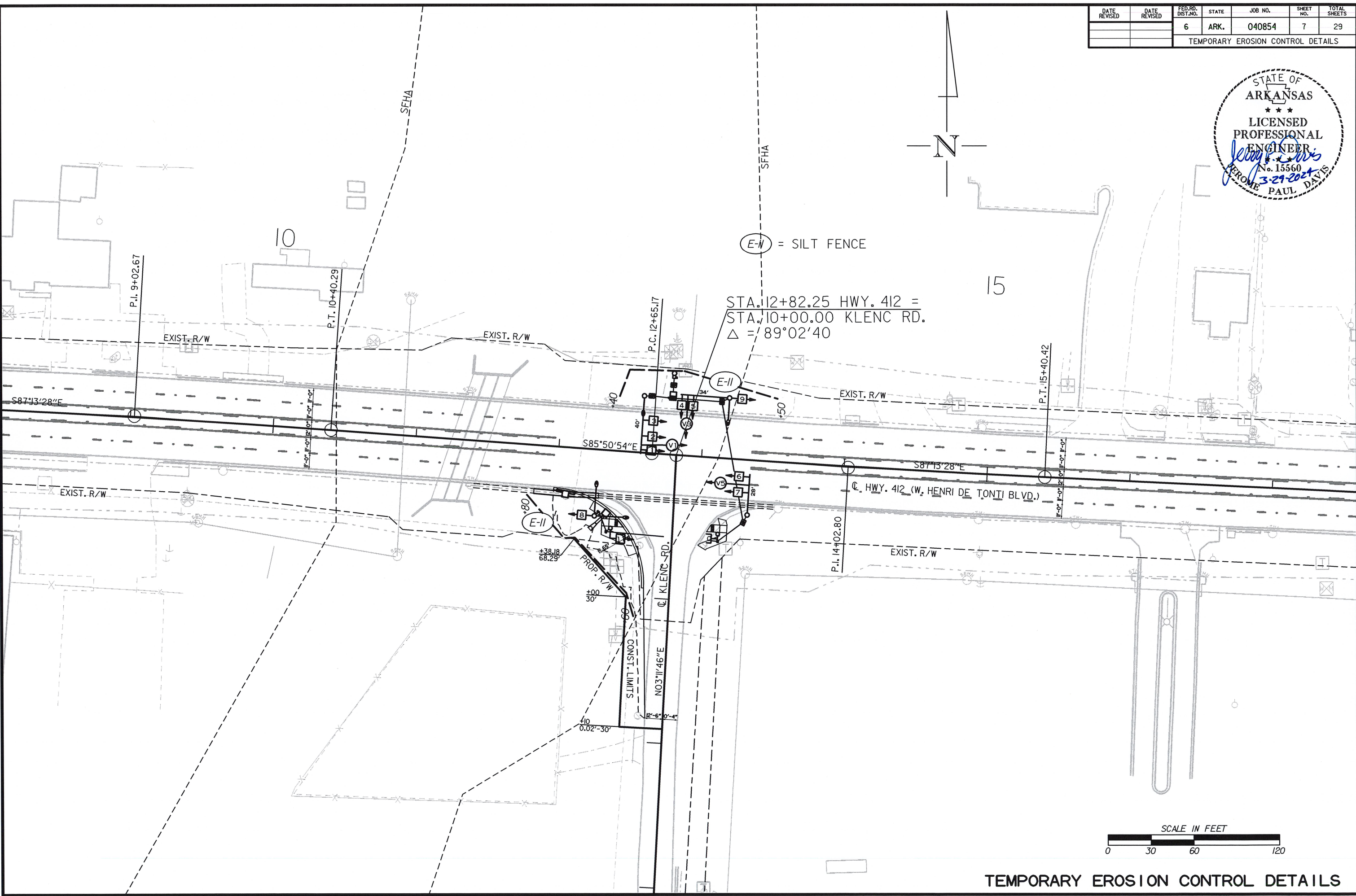
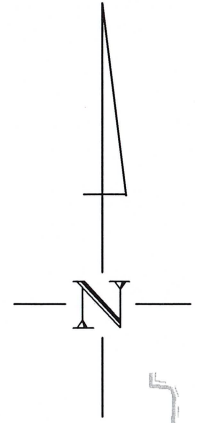
STA. 10+00.00 KLENC RD. =  
STA. 12+82.25 HWY. 412



SPECIAL DETAILS

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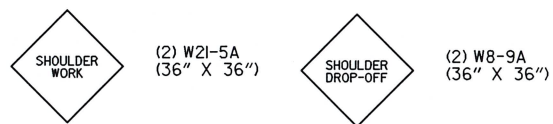
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	7	29
TEMPORARY EROSION CONTROL DETAILS						



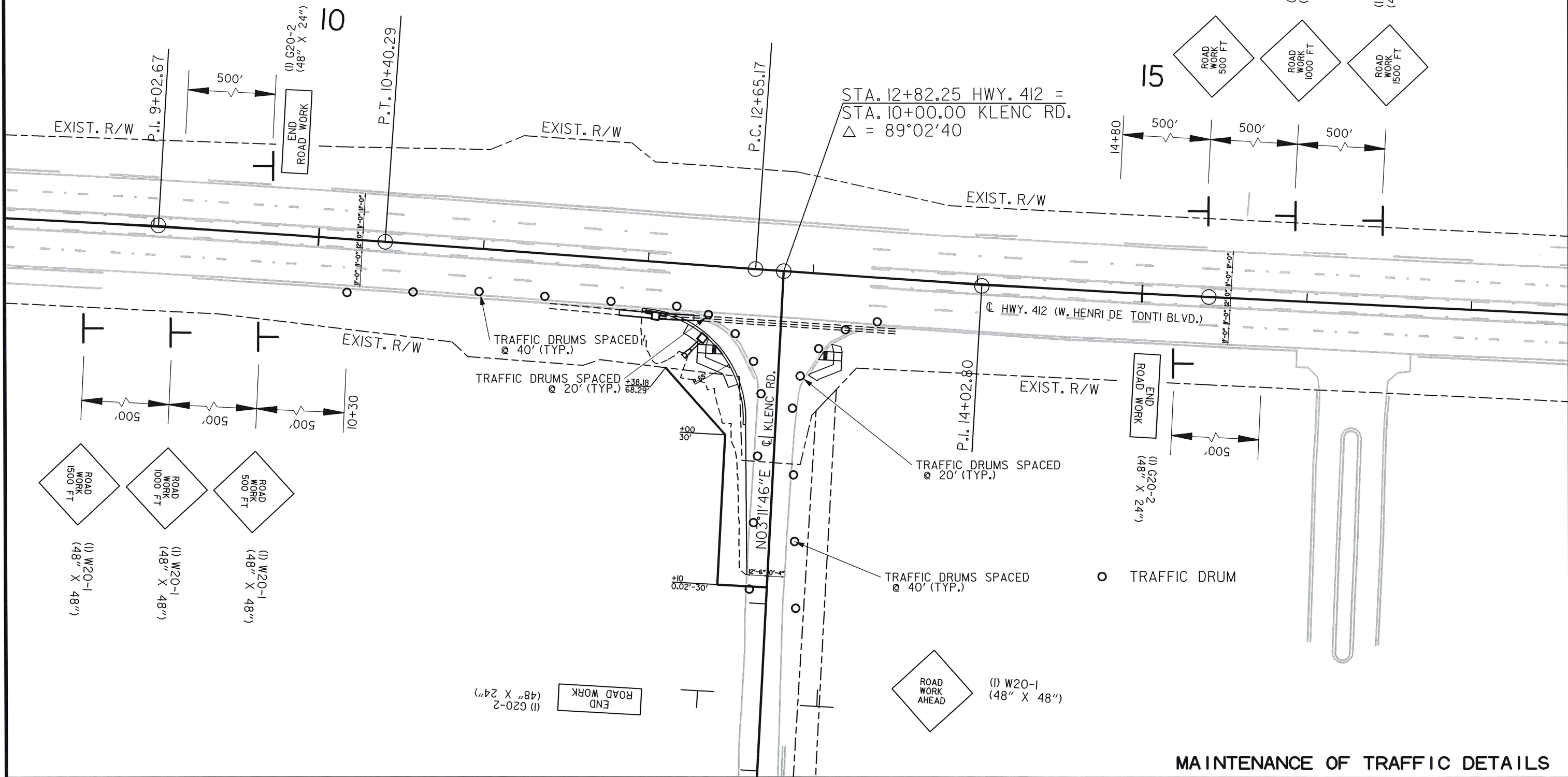
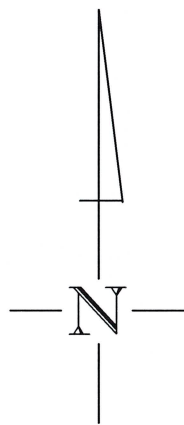
**TEMPORARY EROSION CONTROL DETAILS**

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DATE REVISED	DATE	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	8	29
MAINTENANCE OF TRAFFIC DETAILS						



TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER



MAINTENANCE OF TRAFFIC DETAILS

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DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	9	29
PERMANENT PAVEMENT MARKING DETAILS						

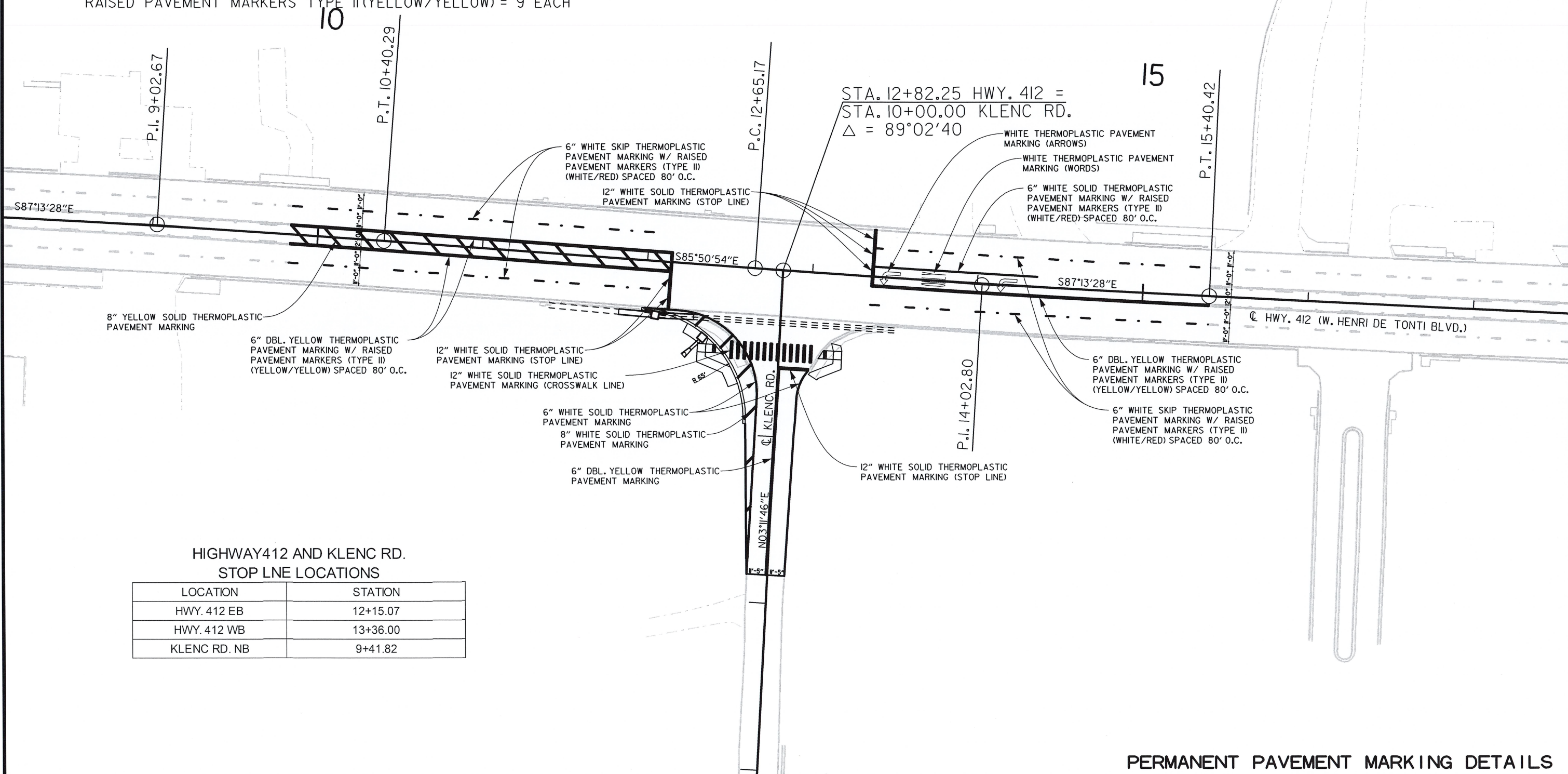


PERMANENT PAVEMENT MARKING QUANTITIES:

REMOVAL OF PERMANENT PAVEMENT MARKINGS = 1197 LIN. FT.

THERMOPLASTIC PAVEMENT MARKING WHITE (6") = 739 LIN. FT.  
 THERMOPLASTIC PAVEMENT MARKING YELLOW (6") = 1610 LIN. FT.  
 THERMOPLASTIC PAVEMENT MARKING WHITE (12") = 204 LIN. FT.  
 THERMOPLASTIC PAVEMENT MARKING WHITE (8") = 52 LIN. FT.  
 THERMOPLASTIC PAVEMENT MARKING YELLOW (8") = 177 LIN. FT.

THERMOPLASTIC PAVEMENT MARKING (WORDS) = 1 EACH  
 THERMOPLASTIC PAVEMENT MARKING (ARROWS) = 2 EACH  
 RAISED PAVEMENT MARKERS TYPE II (WHITE/RED) = 14 EACH  
 RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW) = 9 EACH



HIGHWAY 412 AND KLENC RD.  
STOP LNE LOCATIONS

LOCATION	STATION
HWY. 412 EB	12+15.07
HWY. 412 WB	13+36.00
KLENC RD. NB	9+41.82

PERMANENT PAVEMENT MARKING DETAILS

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DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	10	29
QUANTITIES						

**EROSION CONTROL**

STATION	STATION	LOCATION	PERMANENT EROSION CONTROL					*SEDIMENT REMOVAL & DISPOSAL
			WATER	SOLID SODDING	SAND BAG DITCH CHECKS	SILT FENCE	DROP INLET FILTER SOCK (12")	
					(E-5) BAG	(E-11) LIN. FT.	(E-13) LIN. FT.	
11+80	12+60	HWY. 412 - RT.				116		4
12+40	13+50	HWY. 412 - LT.				126		5
ENTIRE	PROJECT		2.7	211				
*ENTIRE PROJECT TO BE USED IF AND WHERE DIRECTED BY THE ENGINEER.					66		23	3
<b>TOTALS:</b>			2.7	211	66	242	23	12

**BASIS OF ESTIMATE:**

WATER.....12.6 GAL. / SQ. YD. OF SOLID SODDING  
 SAND BAG DITCH CHECKS.....22 BAGS / LOCATION  
 FILTER SOCKS.....23 LIN. FT./ 4' DIA. INLET

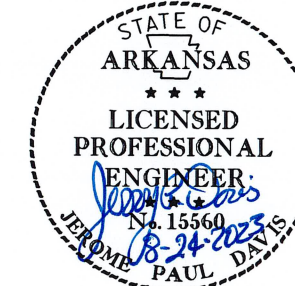
NOTE: THE TEMPORARY EROSION CONTROL DEVICES SHOWN ABOVE AND ON THE PLANS SHALL BE INSTALLED IN SUCH A SEQUENCE AS TO DETER EROSION AND SEDIMENTATION ON U.S. WATERWAYS AS EXPLAINED BY THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT.

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

**REMOVAL AND DISPOSAL OF CULVERTS AND DROP INLETS**

STATION	DESCRIPTION	PIPE CULVERTS	DROP INLETS
		EACH	EACH
12+07	HWY. 412 - RT. DROP INLET WITH 36" X 20' RCP	1	1
12+09	HWY. 412 - RT. 36" x 22'	1	
<b>TOTALS:</b>		2	1

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



**CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS**

DESCRIPTION	END OF JOB	REMOVAL OF PERMANENT PAVEMENT MARKINGS	RAISED PAVEMENT MARKERS		THERMOPLASTIC PAVEMENT MARKING							
			TYPE II (WHITE/RED)	TYPE II (YELLOW/YELLOW)	6"		8"		12"	WORDS	ARROWS	
					WHITE	YELLOW	WHITE	YELLOW	WHITE			
REMOVAL OF PERMANENT PAVEMENT MARKINGS		1197	EACH		LIN. FT.						EACH	
RAISED PAVEMENT MARKERS TYPE II (WHITE/RED)	14		14									
RAISED PAVEMENT MARKERS TYPE II (YELLOW/YELLOW)	9			9								
THERMOPLASTIC PAVEMENT MARKING WHITE (6")	739				739							
THERMOPLASTIC PAVEMENT MARKING YELLOW (6")	1610					1610						
THERMOPLASTIC PAVEMENT MARKING WHITE (8")	52						52					
THERMOPLASTIC PAVEMENT MARKING WHITE (8")	177							177				
THERMOPLASTIC PAVEMENT MARKING WHITE (12")	204								204			
THERMOPLASTIC PAVEMENT MARKING (WORDS)	1									1		
THERMOPLASTIC PAVEMENT MARKING (ARROWS)	2											2
<b>TOTALS:</b>		1197	14	9	739	1610	52	177	204	1		2

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

**ADVANCE WARNING SIGNS AND DEVICES**

SIGN NUMBER	DESCRIPTION	SIGN SIZE	MAXIMUM NUMBER REQUIRED	TOTAL SIGNS REQUIRED		TRAFFIC DRUMS
				NO.	SQ. FT.	
W20-1	ROAD WORK 1500 FT.	48"x48"	2	2	32.0	
W20-1	ROAD WORK 1000 FT.	48"x48"	2	2	32.0	
W20-1	ROAD WORK 500 FT.	48"x48"	2	2	32.0	
W20-1	ROAD WORK AHEAD	48"x48"	1	1	16.0	
G20-2	END ROAD WORK	48"x24"	3	3	24.0	
W21-5a	SHOULDER WORK	36"x36"	2	2	18.0	
W8-9a	SHOULDER DROP-OFF	36"x36"	2	2	18.0	
	TRAFFIC DRUMS			21		21
<b>TOTALS:</b>					172.0	21

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

**REMOVAL AND DISPOSAL OF ITEMS**

STATION	STATION	LOCATION	CURB AND GUTTER	WALKS
			LIN. FT.	SQ. YD.
9+35	9+72	KLENC RD. - LT.	87	
9+39	9+58	KLENC RD. - RT.	23	
9+41	9+67	KLENC RD. - LT.		24
9+37	9+57	KLENC RD. - RT.		13
<b>TOTALS:</b>			110	37

**EARTHWORK**

STATION	STATION	LOCATION / DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT
			CU. YD.	CU. YD.
ENTIRE	PROJECT	HWY. 412	21	7
ENTIRE	PROJECT	KLENC RD.	38	13
<b>TOTALS:</b>			59	20

NOTE: EARTHWORK QUANTITIES SHALL BE PAID AS PLAN QUANTITY.

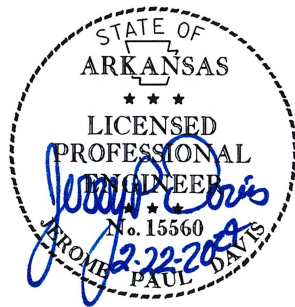
**QUANTITIES**

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DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	II	29
QUANTITIES						

**CONCRETE BASE**

STATION	STATION	LOCATION	LENGTH FEET	TACK COAT 0.05 GAL. PER SQ. YD.			AVG. WID. FEET	PORTLAND CEMENT CONCRETE BASE		
				AVG. WID. FEET	SQ. YD.	GAL.		4" U.T.	6.5" U.T.	10.5" U.T.
				SQ. YD.						
8+16.88	8+49.69	KLENC RD. - LT.	32.81	2.17	7.91	0.40	2.17			7.91
8+49.69	9+08.88	KLENC RD. - LT.	59.19	4.23	27.82	1.39	4.23			27.82
9+08.88	9+74.89	KLENC RD. - LT.	66.01	12.60	92.41	4.62	12.60	92.41		
9+08.88	9+74.89	KLENC RD. - LT.	66.01	16.47	120.80	6.04	16.47		120.80	
<b>TOTALS:</b>					248.94	12.45		92.41	120.80	35.73



**BASE AND SURFACING**

STATION	STATION	LOCATION	LENGTH FEET	AGGREGATE BASE COURSE (CLASS 7)		TACK COAT						ACHM SURFACE COURSE (1/2")										
				TON / STATION	TON	(0.05 GAL. PER SQ. YD.)			(0.17 GAL. PER SQ. YD.)			TOTAL GALLONS	AVG. WID. FEET	SQ. YD.	POUND / SQ. YD.	PG 70-22 TON	AVG. WID. FEET	SQ. YD.	POUND / SQ. YD.	PG 70-22 TON	TOTAL PG 70-22 TON	
						TOTAL WID. FEET	SQ. YD.	GALLON	TOTAL WID. FEET	SQ. YD.	GALLON											
<b>MAIN LANES</b>																						
9+83.54	15+40.42	HWY. 412	556.88							56.00	3465.03	589.06	589.06					56.00	3465.03	220.00	381.15	381.15
8+16.88	8+49.69	KLENC RD. - LT.	32.81	2.75	0.90	2.00	7.29	0.36				0.36	2.17	7.91	220.00	0.87	2.00	7.29	220.00	0.80	1.67	1.67
8+49.69	9+08.88	KLENC RD. - LT.	59.19	2.75	1.63	4.06	26.70	1.34				1.34	4.23	27.82	220.00	3.06	4.06	26.70	220.00	2.94	6.00	6.00
9+08.88	9+74.89	KLENC RD. - LT.	66.01			12.55	92.05	4.60				4.60	12.68	93.00	220.00	10.23	12.55	92.05	220.00	10.13	20.36	20.36
<b>TOTALS:</b>					2.53		126.04	6.30			3465.03	589.06	595.36		128.73		14.16		3591.07		395.02	409.18

BASIS OF ESTIMATE:  
 ACHM SURFACE COURSE (1/2").....93.9% MIN. AGGR.....6.1% ASPHALT BINDER  
 TACK COAT QUANTITIES WERE CALCULATED USING THE EMULSIFIED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.

**STRUCTURES**

STATION	DESCRIPTION	REINFORCED CONCRETE (CLASS III)		FLARED END SECTIONS 18"	DROP INLETS		SOLID SODDING SQ. YD.	WATER M. GAL.	STD. DWG. NOS.
		18"	36"		TYPE MO	EXT. 4'			
		LIN. FT.		EACH					
12+07	HWY. 412 DROP INLET ON RT.		20		1	2			PCC-1, FPC-9E, FPC-9M
12+07	HWY. 412 PIPE CULVERT ON RT.		22						PCC-1
9+59	KLENC RD. DROP INLET ON LT.	10		1	1		5	0.06	FES-1, FES-2, PCC-1, FPC-9E, FPC-9M
<b>TOTALS:</b>		10	42	1	2	2	5	0.06	

NOTE: FOR R.C. PIPE CULVERT INSTALLATIONS USE TYPE 3 BEDDING UNLESS OTHERWISE SPECIFIED.

**SELECTED PIPE BEDDING**

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

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

**CONCRETE COMBINATION CURB AND GUTTER**

STATION	STATION	LOCATION	TYPE A (1' 6") LIN. FT.
9+07	09+72	KLENC RD. - LT.	103
<b>TOTAL:</b>			103

**CONCRETE WALKS**

STATION	STATION	LOCATION	LENGTH LIN. FT.	CONCRETE WALKS SQ. YD.
9+30	9+62	KLENC RD. - LT.	51	31
9+37	09+57	KLENC RD. - RT.	30	17
<b>TOTAL:</b>				48

**COLD MILLING ASPHALT PAVEMENT**

STATION	STATION	LOCATION	AVG. WIDTH FEET	COLD MILLING ASPHALT PAVEMENT SQ. YD.
09+83.54	15+40.42	MAIN LANES HWY. 412	56.00	3465.03
<b>TOTAL:</b>				3465.03

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

**WHEELCHAIR RAMPS**

STATION	LOCATION	TYPE 3 SQ. YD.
9+57	KLENC RD. - LT.	5.0
9+57	KLENC RD. - RT.	4.0
<b>TOTAL:</b>		9.0

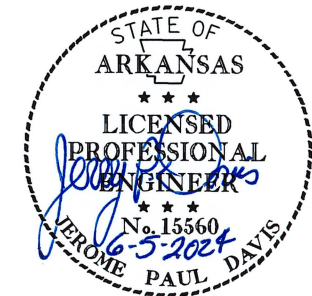
**QUANTITIES**

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DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
06-05-2024		6	ARK.	040854	12	29
SUMMARY OF QUANTITIES & REVISIONS						

### SUMMARY OF QUANTITIES (BOX 1 OF 2)

ITEM NUMBER	ITEM	QUANTITY	UNIT
202	REMOVAL AND DISPOSAL OF CURB AND GUTTER	110	LIN. FT.
202	REMOVAL AND DISPOSAL OF WALKS	37	SQ. YD.
202	REMOVAL AND DISPOSAL OF DROP INLETS	1	EACH
202	REMOVAL AND DISPOSAL OF PIPE CULVERTS	2	EACH
SP, SS, & 210	UNCLASSIFIED EXCAVATION	59	CU. YD.
SP & 210	COMPACTED EMBANKMENT	20	CU. YD.
SP, SS, & 303	AGGREGATE BASE COURSE (CLASS 7)	3	TON
SP, SS, & 309	PORTLAND CEMENT CONCRETE BASE (4" UNIFORM THICKNESS)	92	SQ. YD.
SP, SS, & 309	PORTLAND CEMENT CONCRETE BASE (6 1/2" UNIFORM THICKNESS)	121	SQ. YD.
SP, SS, & 309	PORTLAND CEMENT CONCRETE BASE (10 1/2" UNIFORM THICKNESS)	36	SQ. YD.
SS & 401	TACK COAT	608	GAL.
SP & 412	COLD MILLING ASPHALT PAVEMENT	3465	SQ. YD.
SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	384	TON
SP, SS, & 407	ASPHALT BINDER (PG 70-22) IN ACHM SURFACE COURSE (1/2")	25	TON
601	MOBILIZATION	1.00	LUMP SUM
SP, SS, & 603	MAINTENANCE OF TRAFFIC	1.00	LUMP SUM
SS & 604	SIGNS	172	SQ. FT.
SS & 604	TRAFFIC DRUMS	21	EACH
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS	1197	LIN. FT.
SS & 606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	10	LIN. FT.
SS & 606	36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	42	LIN. FT.
SS & 606	18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	1	EACH
SS & 606	SELECTED PIPE BEDDING	10	CU. YD.
SS & 609	DROP INLETS (TYPE MO)	2	EACH
SS & 609	DROP INLET EXTENSIONS (4')	2	EACH
620	WATER	2.8	M. GAL.
621	SILT FENCE	242	LIN. FT.
621	SAND BAG DITCH CHECKS	66	BAG
621	SEDIMENT REMOVAL AND DISPOSAL	12	CU. YD.
SS & 621	FILTER SOCK (12")	23	LIN. FT.
624	SOLID SODDING	216	SQ. YD.
SP, SS, & 633	CONCRETE WALKS	48	SQ. YD.
SS & 634	CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1' 6")	103	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL	1.00	LUMP SUM
SP, SS, & 641	WHEELCHAIR RAMPS (TYPE 3)	9	SQ. YD.
SP & 701	ACTUATED CONTROLLER TS2-TYPE 2 (8 PHASES)	1	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	8	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	1	EACH
SP & 707	CENTRAL CONTROL UNIT	1	EACH
SP & 707	POLE MOUNTED ASSEMBLY	2	EACH
SP & 707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED	2	EACH
708	TRAFFIC SIGNAL CABLE (5C/12 A.W.G.)	463	LIN. FT.
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	1163	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	74	LIN. FT.
708	TRAFFIC SIGNAL CABLE (12C/14 A.W.G.)	153	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	95	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., E.G.C.)	561	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., E.G.C.)	225	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.)	46	LIN. FT.
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES	892	LIN. FT.
709	GALVANIZED STEEL CONDUIT (2")	20	LIN. FT.
710	NON-METALLIC CONDUIT (2")	40	LIN. FT.
710	NON-METALLIC CONDUIT (3")	383	LIN. FT.
SS & 711	CONCRETE PULL BOX (TYPE 2)	3	EACH
SS & 711	CONCRETE PULL BOX (TYPE 1 HD)	1	EACH
SS & 711	CONCRETE PULL BOX (TYPE 2 HD)	3	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (0')	1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (28')	1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (34')	1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (40')	1	EACH



### SUMMARY OF QUANTITIES (BOX 2 OF 2)

ITEM NUMBER	ITEM	QUANTITY	UNIT
SP	LED LUMINAIRE ASSEMBLY	4	EACH
SS & 715	TRAFFIC SIGNAL PEDESTAL POLE WITH FOUNDATION	2	EACH
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1	EACH
719	THERMOPLASTIC PAVEMENT MARKING WHITE (6")	739	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (8")	52	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING WHITE (12")	204	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (6")	1610	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING YELLOW (8")	177	LIN. FT.
719	THERMOPLASTIC PAVEMENT MARKING (WORDS)	1	EACH
719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)	2	EACH
721	RAISED PAVEMENT MARKERS (TYPE II)	23	EACH
SP	18" STREET NAME SIGN	3	EACH
SP & 733	VIDEO DETECTOR (IP)	1	EACH
SP & 733	HYBRID VIDEO/RADAR DETECTOR	2	EACH
SP & 733	VIDEO CABLE (EXTERIOR CAT 5E)	427	LIN. FT.
SP & 733	VIDEO MONITOR (CLR)	1	EACH
SP & 733	CENTRAL CONTROL UNIT (8 CHANNEL)	1	EACH

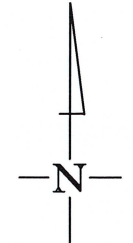
### REVISIONS

DATE	REVISION	SHEET NUMBER
6/5/2024	ADDED SS 102-3 PREQUALIFICATION OF BIDDERS.	3, 12

### SUMMARY OF QUANTITIES & REVISIONS

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DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	13	29
SURVEY CONTROL DETAILS						

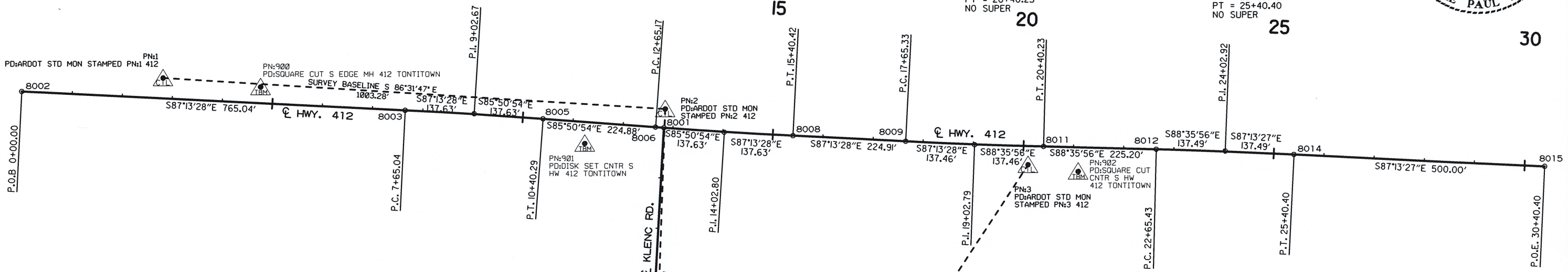


C.L. CONST. HWY. 412  
 PI = 9+02.67  
 $\Delta = 01^{\circ}22'34''$  RT.  
 D = 00'30'00"  
 T = 137.63'  
 L = 275.25'  
 PC = 7+65.04  
 PT = 10+40.29  
 NO SUPER

C.L. CONST. HWY. 412  
 PI = 14+02.80  
 $\Delta = 01^{\circ}22'34''$  LT.  
 D = 00'30'00"  
 T = 137.63'  
 L = 275.25'  
 PC = 12+65.17  
 PT = 15+40.42  
 NO SUPER

C.L. CONST. HWY. 412  
 PI = 19+02.79  
 $\Delta = 01^{\circ}22'28''$  LT.  
 D = 00'30'00"  
 T = 137.46'  
 L = 274.90'  
 PC = 17+65.33  
 PT = 20+40.23  
 NO SUPER

C.L. CONST. HWY. 412  
 PI = 24+02.92  
 $\Delta = 01^{\circ}22'29''$  RT.  
 D = 00'30'00"  
 T = 137.49'  
 L = 274.97'  
 PC = 22+65.43  
 PT = 25+40.40  
 NO SUPER



Alignment Name: CL Const Klenc Rd.				
8000	P.O.B.	3+00.22	677852.2828	649568.8329
8001	P.O.E.	10+00.00	678550.9728	649607.8473

Alignment Name: CL Hwy 412				
8002	P.O.B.	0+00.00	678622.1490	648327.6430
8003	P.C.	7+65.04	678585.1043	649091.7856
8005	P.T.	10+40.29	678588.4763	649366.5262
8006	P.C.	12+65.17	678552.1961	649590.8161
8008	P.T.	15+40.42	678535.5679	649865.5567
8009	P.C.	17+65.33	678524.6774	650090.2029
8011	P.T.	20+40.23	678514.6608	650364.9138
8012	P.C.	22+65.43	678509.1547	650590.0465
8014	P.T.	25+40.40	678499.1349	650864.8272
8015	P.O.E.	30+40.40	678474.9216	651364.2408

SURVEY CONTROL COORDINATES

Project Name: s040854  
 Date: 1/3/2022  
 Coordinate System: ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL, 720066A & 720067A PROJECTED TO GROUND.  
 Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	678649.0020	648609.0826	1287.06	CTL	ARDOT STD MON STAMPED PN: 1
2	678588.2738	649610.5197	1278.42	CTL	ARDOT STD MON STAMPED PN: 2
3	678478.2868	650333.8352	1284.18	CTL	ARDOT STD MON STAMPED PN: 3
4	677768.5519	649582.1010	1286.40	CTL	ARDOT STD MON STAMPED PN: 4
5	677219.2233	649508.6935	1282.46	CTL	ARDOT STD MON STAMPED PN: 5
100	678237.0374	655863.6611	1286.63	GPS	ARDOT GPS MON 720066A
101	688607.3761	652910.4858	1165.10	GPS	ARDOT GPS MON 720067A
900	678631.4222	648803.8795	1286.07	TBM	SQUARE CUT S EDGE MH
901	678519.5690	649449.5841	1277.11	TBM	DISK SET CNTR S HW
902	678465.1119	650434.0845	1282.20	TBM	SQUARE CUT CNTR S HW
903	677230.0740	649450.8038	1283.46	TBM	SQUARE CUT SE CRNR S HW
990	678451.4635	652682.7182	1306.29	TBM	SQUARE CUT BASE OF PA

\*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 0.9999239637 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.  
 THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.  
 GRID DISTANCE = GROUND DISTANCE X CAF.  
 GRID COORDINATES ARE STORED UNDER FILE NAME s040854.gi.CTL  
 HORIZONTAL DATUM: NAD 83 (2011)  
 VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

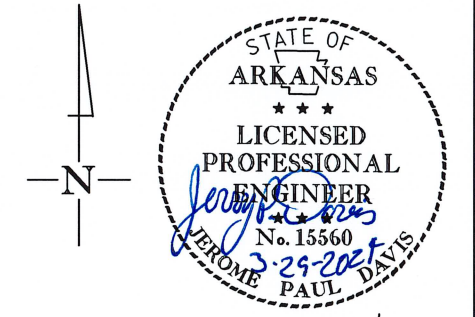
REFERENCE POINTS (1500 SERIES) ARE TO BE USED TO ESTABLISH CONTROL IF THE PRIMARY CONTROL POINTS LISTED ABOVE HAVE BEEN DESTROYED. REFERENCE POINTS ARE NOT TO BE USED FOR VERTICAL CONTROL

BASIS OF BEARING:  
 ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE  
 DETERMINED FROM GPS CONTROL POINTS: 720066A & 720067A  
 CONVERGENCE ANGLE: 01 18 24.5 LEFT AT PN:2 LT: N36°10'36.2072" LG: W94°14'44.7273"  
 GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

USER: j65296  
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 SCALE: 1:200

SURVEY CONTROL DETAILS

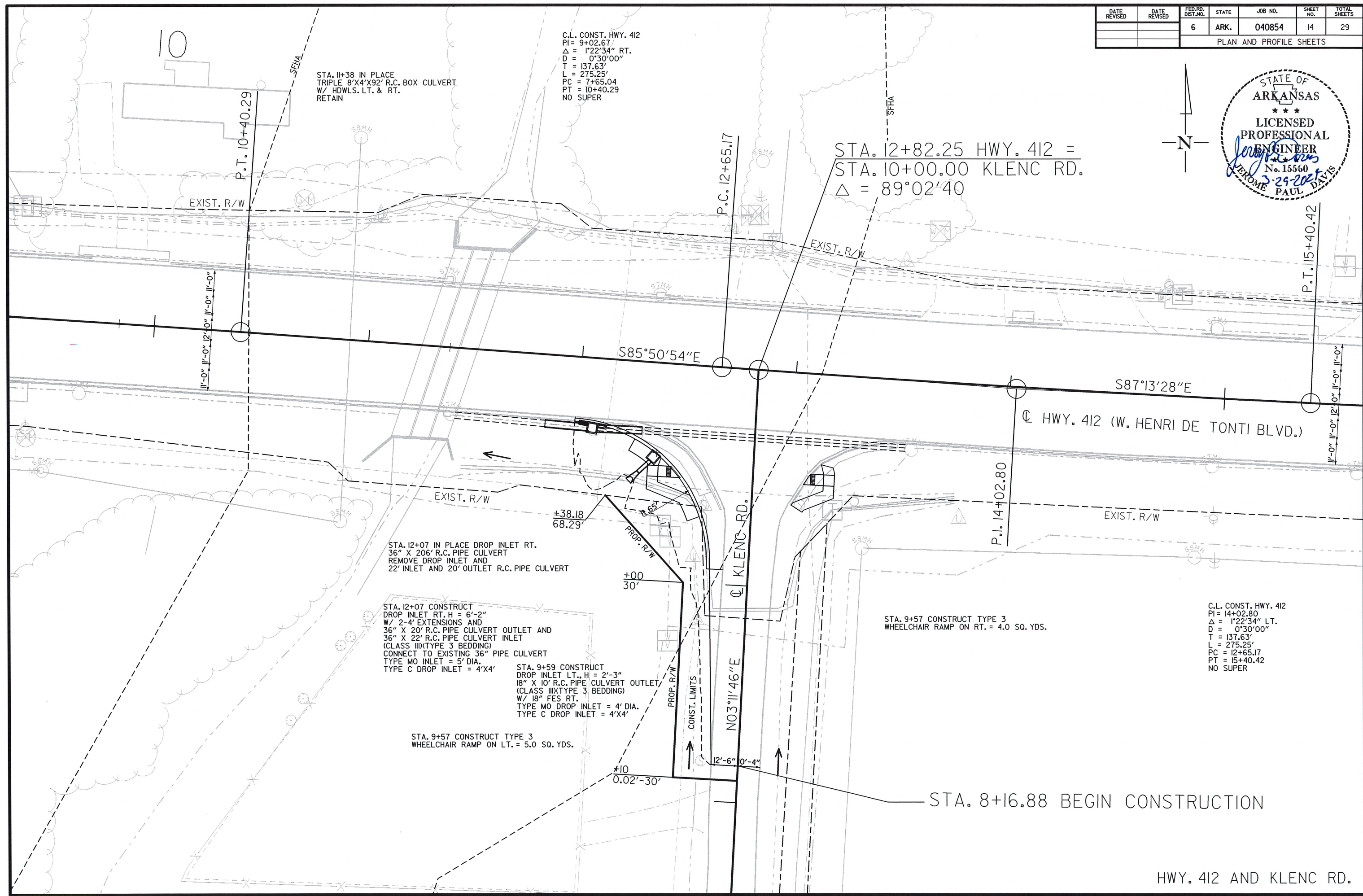
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	14	29
PLAN AND PROFILE SHEETS						



C.L. CONST. HWY. 412  
 PI = 9+02.67  
 $\Delta = 1^{\circ}22'34''$  RT.  
 D = 0'30'00"  
 T = 137.63'  
 L = 275.25'  
 PC = 7+65.04  
 PT = 10+40.29  
 NO SUPER

STA. 11+38 IN PLACE  
 TRIPLE 8'X4'X92' R.C. BOX CULVERT  
 W/ HDWLS. LT. & RT.  
 RETAIN

STA. 12+82.25 HWY. 412 =  
 STA. 10+00.00 KLENC RD.  
 $\Delta = 89^{\circ}02'40''$



STA. 12+07 IN PLACE DROP INLET RT.  
 36" X 206' R.C. PIPE CULVERT  
 REMOVE DROP INLET AND  
 22" INLET AND 20' OUTLET R.C. PIPE CULVERT

STA. 12+07 CONSTRUCT  
 DROP INLET RT. H = 6'-2"  
 W/ 2-4' EXTENSIONS AND  
 36" X 20' R.C. PIPE CULVERT OUTLET AND  
 36" X 22' R.C. PIPE CULVERT INLET  
 (CLASS III TYPE 3 BEDDING)  
 CONNECT TO EXISTING 36" PIPE CULVERT  
 TYPE MO INLET = 5' DIA.  
 TYPE C DROP INLET = 4'X4'

STA. 9+59 CONSTRUCT  
 DROP INLET LT., H = 2'-3"  
 18" X 10' R.C. PIPE CULVERT OUTLET  
 (CLASS III TYPE 3 BEDDING)  
 W/ 18" FES RT.  
 TYPE MO DROP INLET = 4' DIA.  
 TYPE C DROP INLET = 4'X4'

STA. 9+57 CONSTRUCT TYPE 3  
 WHEELCHAIR RAMP ON LT. = 5.0 SQ. YDS.

STA. 9+57 CONSTRUCT TYPE 3  
 WHEELCHAIR RAMP ON RT. = 4.0 SQ. YDS.

C.L. CONST. HWY. 412  
 PI = 14+02.80  
 $\Delta = 1^{\circ}22'34''$  LT.  
 D = 0'30'00"  
 T = 137.63'  
 L = 275.25'  
 PC = 12+65.17  
 PT = 15+40.42  
 NO SUPER

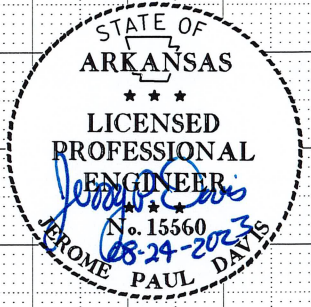
STA. 8+16.88 BEGIN CONSTRUCTION

HWY. 412 AND KLENC RD.

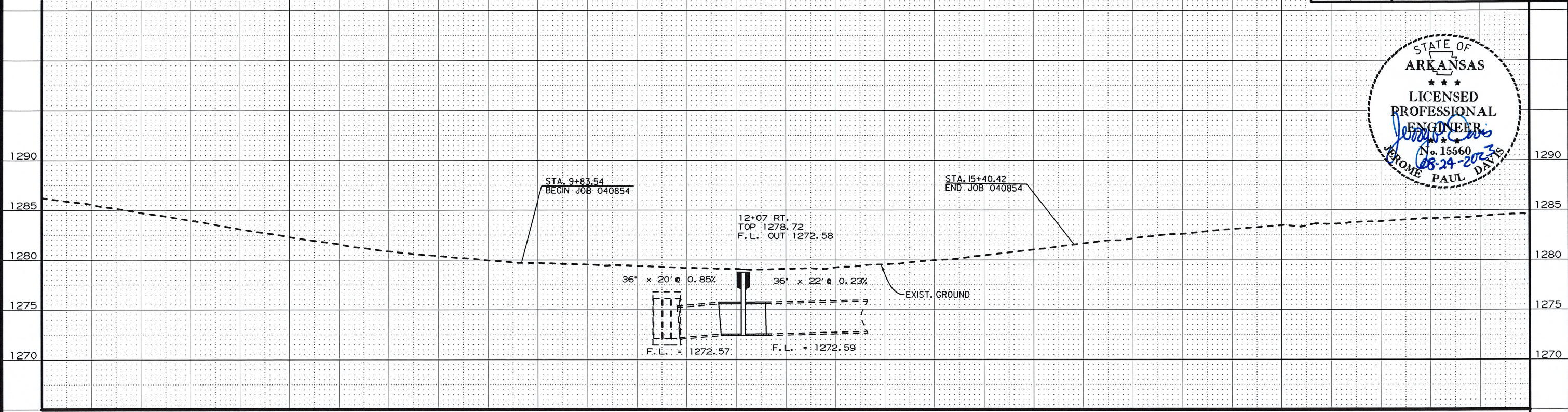
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DATE REVISED	DATE REVISED	FED. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	15	29

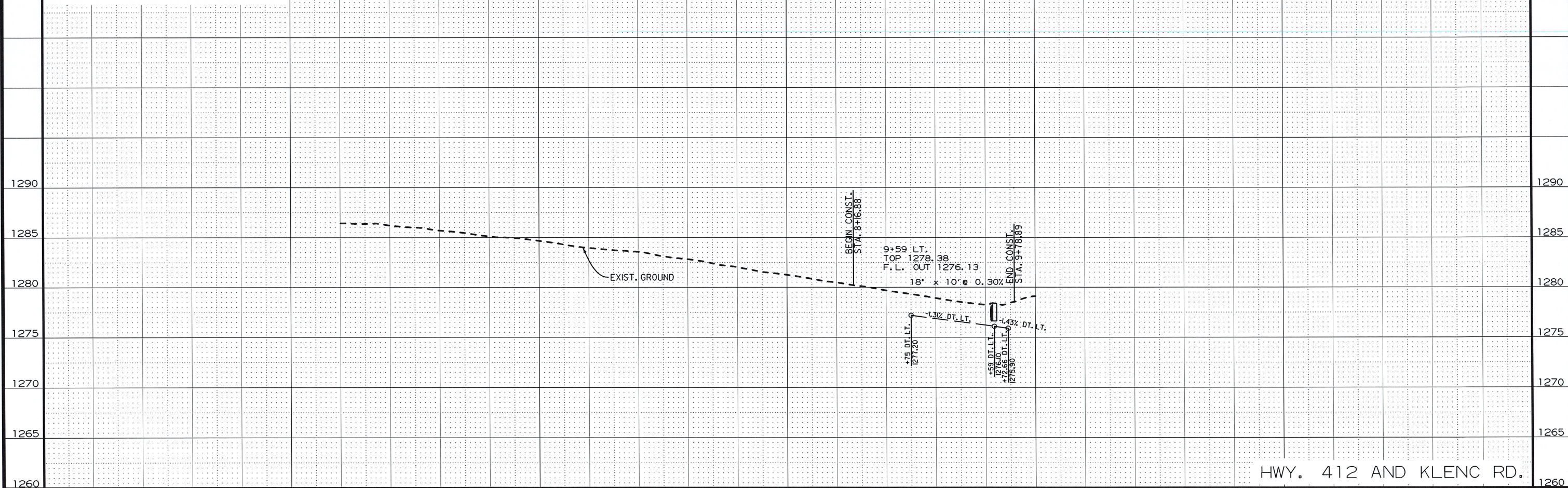
PLAN AND PROFILE SHEETS



HWY. 412 RIGHT SIDE



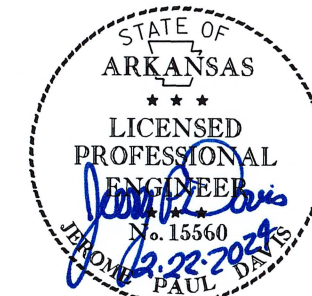
KLENC RD. LT. SIDE



HWY. 412 AND KLENC RD.

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DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	16	29
SUMMARY OF TRAFFIC SIGNAL QUANTITIES						



### SUMMARY OF TRAFFIC SIGNAL QUANTITIES

ITEM NUMBER	ITEM	QUANTITY	UNIT
SP & 701	ACTUATED CONTROLLER TS2-TYPE 2 (8 PHASES)	1	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	8	EACH
SP & 706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	1	EACH
SP & 707	CENTRAL CONTROL UNIT	1	EACH
SP & 707	POLE MOUNTED ASSEMBLY	2	EACH
SP & 707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED	2	EACH
708	TRAFFIC SIGNAL CABLE (5C/12 A.W.G.)	463	LIN. FT.
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	1163	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	74	LIN. FT.
708	TRAFFIC SIGNAL CABLE (12C/14 A.W.G.)	153	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	95	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., E.G.C.)	561	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., E.G.C.)	225	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.)	46	LIN. FT.
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES	892	LIN. FT.
709	GALVANIZED STEEL CONDUIT (2")	20	LIN. FT.
710	NON-METALLIC CONDUIT (2")	40	LIN. FT.
710	NON-METALLIC CONDUIT (3")	383	LIN. FT.
SS & 711	CONCRETE PULL BOX (TYPE 2)	3	EACH
SS & 711	CONCRETE PULL BOX (TYPE 1 HD)	1	EACH
SS & 711	CONCRETE PULL BOX (TYPE 2 HD)	3	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (0')	1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (28')	1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (34')	1	EACH
SS & 714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (40')	1	EACH
SP	LED LUMINAIRE ASSEMBLY	4	EACH
SS & 715	TRAFFIC SIGNAL PEDESTAL POLE WITH FOUNDATION	2	EACH
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1	EACH
SP	18" STREET NAME SIGN	3	EACH
SP & 733	VIDEO DETECTOR (IP)	1	EACH
SP & 733	HYBRID VIDEO/RADAR DETECTOR	2	EACH
SP & 733	VIDEO CABLE (EXTERIOR CAT 5E)	427	LIN. FT.
SP & 733	VIDEO MONITOR (CLR)	1	EACH
SP & 733	CENTRAL CONTROL UNIT (8 CHANNEL)	1	EACH

LOCATION: HIGHWAY 412 AND KLENC RD.  
 CITY: TONTI TOWN  
 COUNTY: WASHINGTON  
 DISTRICT: 4      SCALE: N/A      DRAWN BY: CTA



**TRAFFIC SIGNAL NOTES:**

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	17	29
TRAFFIC SIGNAL NOTES						

1. THE TRAFFIC SIGNAL SHALL NOT BE PUT INTO OPERATION OR SWITCHED TO THE NEXT CONSTRUCTION STAGE PRIOR TO THE FOLLOWING:
  - A. ALL TRAFFIC SIGNAL EQUIPMENT HAS BEEN INSTALLED ACCORDING TO THE PLANS, SPECIAL PROVISIONS, AND PROPERLY FUNCTIONAL. THIS INCLUDES BUT NOT LIMITED TO: CABINETS, PULL BOXES, JUNCTION BOXES, POLES, MAST ARMS, FOUNDATIONS, LUMINAIRES, SIGNAL HEADS, PEDESTRIAN SIGNAL HEADS, PUSH BUTTONS, DETECTION SYSTEM, CONDUITS, CONDUCTORS, CABLES, TRAFFIC CONTROLLER, CONFLICT MONITOR, COMMUNICATION SYSTEM, SERVICE POINT, AND RAILROAD INTERCONNECT
  - B. THE DETECTION SYSTEM SHALL BE INSTALLED, SETUP, AND CONFIGURED BY THE CONTRACTOR OR THEIR SUPPLIER PER PLANS. A TRAFFIC OPERATIONS INSPECTOR SHALL INSPECT AND PROVIDE APPROVAL IN ORDER TO PUT THE TRAFFIC SIGNAL INTO OPERATION.
  - C. THE TRAFFIC CONTROLLER AND CONFLICT MONITOR SHALL BE PROGRAMMED TO OPERATE AS REQUIRED PER THE PLANS (PHASING DIAGRAM, INTERVAL CHART, AND ANY ADDITIONAL NOTES), SPECIAL PROVISIONS AND ARDOT SPECIFICATIONS.
  - D. TIMING SETTINGS HAVE BEEN PROGRAMMED AND APPROVED AS REQUIRED BY ITS MANAGEMENT SECTION-MAINTENANCE DIVISION.
  - E. THE TRAFFIC SIGNAL HAS BEEN INSPECTED AND APPROVED BY A TRAFFIC OPERATIONS INSPECTOR.
  - F. ALL REQUIRED DOCUMENTS RELATED TO THE TRAFFIC SIGNAL EQUIPMENT, THIS INCLUDES BUT NOT LIMITED TO: TEST RESULTS, CONFIGURATION/DATA REPORTS, WARRANTIES, AND ANY OTHER DOCUMENTATION REQUIRED PER PLANS AND SPECIAL PROVISIONS.
2. CONTRACTOR SHALL NOTIFY ALL EXISTING UTILITY OWNERS BEFORE BEGINNING WORK ON THIS PROJECT.
3. TRAFFIC SIGNAL CONTRACTOR SHALL NOTIFY THE 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.
4. THE CONTRACTOR SHALL PERFORM ALL WORK POSSIBLE THAT WILL MINIMIZE THE TIME THAT THE TRAFFIC SIGNAL IS OUT OF OPERATION. IF, IN THE OPINION OF THE ENGINEER, TRAFFIC CONDITIONS WARRANT, THE CONTRACTOR SHALL PROVIDE FLAGMEN TO DIRECT TRAFFIC WHILE THE TRAFFIC SIGNAL IS OUT OF OPERATION.
5. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE NFPA 70 (CURRENT EDITION) NATIONAL ELECTRICAL CODE, NFPA 101 (CURRENT EDITION) LIFE SAFETY CODE, STATE ELECTRICAL CODE AND LOCAL ELECTRICAL CODE.
6. EXTEND GREEN EQUIPMENT GROUNDING CONDUCTOR (E.G.C.) FROM GROUND BAR AT MAIN BREAKER TO CONTROL PANEL AND TO FIRST POLE. SOLIDLY BOND E.G.C. TO GROUND LUG OF CONTROL CABINET AND TO POLE GROUND. ENSURE THAT ONLY ONE NEUTRAL-TO-GROUND BOND EXISTS IN THE SYSTEM AND THAT IT IS AT THE MAIN BREAKER.
7. ELECTRICAL SERVICE SHALL BE PROVIDED BY THE CITY/COUNTY TO A SERVICE POLE WITH EXTERNAL RAIN-TIGHT 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 A.W.G. USE RATED, WITH GROUND TYPICAL), AND PERFORM WIRING TO TAP INTO THE CITY'S/ COUNTY'S MAIN BREAKER AS PART OF THIS CONTRACT. CONDUIT IS PAID FOR AS A SEPARATE ITEM OF THIS CONTRACT. TWO CIRCUIT BREAKERS, CONSIDERED SUBSIDIARY TO THE CONTROL EQUIPMENT, ARE NEEDED WHERE STREET LIGHTING IS INCLUDED. AS PART OF THE SIGNAL INSTALLATION, STREET LIGHTING CIRCUIT (2c/#12 A.W.G. UF RATED, TYPICAL) SHALL BE KEPT FROM THE CIRCUIT SERVING THE TRAFFIC SIGNAL CONTROL EQUIPMENT FROM THE POINT OF TIE-IN AT THE SECONDARY BREAKER PROVIDED BY THE CONTRACTOR.
8. CONTRACTOR SHALL CONNECT A SEPARATE NEUTRAL FOR EACH LOAD SWITCH REPRESENTED ON EACH SIGNAL POLE.
9. 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.
10. CONTROLLER CABINET SHALL BE WIRED SUCH THAT DURING FLASH OPERATIONS POWER TO THE LOAD SWITCHES CANNOT BACKFEED TO LOAD SWITCH POWER BUSS.

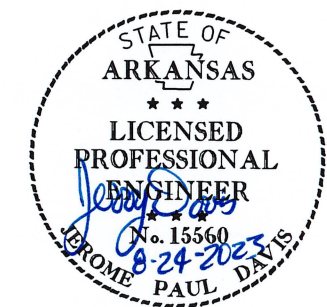
11. ALL PARTS OF THIS INSTALLATION SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, STANDARD DRAWINGS, AND WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION.
12. CONTROLLER CABINET LAYOUT AND ORIENTATION SHALL CONFORM TO IMSA STANDARDS.
13. DOOR PANEL TEST PUSH BUTTONS SHALL ACTUATE INDICATED PHASES. DETECTOR ASSIGNMENTS AND/OR SIDE PANEL JUMPERS MAY REQUIRE MODIFICATION.
14. ALL SYSTEM DETECTOR RACKS AND ASSOCIATED EQUIPMENT SHALL BE PROTECTED BY THE MAIN CONTROLLER CABINET POWER SURGE PROTECTION.
15. 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.
16. 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.
17. THE LOCAL RADIO WITH ANTENNA AND TRAFFIC SIGNAL CONTROLLER SHALL BE COMPATIBLE WITH THE EXISTING COORDINATION SYSTEM IN THE CITY/COUNTY.
18. CONDUIT INSTALLED UNDER ROADWAY SURFACES SHALL BE INSTALLED BY PUSHING OR BORING METHOD OR AS DIRECTED BY THE ENGINEER. PVC OR HDPE CONDUIT SHALL BE USED AND SHALL BE UL LISTED. PVC CONDUIT SHALL BE MARKED "DIR. BORING" OR "DIRECTIONAL BORING" PER NEC. IF THE ENGINEER DETERMINES THIS IS NOT FEASIBLE, THEN A TRENCHING METHOD AS SHOWN IN THE STANDARD DRAWINGS MAY BE USED. THE ENGINEER SHALL GRANT A WRITTEN APPROVAL PRIOR TO USING THE TRENCHING METHOD.
19. ALL CONDUIT SHALL BE THREE (3") INCH DIAMETER UNLESS SPECIFIED ON PLANS. ALL CONDUIT UNDER THE ROADWAY, SIDEWALKS, AND DRIVEWAYS SHALL HAVE A MINIMUM DEPTH OF 24" FROM THE TOP OF THE CONDUIT TO THE FINISHED GRADE. CONDUIT DEPTH MAY NEED TO INCREASE NEAR DRAINAGE STRUCTURES.
20. CONDUIT BELL END FITTINGS SHALL BE INSTALLED ON ALL TERMINATING ENDS OF NON-METALLIC CONDUIT RUNS. THIS INCLUDES PULL BOXES, POLE BASES, AND TRAFFIC SIGNAL CABINETS. THE COST OF THE FITTINGS SHALL BE CONSIDERED SUBSIDIARY TO THE PAY ITEM. ALL NON-METALLIC CONDUIT SHALL USE LONG SWEEP 90 DEGREE ELBOWS ON ALL CONDUIT BENDS.
21. ALL CONCRETE PULL BOXES SHALL BE (TYPE 2 HD) UNLESS OTHERWISE INDICATED. PULL BOX LIDS SHALL CLOSE FLUSH WITHOUT PINCHING ANY CONDUCTORS. CONDUIT LENGTHS IN PULL BOXES SHALL BE SET ACCORDINGLY. ANY CONDUCTORS THAT HAVE BEEN DAMAGED BY PINCHING SHALL BE COMPLETELY REPLACED AT THE CONTRACTOR'S EXPENSE.
22. ALL CONCRETE PULL BOXES SHALL BE SET ON A GRAVEL OR CRUSHED STONE BEDDING AS SPECIFIED IN SECTION 711, CONCRETE PULL BOX, OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2014.
23. CONTRACTOR SHALL ATTACH A PERMANENT TAG OF RIGID PLASTIC OR NON-FERROUS METAL TO EACH CONDUIT AT PULLBOXES, POLE BASES, JUNCTION BOXES AND CONTROLLER CABINETS. TAGS SHALL BE EMBOSSED, STAMPED OR ENGRAVED WITH LETTERS 1/4" OR GREATER IN HEIGHT AND SECURED TO THE CONDUIT WITH NYLON OR PLASTIC TIES. EACH TAG SHALL INDICATE THE END LOCATION OF CONDUIT RUN. THE COST OF THE TAGS SHALL BE SUBSIDIARY TO THE CONDUIT PAY ITEM.  
 EXAMPLES FOR CONDUIT IN SIDE CABINET: "TO POLE A AND B" OR "TO POLE C"  
 EXAMPLES FOR CONDUIT IN PULL BOX: "TO POLE A" OR "TO TRAFFIC CABINET"
24. ALL STEEL POLES SHALL BE DESIGNED TO MEET THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4th EDITION (2001) WITH 2003 AND 2006 INTERIMS.
25. ALL TRAFFIC SIGNAL POLES SHALL BE GALVANIZED.
26. CONNECTION OF TRAFFIC SIGNAL DISPLAY TO FIELD WIRING SHALL UTILIZE AN APPROVED TERMINAL STRIP BEHIND HAND-HOLE COVER AT BASE OF POLE. TERMINAL STRIP SHALL PROVIDE PROTECTION TO PREVENT EXPOSURE TO THE PUBLIC IN THE EVENT THAT POLE COVER IS MISSING. PAYMENT FOR TERMINAL STRIPS SHALL BE INCLUDED IN ITEM 714 TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, CURRENT EDITION.

27. FOUNDATION FOR ALL POLES SHALL BE EXTENDED IF NECESSARY TO ACCOMMODATE THE REQUIREMENTS FOR SIGNAL HEAD CLEARANCE ABOVE ROADWAY ONLY AT LOCATIONS WHERE THE GROUND ELEVATION AT THE POLE IS BELOW THE ELEVATION OF THE ROADWAY (SEE NOTES ON STANDARD DRAWING). PAYMENT WILL BE INCLUDED IN SECTION 714 TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, CURRENT EDITION.
28. 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, THIRTY-EIGHT (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 TWENTY-ONE (21') FEET SHOULD BE USED TO DETERMINE UTILITY CLEARANCE ABOVE THE TRAFFIC SIGNAL MAST ARM. AN ADDITIONAL SIX (6') FEET SHOULD BE USED DIRECTLY ABOVE "VIDEO DETECTOR" AT LOCATIONS SHOWN ON THE SIGNAL PLANS.
29. THE DESIRABLE MINIMUM DISTANCE FROM THE FACE OF ROADWAY CURB OR SHOULDER EDGE TO THE FACE OF NON-BREAKAWAY POLE OR OBSTRUCTION IS SIX (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.
30. 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.
31. LED LUMINAIRE ASSEMBLIES SHALL HAVE A BUG RATING OF U0.
32. BACKPLATES SHALL BE SUPPLIED FOR ALL TRAFFIC SIGNAL HEADS, REFER TO THE RETROREFLECTIVE BACKPLATES SPECIAL PROVISION FOR REQUIREMENTS.
33. PAVEMENT MARKINGS SHOWN FOR REFERENCE ONLY. SEE PERMANENT PAVEMENT MARKING DETAILS.
34. BEFORE FINAL ACCEPTANCE OF THE TRAFFIC SIGNAL, THE CONTRACTOR SHALL PROVIDE TWO (2) SETS OF LEDGER SIZE (11" X 17") AS-BUILT TRAFFIC SIGNAL PLANS TO THE MAINTENANCE AUTHORITY AND ARDOT.

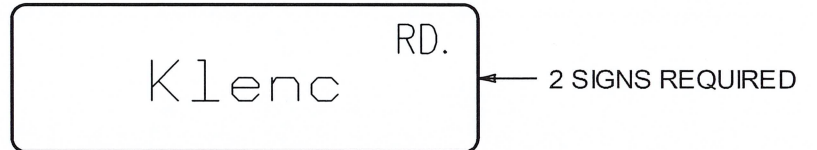
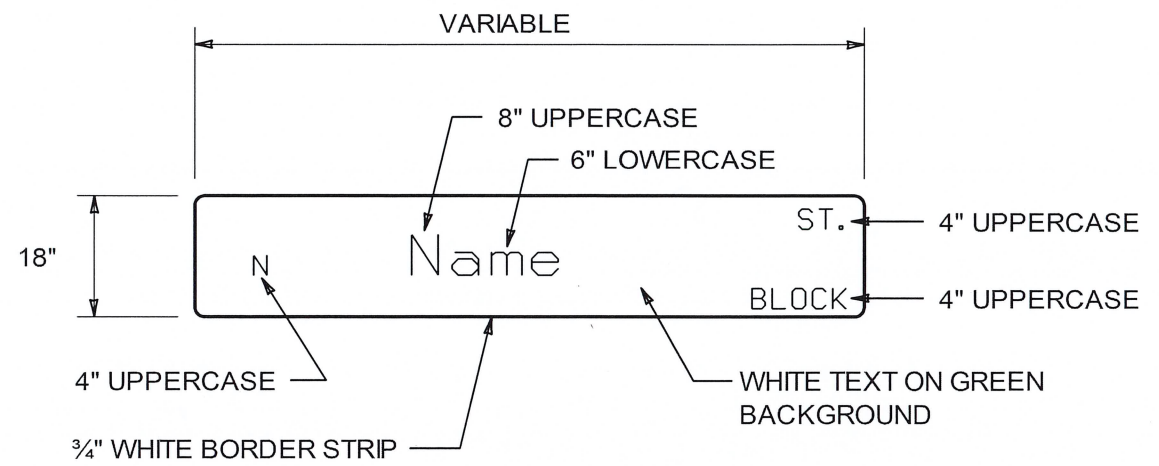


LOCATION:	HIGHWAY 412 AND KLENC RD.
CITY:	TONTI TOWN
COUNTY:	WASHINGTON
DISTRICT:	4
SCALE:	N/A
DRAWN BY:	CTA

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	18	29
TRAFFIC SIGNAL STREET NAME SIGN						



OVERHEAD STREET NAME MARKER  
STANDARD MAST ARM MOUNTED



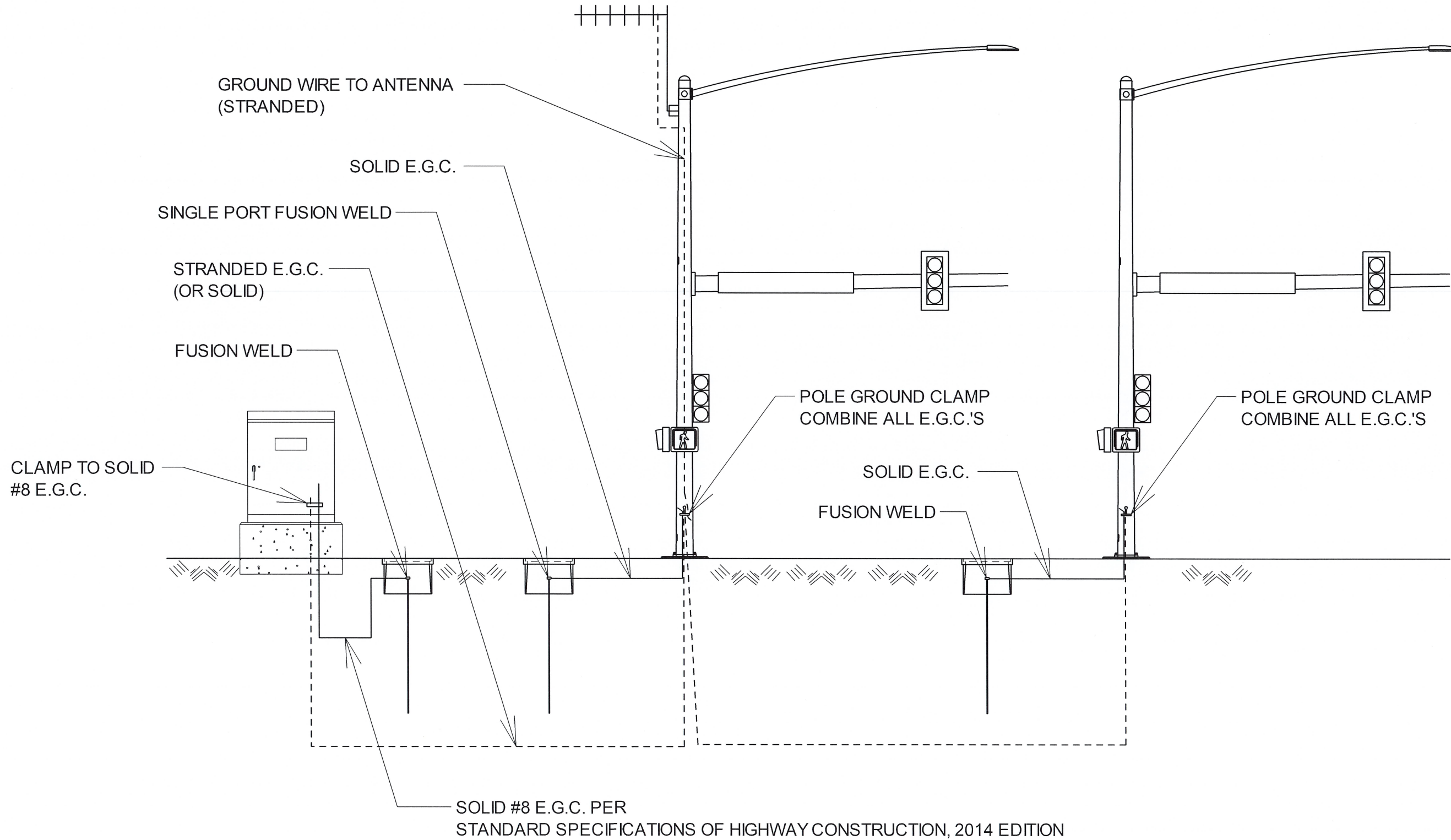
NOTES:

1. REFLECTIVE SHEETING SHALL COMPLY WITH ASTM 4956 TYPE 8 OR 9 REFLECTIVE SHEETING. SHEETING AND LEGEND SHALL BE APPLIED IN SUCH A MANNER TO PROVIDE WRINKLE AND BUBBLE FREE SURFACES. APPLICATION OF SHEETING IS CAUSE FOR REJECTION OF MATERIALS DUE TO WORKMANSHIP.
2. ALUMINUM SIGN BLANK SHALL BE ALLOY 6061-T6 OR 5052-H38. THE ALUMINUM SIGN SHALL BE ALSO ALODIZED. THE ALUMINUM SHEETING SHALL BE 0.100 INCH NOMINAL THICKNESS AND OF THE SIZE SHOWN WITH 1.5" CORNER RADII. PRIOR TO FABRICATION OF THE SIGNS, THE LAYOUT SHALL FIRST BE APPROVED BY AN AGENT OF THE CITY/ COUNTY.
3. WHEN CROSSROAD HAS TWO NAMES, THE SIGN FOR THE CROSSROAD TO THE LEFT MAY BE INSTALLED ON THE BACKSIDE OF THE MAST ARM ON THE NEAR SIDE LEFT POLE. SEE STANDARD DRAWING SHEET FOR MORE INFORMATION FOR MOUNTING ON MAST ARM ASSEMBLY.
4. THE SERIES C 2000 STANDARD ALPHABET SHALL BE USED FOR ALL LETTERS.

LOCATION: HIGHWAY 412 AND KLENC RD.  
 CITY: TONTI TOWN  
 COUNTY: WASHINGTON  
 DISTRICT: 4 SCALE: N/A DRAWN BY: CTA

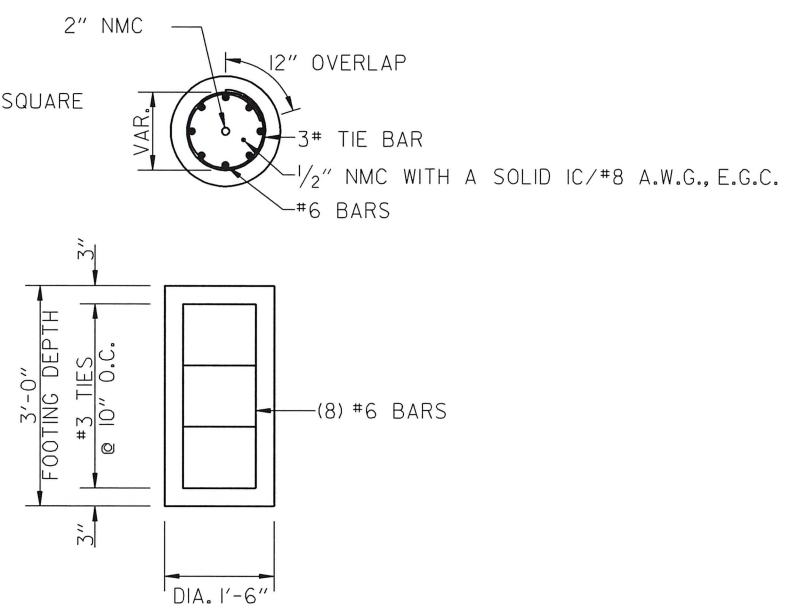
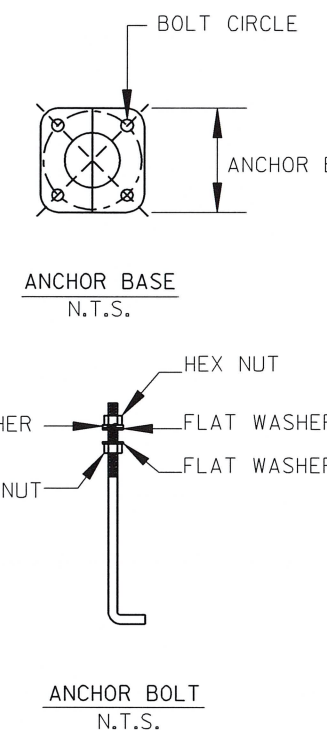
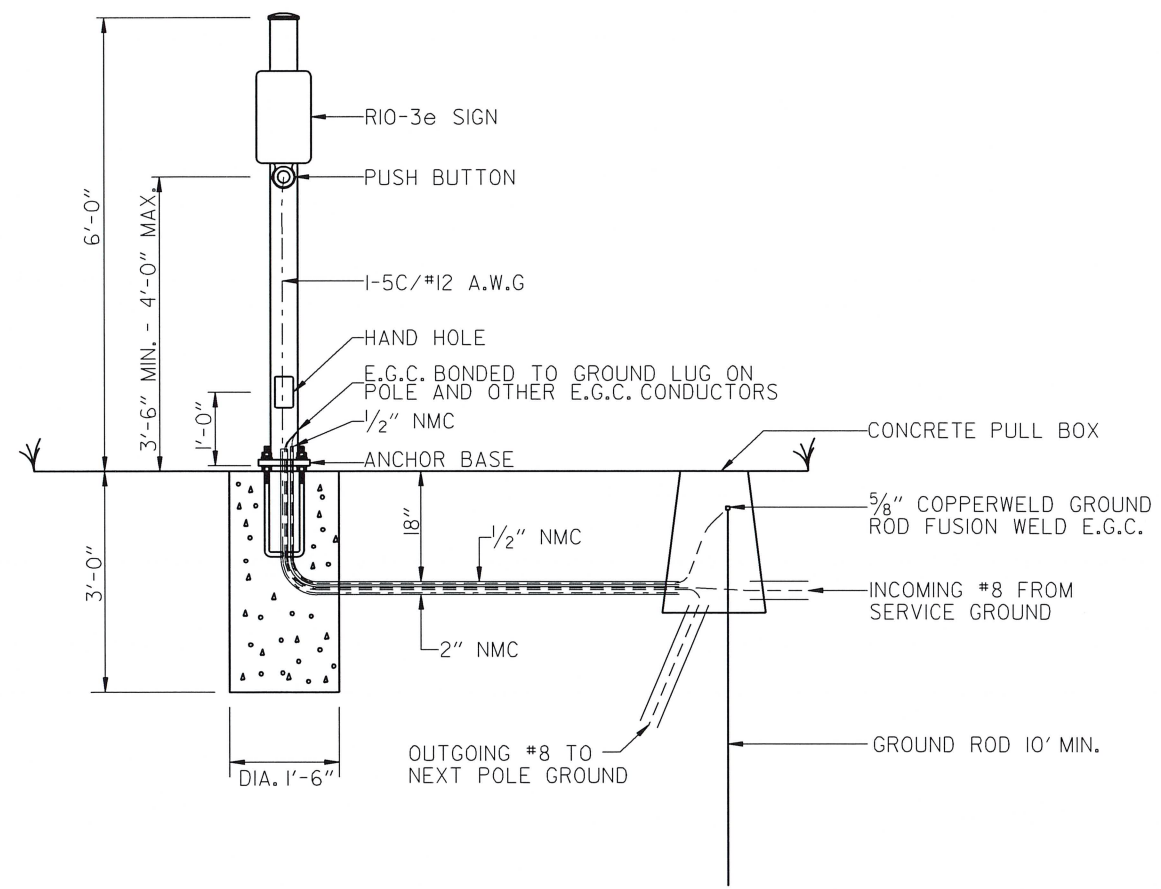
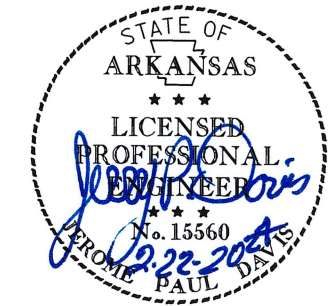
# GROUNDING ARRAY SINGLE-PORT FUSION WELDS

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	19	29
GROUNDING ARRAY DETAIL						



LOCATION:	HIGHWAY 412 AND KLENC RD.
CITY:	TONTI TOWN
COUNTY:	WASHINGTON
DISTRICT:	4
SCALE:	N/A
DRAWN BY:	CTA

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	20	29



## PEDESTRIAN PUSH BUTTON PEDESTAL DETAIL

**NOTES:**

EACH PEDESTRIAN PUSH BUTTON SHALL HAVE ONE RIO-3E SIGN ATTACHED TO THE POLE ABOVE THE BUTTON. ALL SIGNS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 723 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

ALL SIGN BLANKS SHALL BE CONSTRUCTED OF ALUMINUM ALLOY (ASTM DESIGNATION B-209, ALLOY 5052-H38) WITH THICKNESS OF 0.100 INCH.

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.

CONSTRUCTION SPECIFICATIONS:  
STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION) WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

POLE CAP - POLE CAPS SHALL BE PROVIDED, FABRICATED OF EITHER STEEL OR CAST ALUMINUM.

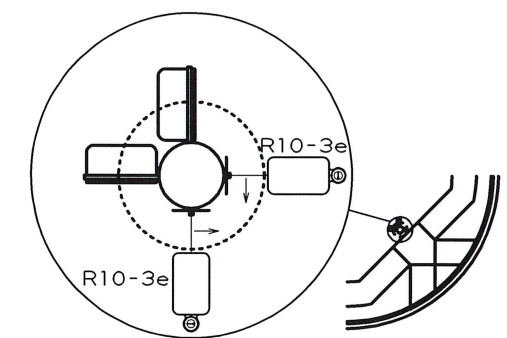
HAND HOLE - HAND HOLES SHALL BE 3 IN. X 5 IN. FOR PED POLES. MINIMUM PLACED APPROXIMATELY 12 INCHES FROM BASE, AND SHALL BE FIXED WITH A BOLT DOWN COVER. A VACUUM FORMED ABS COVER IS AN ACCEPTABLE ALTERNATE TO STEEL.

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

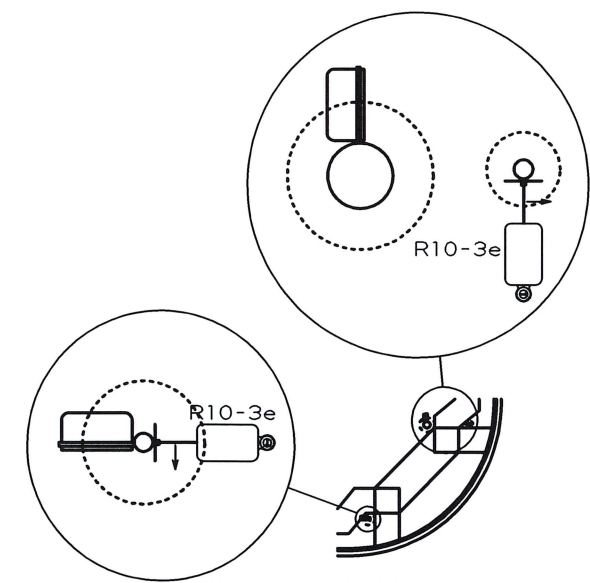
GROUND ROD - A 10' X 5/8" GROUND ROD SHALL BE INSTALLED IN THE CONCRETE PULL BOX FOR EACH POLE AND THE CONTROLLER. PAYMENT FOR THE GROUND ROD AND 1/2" NMC SHALL BE INCLUDED IN ITEM 714 FOR SIGNAL POLES AND ITEM 701 FOR THE CONTROLLER. THE CONCRETE PULL BOX AND CONDUCTOR BOX SHALL BE PAID SEPARATELY.

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.

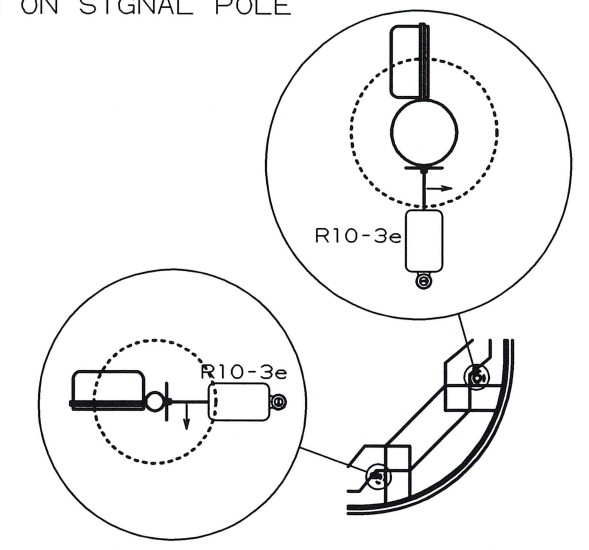
CONCRETE - ALL CONCRETE POLE FOUNDATION SHALL BE CLASS "S" OR GREATER.



TYPICAL MOUNTING PUSH BUTTON ON SIGNAL POLE



TYPICAL MOUNTING PUSH BUTTON ON PEDESTRIAN POLE AND PEDESTRIAN PUSH BUTTON POLE



TYPICAL MOUNTING PUSH BUTTON ON PEDESTRIAN POLE AND SIGNAL POLE

LOCATION:	HIGHWAY 412 AND KLENC RD.
CITY:	TONTI TOWN
COUNTY:	WASHINGTON
DISTRICT:	4
SCALE:	N/A
DRAWN BY:	CTA

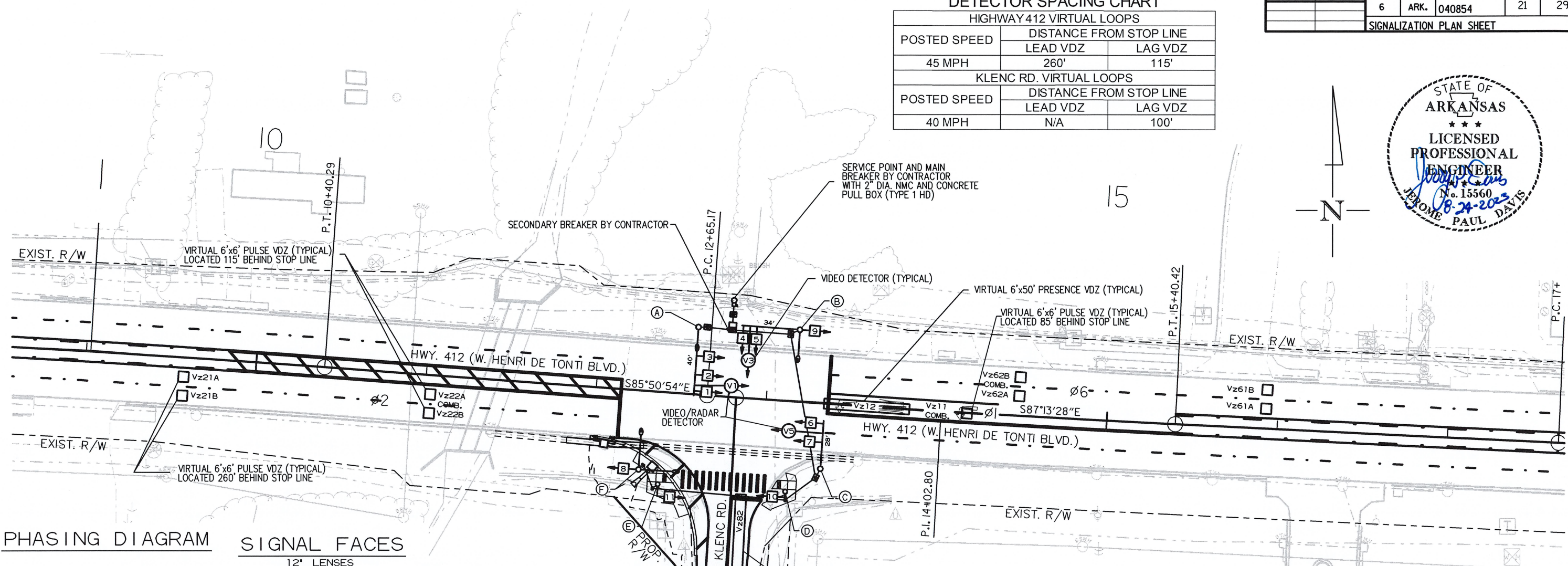
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	21	29

### DETECTOR SPACING CHART

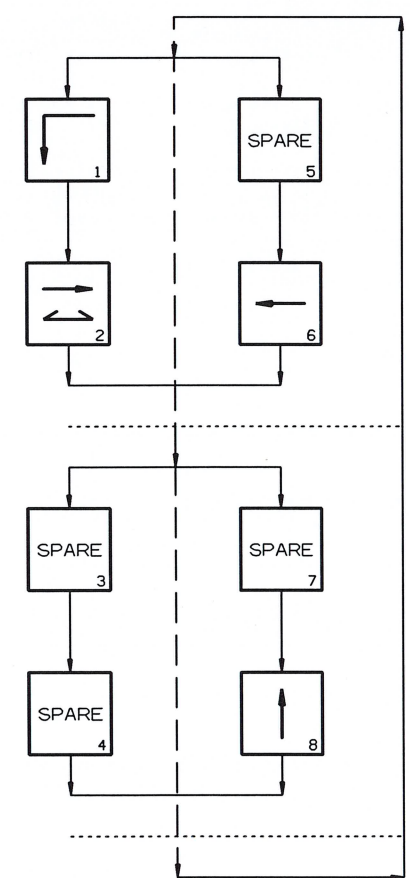
HIGHWAY 412 VIRTUAL LOOPS		
POSTED SPEED	DISTANCE FROM STOP LINE	
	LEAD VDZ	LAG VDZ
45 MPH	260'	115'

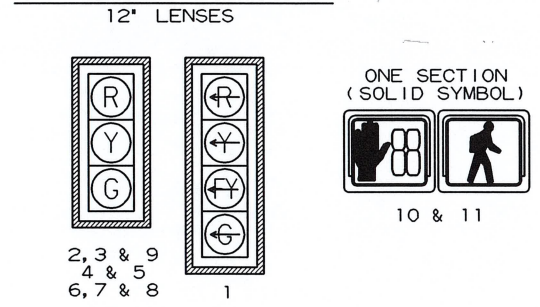
KLENC RD. VIRTUAL LOOPS		
POSTED SPEED	DISTANCE FROM STOP LINE	
	LEAD VDZ	LAG VDZ
40 MPH	N/A	100'



#### PHASING DIAGRAM



#### SIGNAL FACES

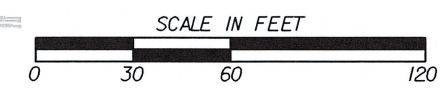


- NOTES:
- ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
  - REFER TO SPECIAL PROVISION \*RETROREFLECTIVE BACKPLATES\* FOR DETAILS ON REQUIREMENTS FOR BACKPLATES.
  - REFER TO SPECIAL PROVISIONS FOR DETAILS ON REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS.
  - ALL PEDESTRIAN SIGNAL HEADS CAN BE PLACED INTO OPERATION IF THERE ARE BOTH WHEELCHAIR RAMPS AND A CROSSWALK THAT MEETS A. D. A. S. STANDARD.

#### HIGHWAY 412 AND KLENC RD. POLE DIMENSIONS

POLE	MAST ARM	*MAST ARM ANGLE	**HAND HOLE	VERT. SHAFT	LUM. ARM	*LUM. ANGLE
A	40'	184°	180°	35'	10'	184°
B	34'	274°	90°	35'	15'	184°
C	28'	4°	180°	21'	N/A	N/A
D	N/A	N/A	N/A	10'	N/A	N/A
E	N/A	N/A	N/A	10'	N/A	N/A
F	N/A	N/A	N/A	35'	20'/20'	4°/93°

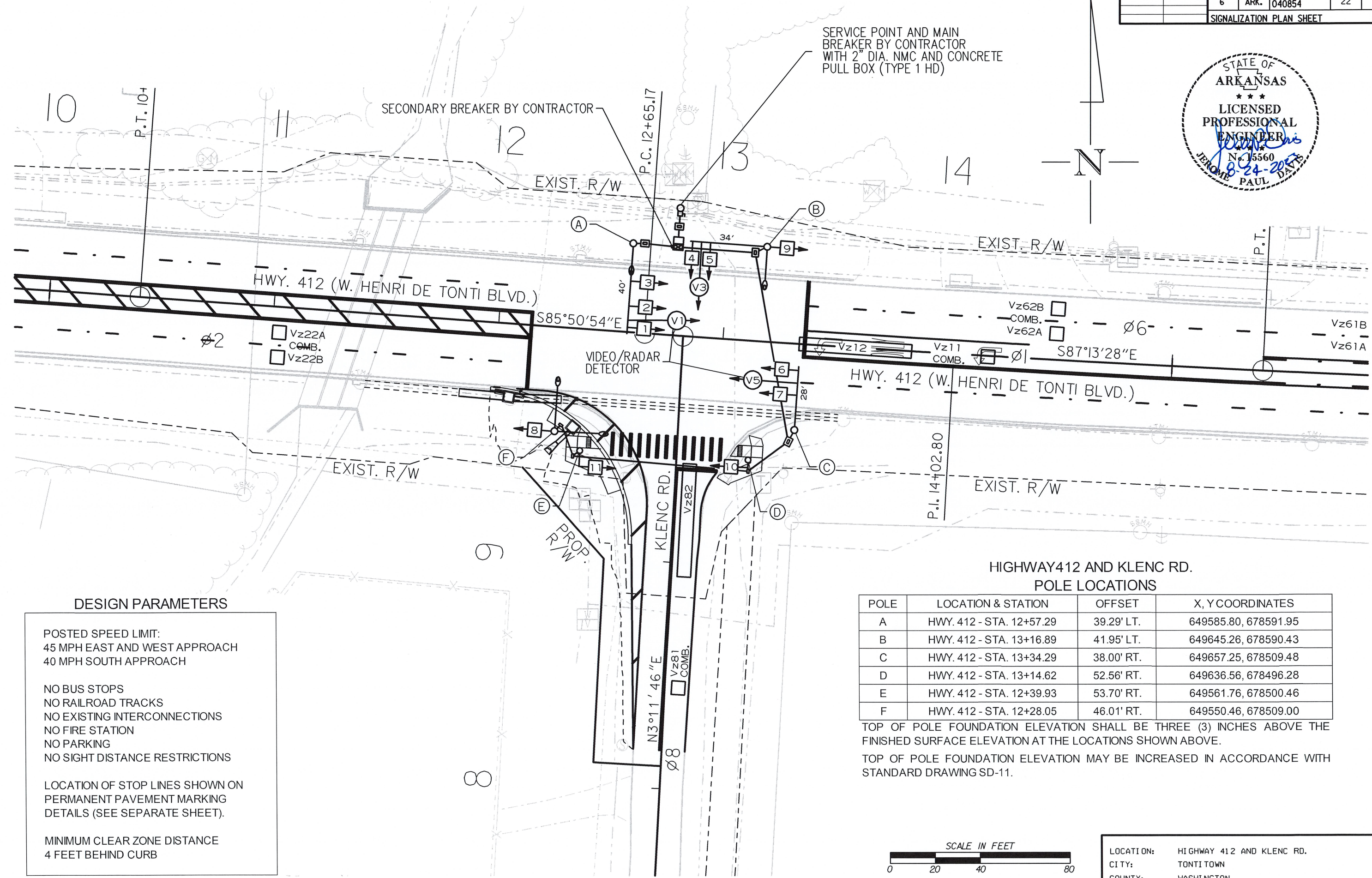
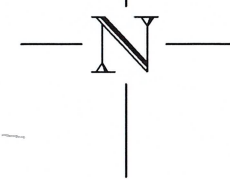
\* MAST ARM AND LUMINAIRE ARM ANGLE MEASURED FROM PLAN NORTH = 0°, CLOCKWISE ROTATION.  
 \*\* HAND HOLE LOCATION MEASURED CLOCKWISE FROM MAST ARM.



DATE: 01-28-22 FILE NAME: T040854.dgn

LOCATION: HWY. 412 AND KLENC RD.  
 CITY: TONTI TOWN  
 COUNTY: WASHINGTON  
 DISTRICT: 4 SCALE: 1" = 60' DRAWN BY: CTA

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	22	29
SIGNALIZATION PLAN SHEET						



**DESIGN PARAMETERS**

POSTED SPEED LIMIT:  
 45 MPH EAST AND WEST APPROACH  
 40 MPH SOUTH APPROACH

NO BUS STOPS  
 NO RAILROAD TRACKS  
 NO EXISTING INTERCONNECTIONS  
 NO FIRE STATION  
 NO PARKING  
 NO SIGHT DISTANCE RESTRICTIONS

LOCATION OF STOP LINES SHOWN ON  
 PERMANENT PAVEMENT MARKING  
 DETAILS (SEE SEPARATE SHEET).

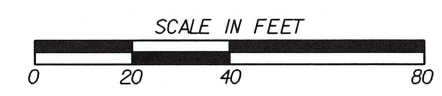
MINIMUM CLEAR ZONE DISTANCE  
 4 FEET BEHIND CURB

**HIGHWAY 412 AND KLENC RD.  
 POLE LOCATIONS**

POLE	LOCATION & STATION	OFFSET	X, Y COORDINATES
A	HWY. 412 - STA. 12+57.29	39.29' LT.	649585.80, 678591.95
B	HWY. 412 - STA. 13+16.89	41.95' LT.	649645.26, 678590.43
C	HWY. 412 - STA. 13+34.29	38.00' RT.	649657.25, 678509.48
D	HWY. 412 - STA. 13+14.62	52.56' RT.	649636.56, 678496.28
E	HWY. 412 - STA. 12+39.93	53.70' RT.	649561.76, 678500.46
F	HWY. 412 - STA. 12+28.05	46.01' RT.	649550.46, 678509.00

TOP OF POLE FOUNDATION ELEVATION SHALL BE THREE (3) INCHES ABOVE THE FINISHED SURFACE ELEVATION AT THE LOCATIONS SHOWN ABOVE.

TOP OF POLE FOUNDATION ELEVATION MAY BE INCREASED IN ACCORDANCE WITH STANDARD DRAWING SD-11.



DATE: 01-28-22 FILE NAME: T040854.dgn

LOCATION: HIGHWAY 412 AND KLENC RD.  
 CITY: TONTI TOWN  
 COUNTY: WASHINGTON  
 DISTRICT: 4 SCALE: 1" = 40' DRAWN BY: CTA

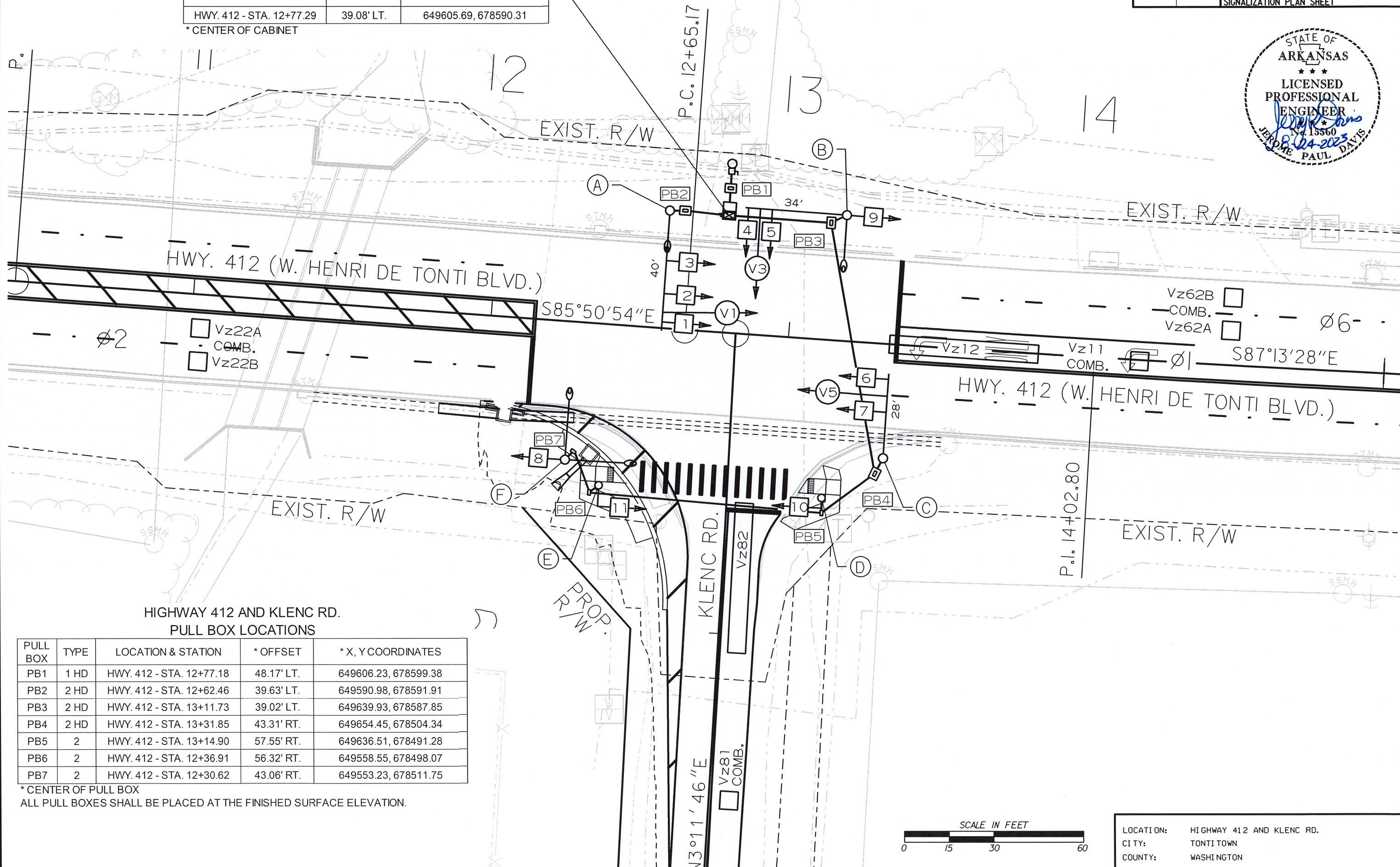
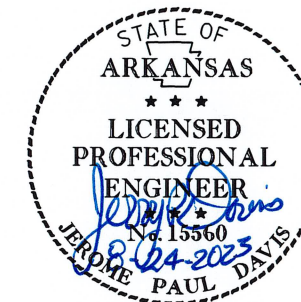
CONTROLLER CABINET LOCATION

LOCATION & STATION	* OFFSET	* X, Y COORDINATES
HWY. 412 - STA. 12+77.29	39.08' LT.	649605.69, 678590.31

\* CENTER OF CABINET

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	23	29

SIGNALIZATION PLAN SHEET

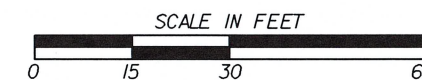


HIGHWAY 412 AND KLENC RD.  
PULL BOX LOCATIONS

PULL BOX	TYPE	LOCATION & STATION	* OFFSET	* X, Y COORDINATES
PB1	1 HD	HWY. 412 - STA. 12+77.18	48.17' LT.	649606.23, 678599.38
PB2	2 HD	HWY. 412 - STA. 12+62.46	39.63' LT.	649590.98, 678591.91
PB3	2 HD	HWY. 412 - STA. 13+11.73	39.02' LT.	649639.93, 678587.85
PB4	2 HD	HWY. 412 - STA. 13+31.85	43.31' RT.	649654.45, 678504.34
PB5	2	HWY. 412 - STA. 13+14.90	57.55' RT.	649636.51, 678491.28
PB6	2	HWY. 412 - STA. 12+36.91	56.32' RT.	649558.55, 678498.07
PB7	2	HWY. 412 - STA. 12+30.62	43.06' RT.	649553.23, 678511.75

\* CENTER OF PULL BOX

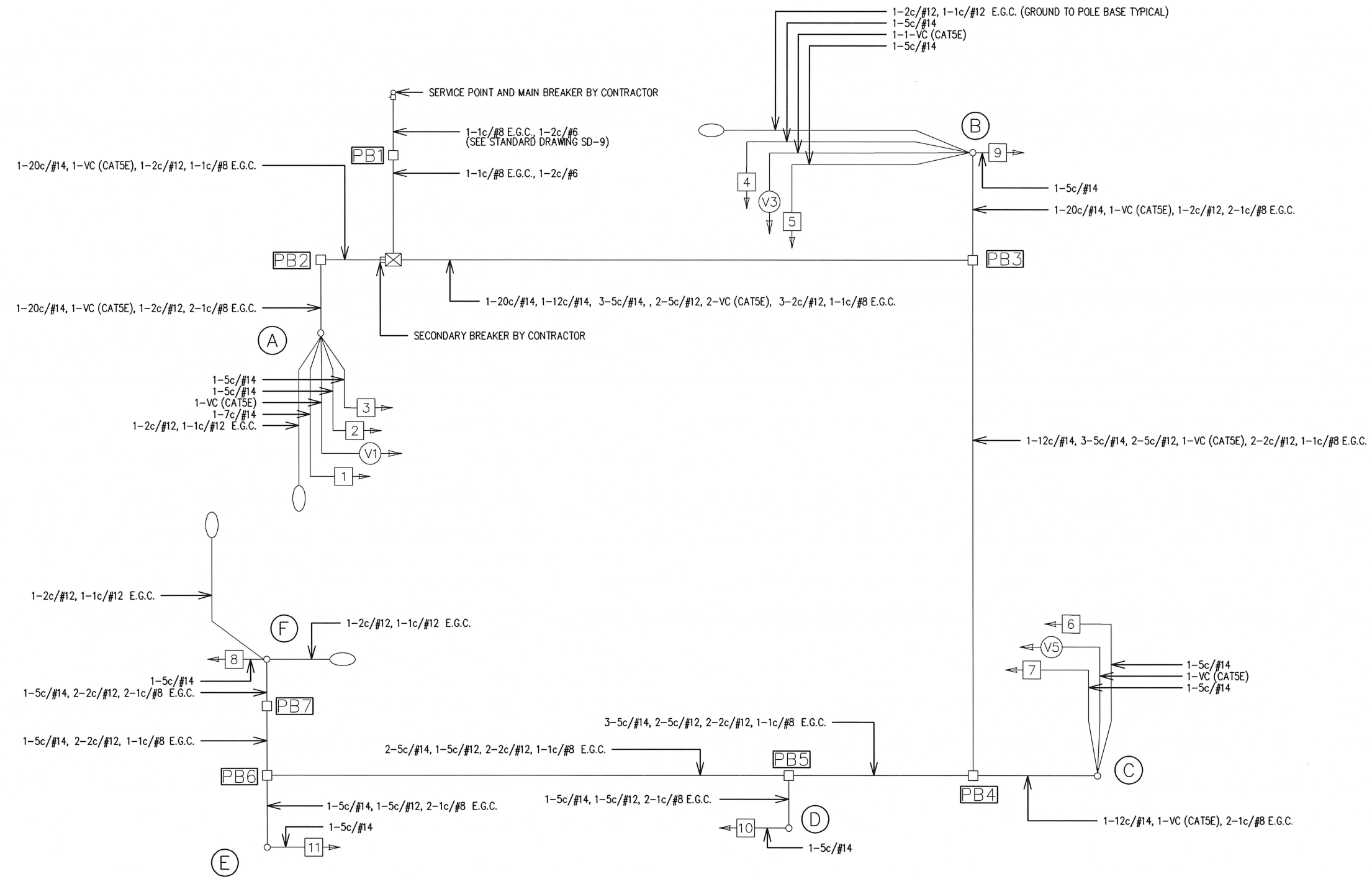
ALL PULL BOXES SHALL BE PLACED AT THE FINISHED SURFACE ELEVATION.



DATE: 01-20-23 FILE NAME: T040854.dgn

LOCATION: HIGHWAY 412 AND KLENC RD.  
CITY: TONTI TOWN  
COUNTY: WASHINGTON  
DISTRICT: 4 SCALE: 1" = 30' DRAWN BY: CTA

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	24	29
SIGNALIZATION PLAN SHEET						



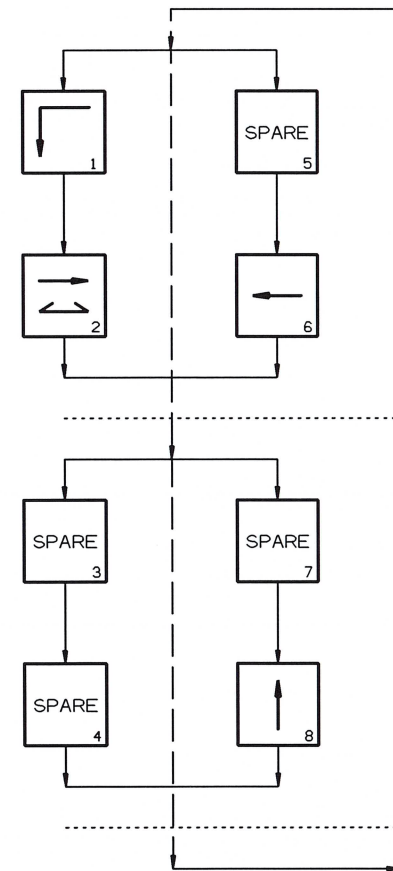
**WIRING DIAGRAM**

- NOTES TO CONTRACTOR:
- ONE SEPARATE 1-5c/#12 IS RUN TO EACH POLE FOR THE ACCESSIBLE PEDESTRIAN PUSH BUTTON(S).
  - ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.
  - THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.
  - SEE GROUNDING ARRAY DETAIL ON SHEET 19.

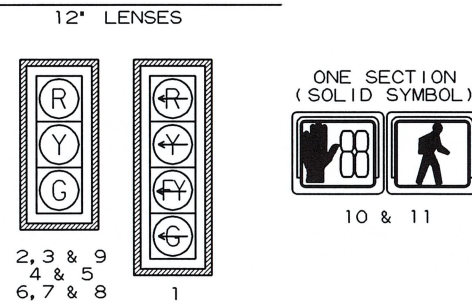
LOCATION:	HIGHWAY 412 AND KLENC RD.
CITY:	TONTI TOWN
COUNTY:	WASHINGTON
DISTRICT:	4
SCALE:	N/A
DRAWN BY:	CTA



### PHASING DIAGRAM

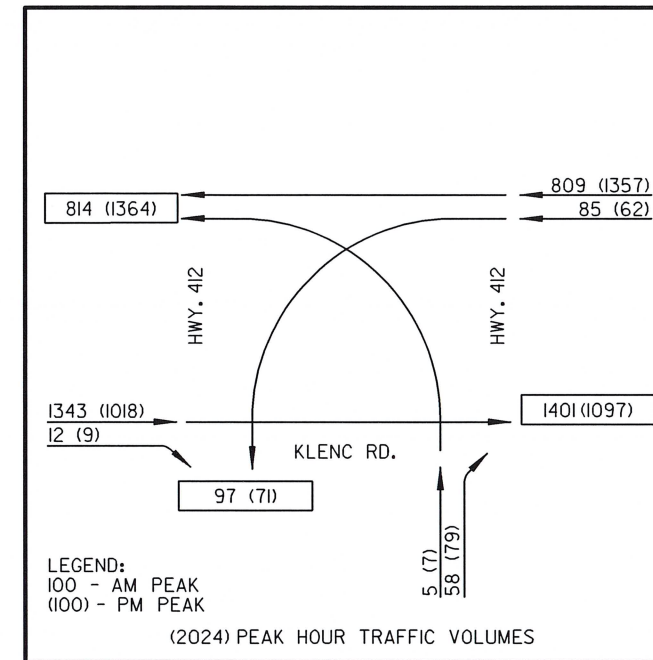


### SIGNAL FACES



- NOTES:
- ALL SIGNAL HEADS SHALL HAVE BACKPLATES.
  - REFER TO SPECIAL PROVISION "RETROREFLECTIVE BACKPLATES" FOR DETAILS ON REQUIREMENTS FOR BACKPLATES.
  - REFER TO SPECIAL PROVISIONS FOR DETAILS ON REQUIREMENTS FOR PEDESTRIAN SIGNAL HEADS.
  - ALL PEDESTRIAN SIGNAL HEADS CAN BE PLACED INTO OPERATION IF THERE ARE BOTH WHEELCHAIR RAMPS AND A CROSSWALK THAT MEETS A.D.A.S. STANDARD.

### TRAFFIC FLOW DIAGRAM



### DETECTOR CHART

DETECTOR SYSTEM DESCRIPTION: JOB 040854												
HIGHWAY 412 AND KLENC ROAD DETECTOR ASSIGNMENTS			HARDWARE INPUTS BY SUPPLIER				PROGRAM ASSIGNMENTS			COMMENTS	TUBE LENGTHS	
DET. ID #	LOCATION DIRECTION	TYPE	DET. #	CAB. TRM. #	AMP CHN. #	CON. IMP. #	PHS	SYSTEM DET. #	LOCAL			MASTER SYSTEM DETECTOR NUMBERS
Vz11	WB LEFT TURN FAR	COMB.				V9	1	1			CAMERA V1	23"
Vz12	WB LEFT TURN	LOCAL				V1	1				CAMERA V1	23"
Vz21 A&B	EB ADVANCE	LOCAL				V2	2				CAMERA V5	23"
Vz22 A&B	EB NEAR	COMB.				V10	2	2			CAMERA V5	23"
Vz61 A&B	WB ADVANCE	LOCAL				V6	6				CAMERA V1	23"
Vz62 A&B	WB NEAR	COMB.				V14	6	6			CAMERA V1	23"
Vz81	NB ADVANCE	COMB.				V8	8	8			CAMERA V3	58"
Vz82	NB NEAR	LOCAL				V16	8				CAMERA V3	58"
PB2 A&B	KLENC RD. S. LEG	PED.				P2	2					
SPARE:												

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

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

### INTERVAL CHART

SIGNAL FACES	HIGHWAY 412 AND KLENC RD.						FLASH SEQUENCE
	1+6	CLR.	2+6	CLR.	8	CLR.	
1	<G	*	<FY	***	<R	<R	<R
2, 3 & 9	G	**	G	**	R	R	R
4 & 5	R	R	R	R	G	Y	R
6, 7 & 8	R	R	G	**	R	R	R
10 & 11	DW	DW	W	FDW	DW	DW	BLK

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

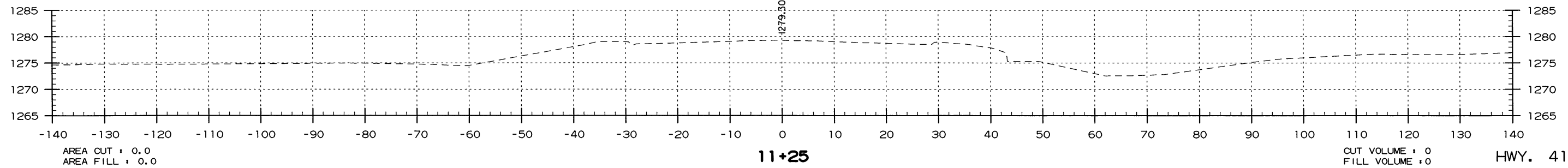
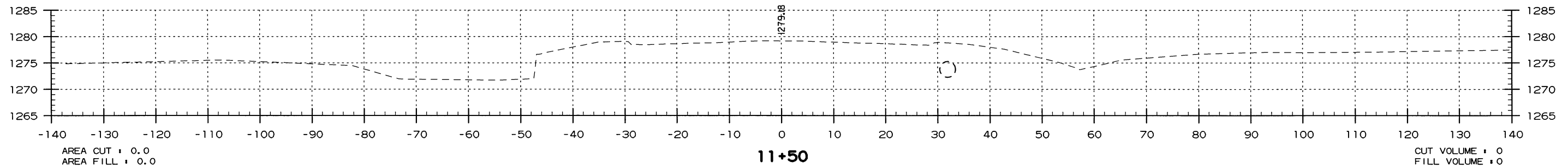
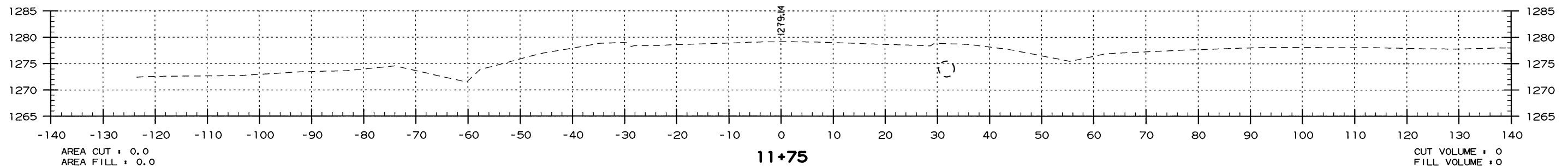
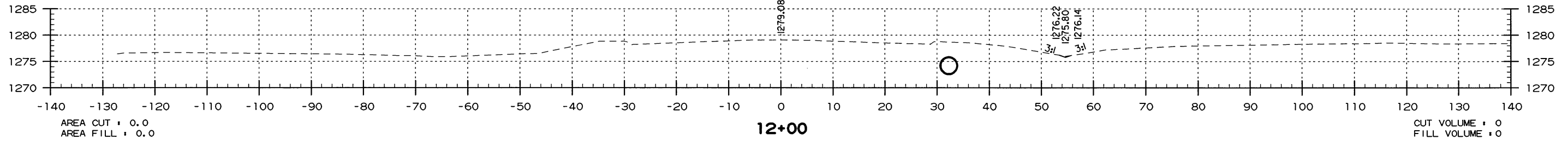
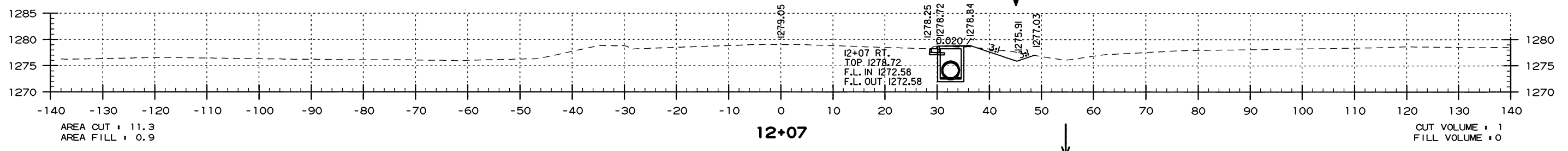
LOCATION: HIGHWAY 412 AND KLENC RD.  
CITY: TONTI TOWN  
COUNTY: WASHINGTON  
DISTRICT: 4 SCALE: N/A DRAWN BY: CTA

DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	26	29

STA. 12+07 IN PLACE DROP INLET RT.  
 36" X 206' R.C. PIPE CULVERT  
 REMOVE DROP INLET AND  
 22' INLET AND 20' OUTLET R.C. PIPE CULVERT

CROSS SECTIONS

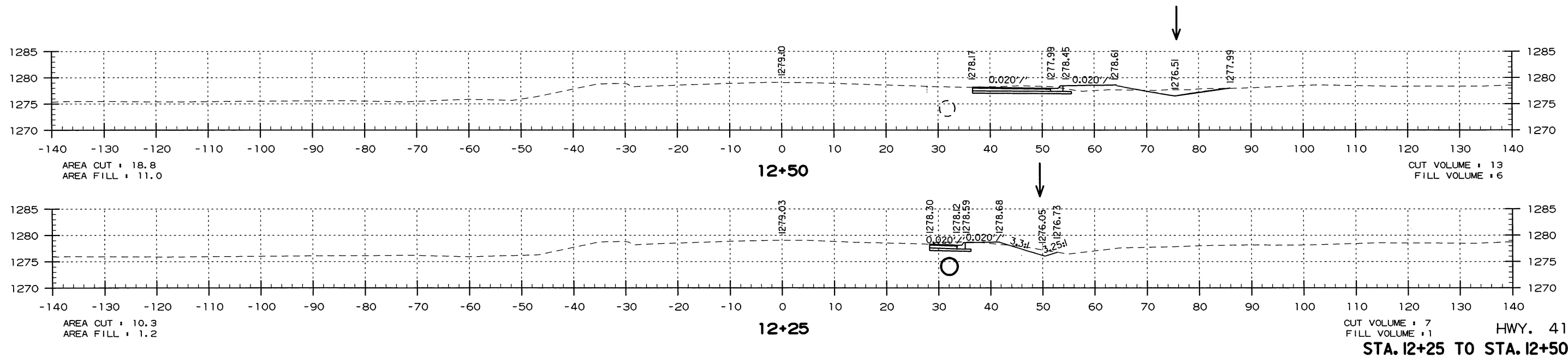
STA. 12+07 CONSTRUCT  
 DROP INLET RT. H = 6'-2"  
 W/ 2'-4" EXTENSIONS AND  
 36" X 20' R.C. PIPE CULVERT OUTLET AND  
 36" X 22' R.C. PIPE CULVERT INLET  
 (CLASS III TYPE 3 BEDDING)  
 CONNECT TO EXISTING 36" PIPE CULVERT  
 TYPE MO INLET = 5' DIA.  
 TYPE C DROP INLET = 4'X4'



HWY. 412  
 STA. 11+25 TO STA. 12+07

USER: j05296  
 DESIGN FILE: \\ROGFILE\JobFiles\2210080L\040854\TRANSP\dgn\sect\040854 XS\_Klenc.dgn  
 PLOTTED: 8/24/2023 15:11 SCALE: 1:20

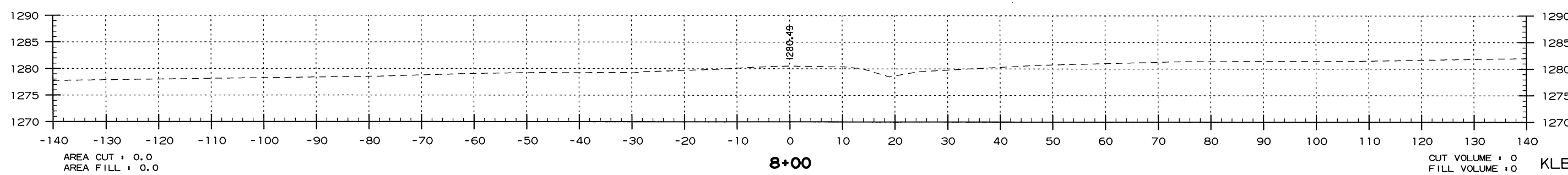
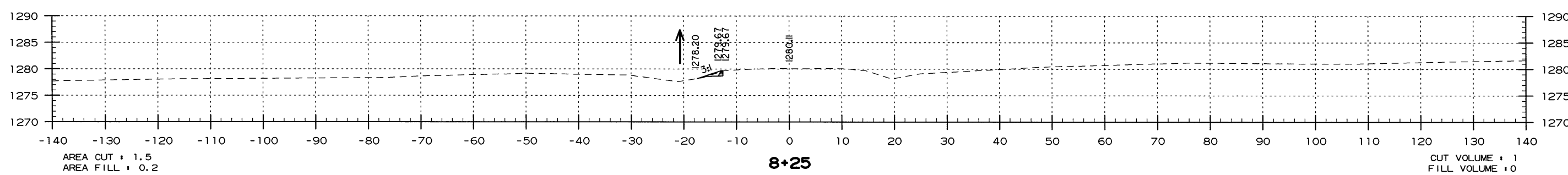
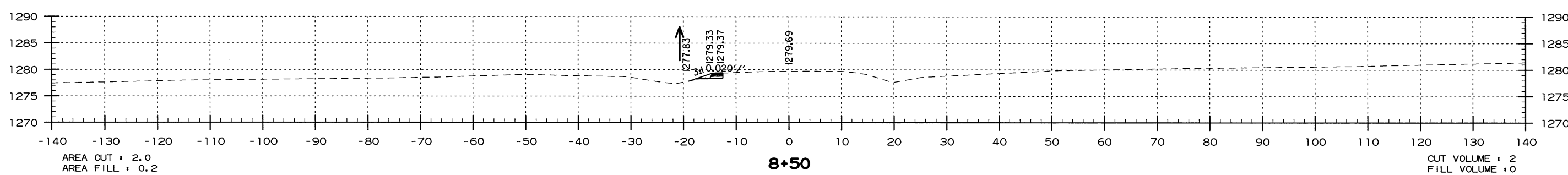
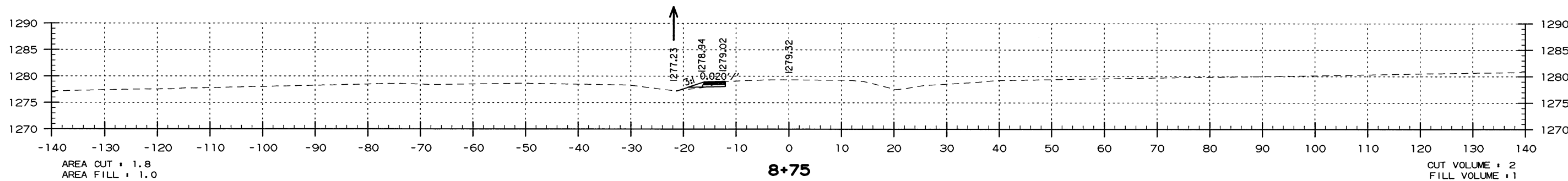
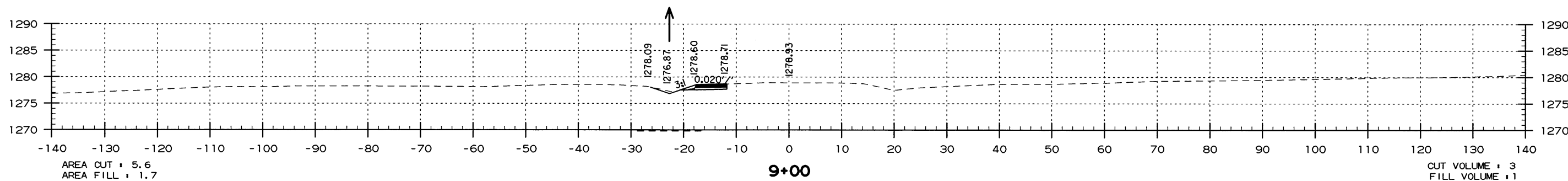
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	27	29
CROSS SECTIONS						



HWY. 412  
**STA. 12+25 TO STA. 12+50**

USER: j05296  
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 PLOTTED: 8/24/2023 15:11 SCALE: 1:20

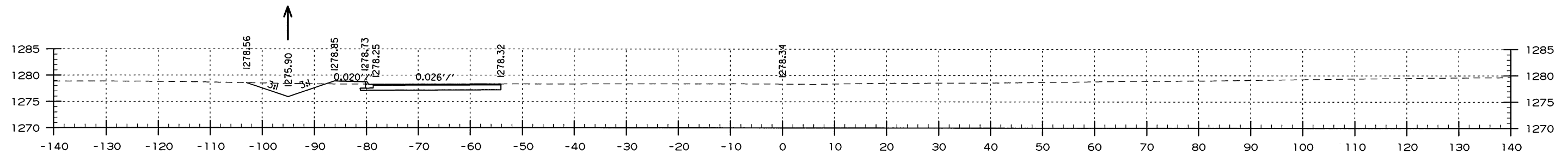
DATE REVISED	DATE REVISED	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	28	29
CROSS SECTIONS						



KLENC RD.  
STA. 8+00 TO STA. 9+00

USER: jcs296  
 DESIGN FILE: \\ROGFILE\Jobfiles\22100801\040854\TRANSP\dgn\sect\040854 XS\_Klenc.dgn  
 PLOTTED: 8/24/2023 15:11  
 SCALE: 1:20

DATE REVISION	DATE REVISION	FED. RD. DIST. NO.	STATE	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	ARK.	040854	29	29
CROSS SECTIONS						

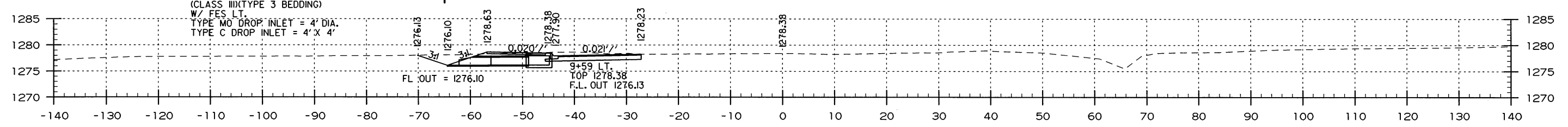


AREA CUT : 48.9  
AREA FILL : 3.5

STA. 9+59 CONSTRUCT  
DROP INLET LT. H = 2'-3"  
18" X 10' R.C. PIPE CULVERT OUTLET  
(CLASS III)(TYPE 3 BEDDING)  
W/ FES LT.  
TYPE MO DROP INLET = 4' DIA.  
TYPE C DROP INLET = 4' X 4'

9+73

CUT VOLUME : 6  
FILL VOLUME : 1

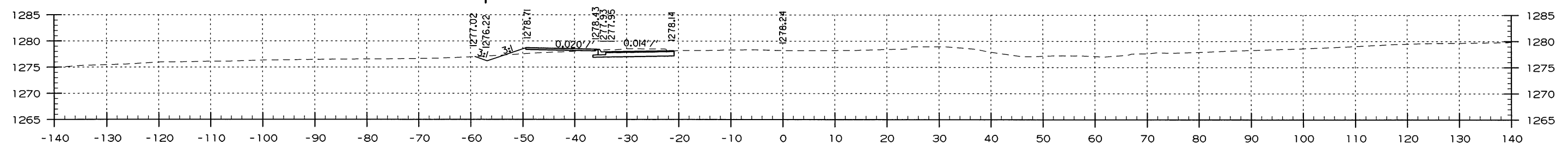


AREA CUT : 39.1  
AREA FILL : 0.2

9+59 LT.  
TOP 1278.38  
F.L. OUT 1276.13

9+59

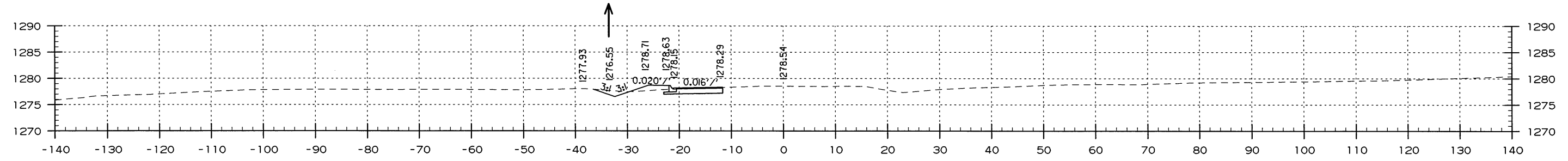
CUT VOLUME : 5  
FILL VOLUME : 1



AREA CUT : 23.1  
AREA FILL : 6.8

9+50

CUT VOLUME : 11  
FILL VOLUME : 6



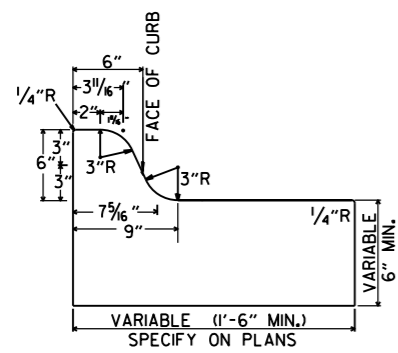
AREA CUT : 14.3  
AREA FILL : 5.4

9+25

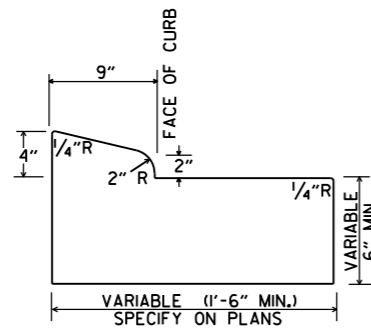
CUT VOLUME : 8  
FILL VOLUME : 3

KLENC RD.  
STA. 9+25 TO STA. 9+73

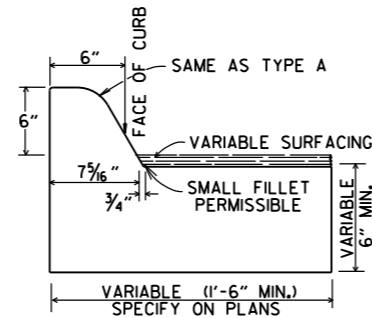
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PLOTTED: 8/24/2023 15H SCALE: 1:20



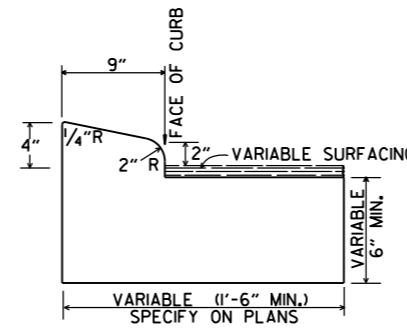
TYPE A



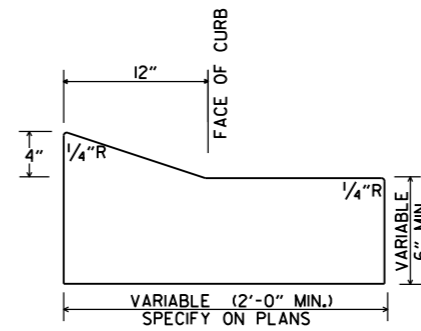
TYPE B-1



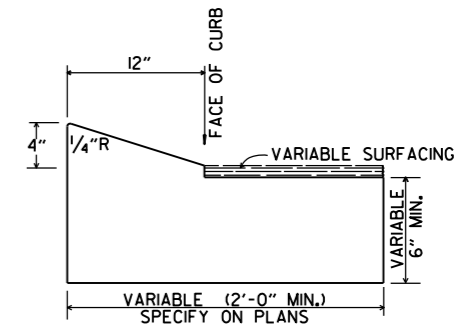
TYPE C



TYPE B-2

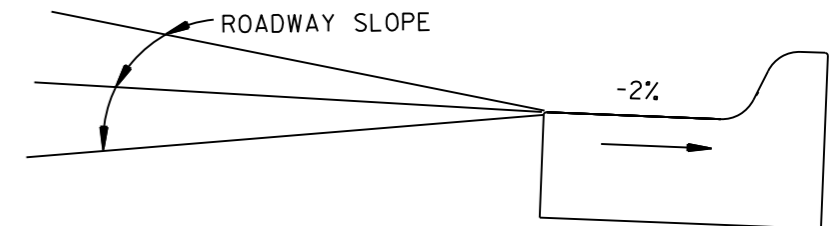


TYPE E-1

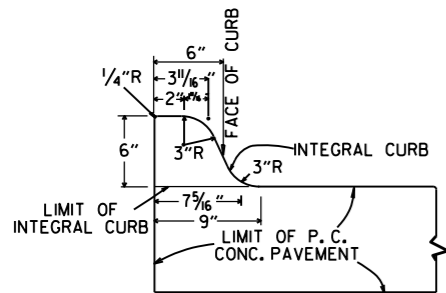


TYPE E-2

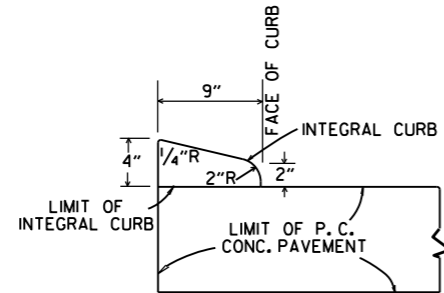
CONCRETE COMBINATION CURB AND GUTTER



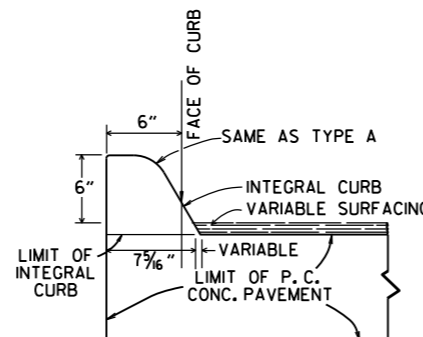
DETAIL OF GUTTER SLOPE  
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

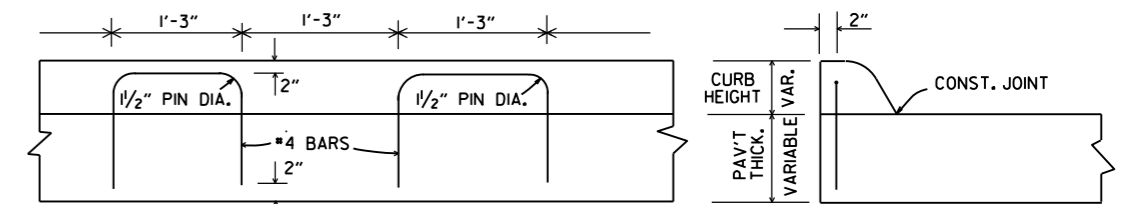


TYPE B



TYPE C

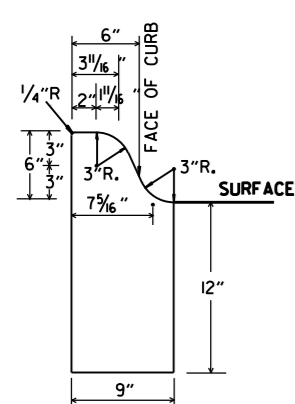
INTEGRAL CURB



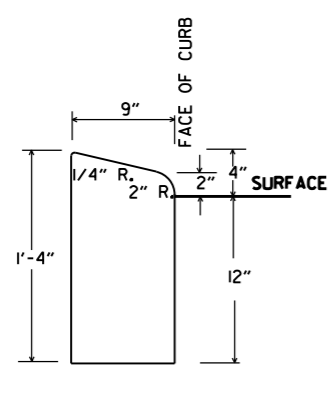
LONGITUDINAL SECTION

ELEVATION

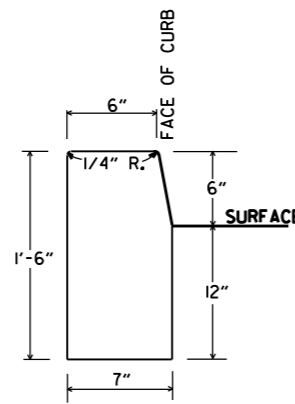
ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



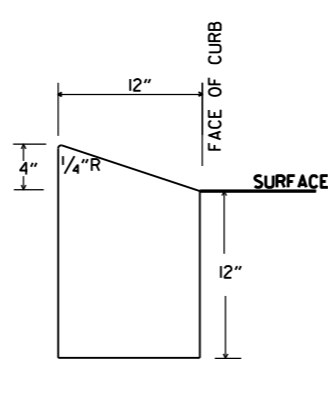
TYPE A



TYPE B

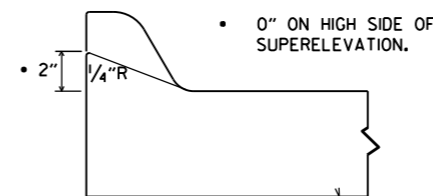


TYPE D



TYPE E

CONCRETE CURB



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

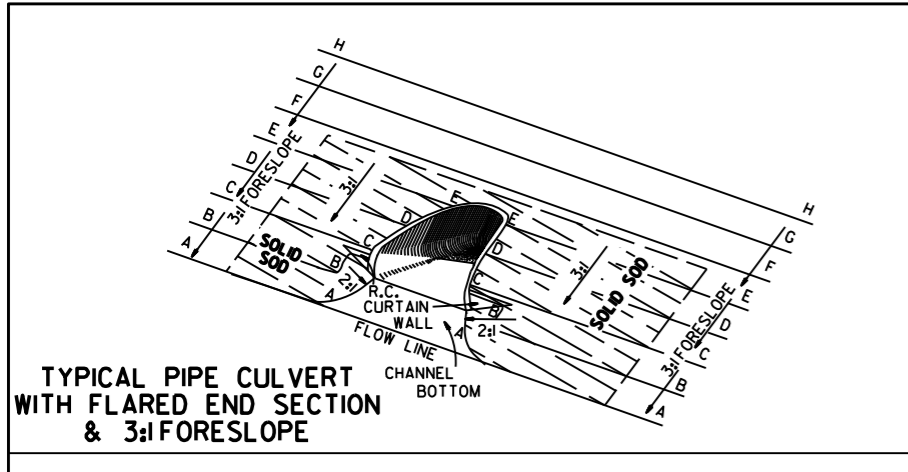
DETAILS OF MODIFIED CURB

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

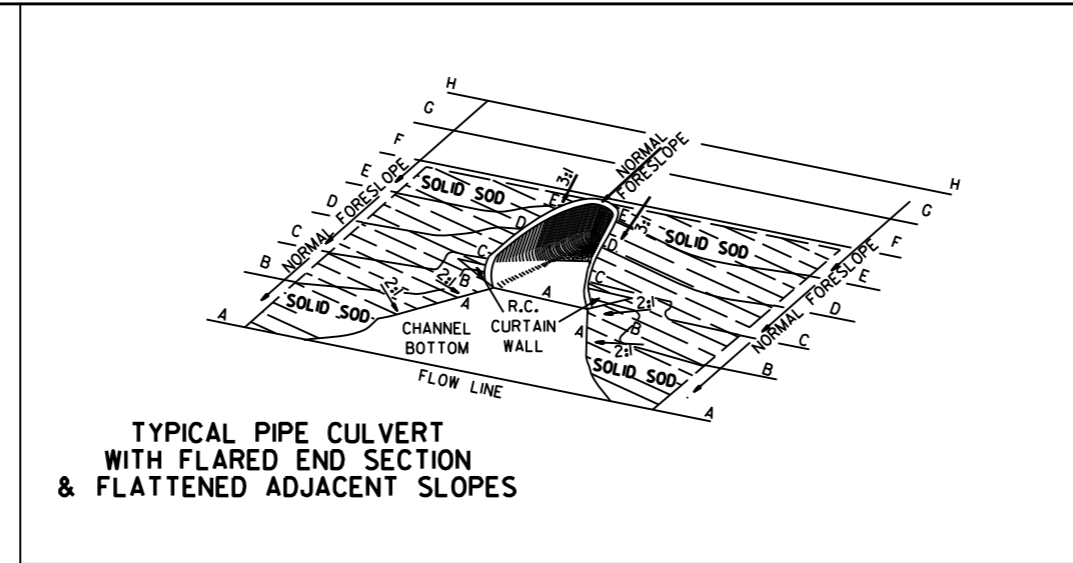
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

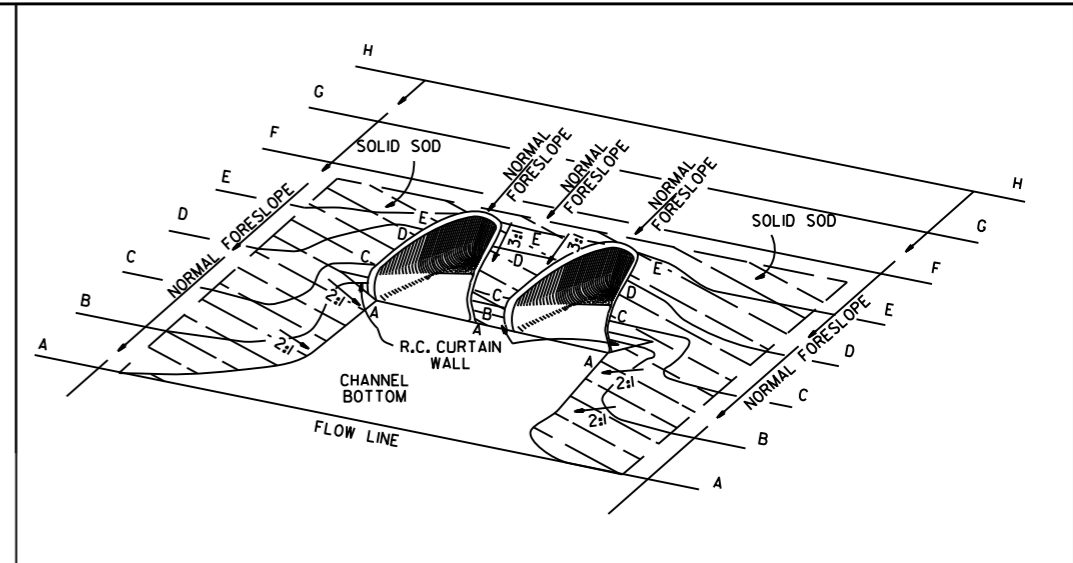
STANDARD DRAWING CG-1



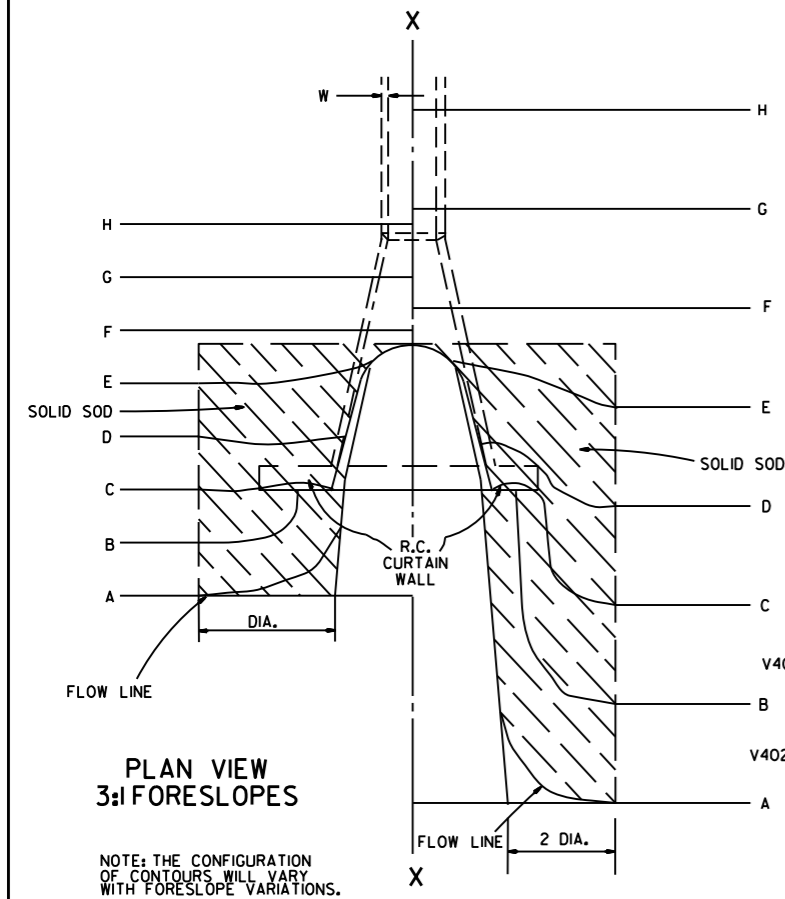
TYPICAL PIPE CULVERT WITH FLARED END SECTION & 3:1 FORESLOPE



TYPICAL PIPE CULVERT WITH FLARED END SECTION & FLATTENED ADJACENT SLOPES

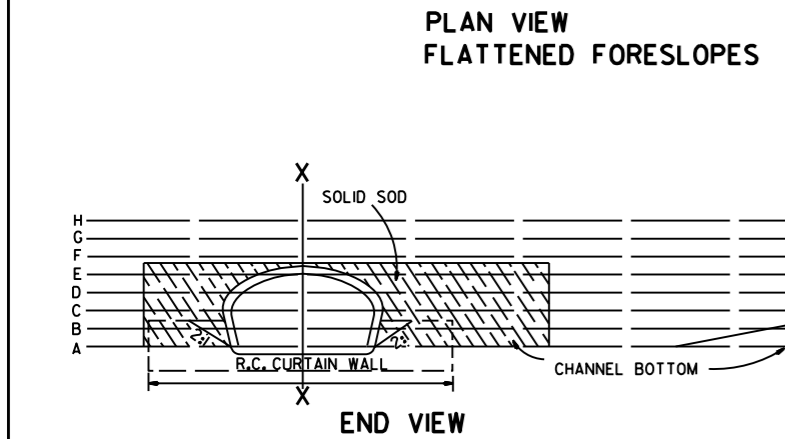


TYPICAL MULTIPLE PIPE CULVERT WITH FLARED END SECTIONS & FLATTENED ADJACENT SLOPES



PLAN VIEW 3:1 FORESLOPES

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



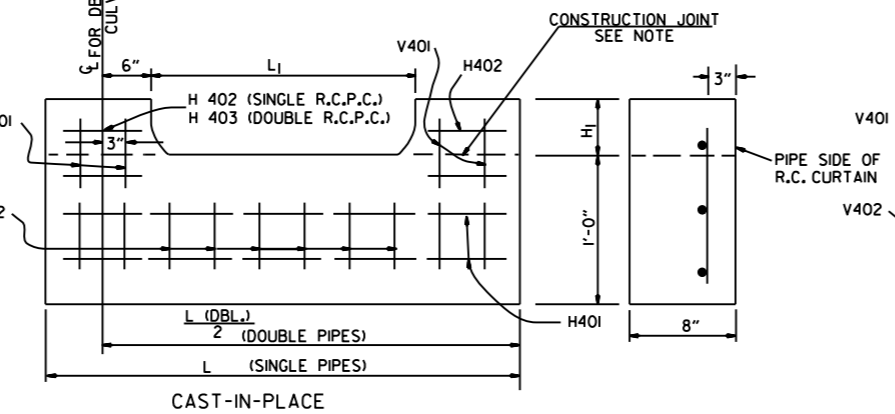
PLAN VIEW FLATTENED FORESLOPES

END VIEW

R.C. CURTAIN WALL DIMENSIONS & QUANTITIES

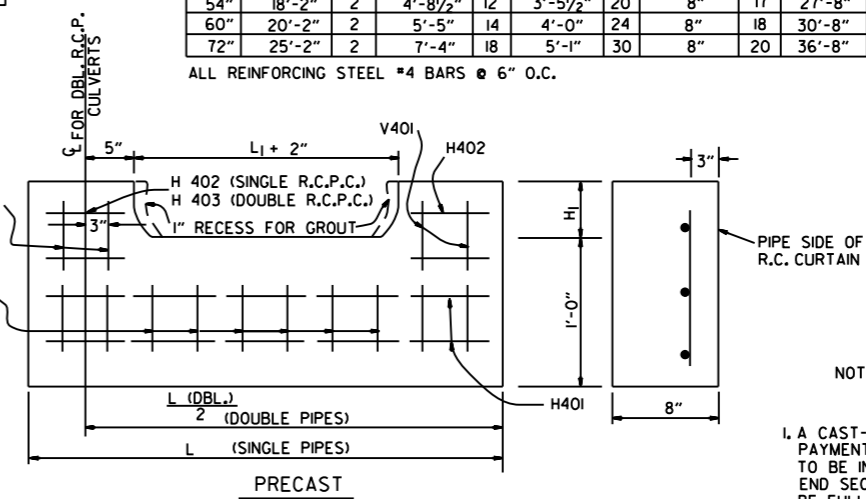
PIPE DIA.	H <sub>1</sub>	L <sub>1</sub>	L	L (DBL.) 2	SINGLE R.C.P.C.		DOUBLE R.C.P.C.	
					CONC.	REINF. STEEL	CONC.	REINF. STEEL
					CU. YDS.	LBS.	CU. YDS.	LBS.
18"	11 1/2"	3'-5"	8'-0"	6'-3"	0.31	27.7	0.45	39.5
24"	1'-0 1/2"	4'-6"	9'-6"	7'-6"	0.37	33.4	0.53	48.0
30"	1'-3 1/2"	5'-7"	11'-0"	9'-0"	0.45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



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.

R.C. CURTAIN WALL DETAILS



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.

REINFORCING STEEL SCHEDULE

PIPE DIA.	SINGLE R.C. PIPE CULVERT								DOUBLE R.C. PIPE CULVERT									
	H401		H402		V401		V402		H401		H402		H403		V401		V402	
	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.	L	NO.
18"	7'-8"	2	1'-11 1/2"	4	1'-7 1/2"	8	8"	8	12'-2"	2	1'-11 1/2"	4	8"	2	1'-7 1/2"	10	8"	14
24"	9'-2"	2	2'-2"	4	1'-8 1/2"	10	8"	9	14'-8"	2	2'-2"	4	8"	2	1'-8 1/2"	12	8"	18
30"	10'-8"	2	2'-4 1/2"	4	1'-11 1/2"	10	8"	12	17'-8"	2	2'-4 1/2"	4	8"	2	1'-11 1/2"	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'-9 1/2"	8	2'-9 1/2"	16	8"	15	23'-8"	2	3'-9 1/2"	8	8"	4	2'-9 1/2"	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'-8 1/2"	12	3'-5 1/2"	20	8"	17	27'-8"	2	4'-9"	12	8"	6	3'-5 1/2"	22	8"	34
60"	20'-2"	2	5'-5"	14	4'-0"	24	8"	18	30'-8"	2	5'-5"	14	8"	7	4'-0"	26	8"	36
72"	25'-2"	2	7'-4"	18	5'-1"	30	8"	20	36'-8"	2	7'-4"	18	8"	9	5'-1"	33	8"	40

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

SOLID SODDING

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

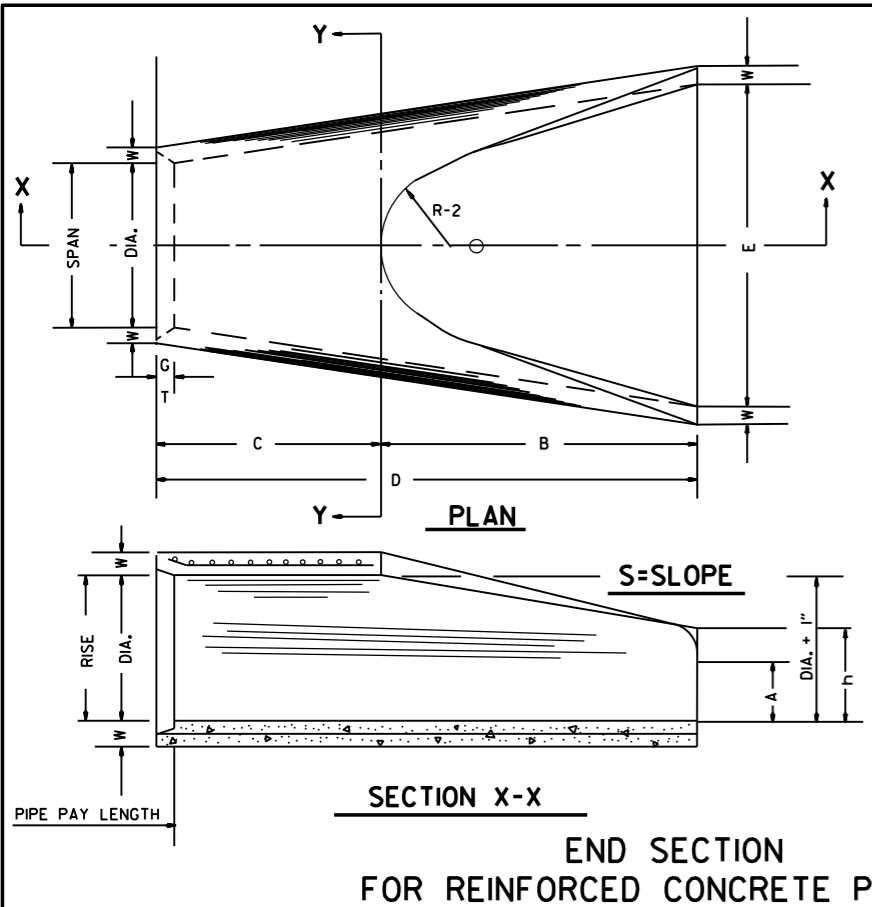
GENERAL NOTES

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 3/4".
3. CONCRETE FOR CURTAIN WALL SHALL MEET THE REQUIREMENTS FOR CLASS A OR S CONCRETE AS PROVIDED IN SECTION 802 OF THE STANDARD SPECIFICATIONS OR FOR PAVING CONCRETE AS PROVIDED IN SECTION 501 OF THE STANDARD SPECIFICATIONS.
4. WELDED WIRE MESH 3 x 3 W/10 x W/10 MAY BE USED IN LIEU OF REINFORCING BARS.

DATE	REVISION	FILMED	STANDARD DRAWING FES-1
10-18-96	ADDED NOTE TO SOLID SODDING		ARKANSAS STATE HIGHWAY COMMISSION
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		

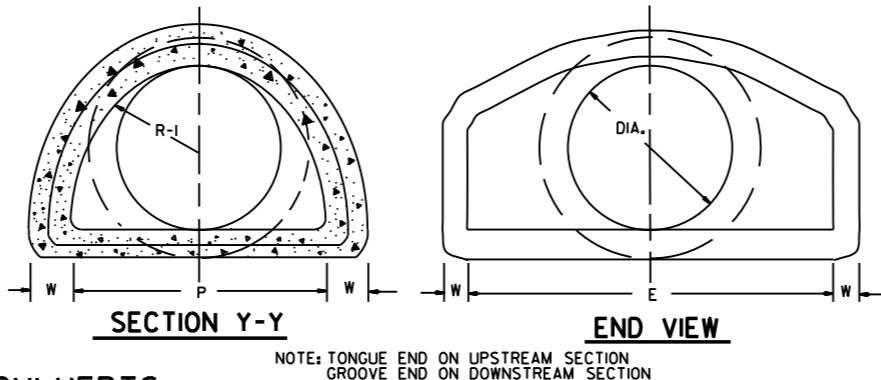
FLARED END SECTION

STANDARD DRAWING FES-1



### TABLE OF DIMENSIONS

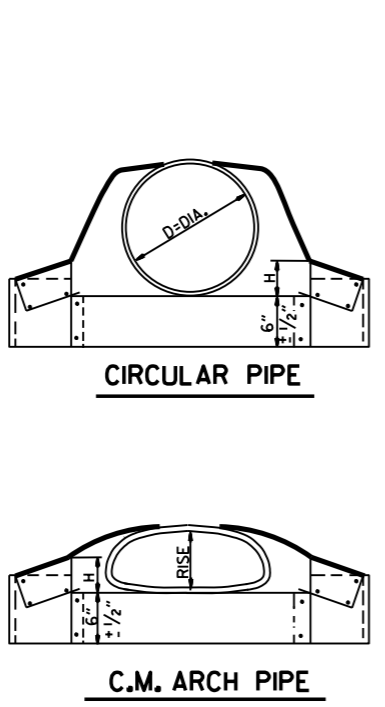
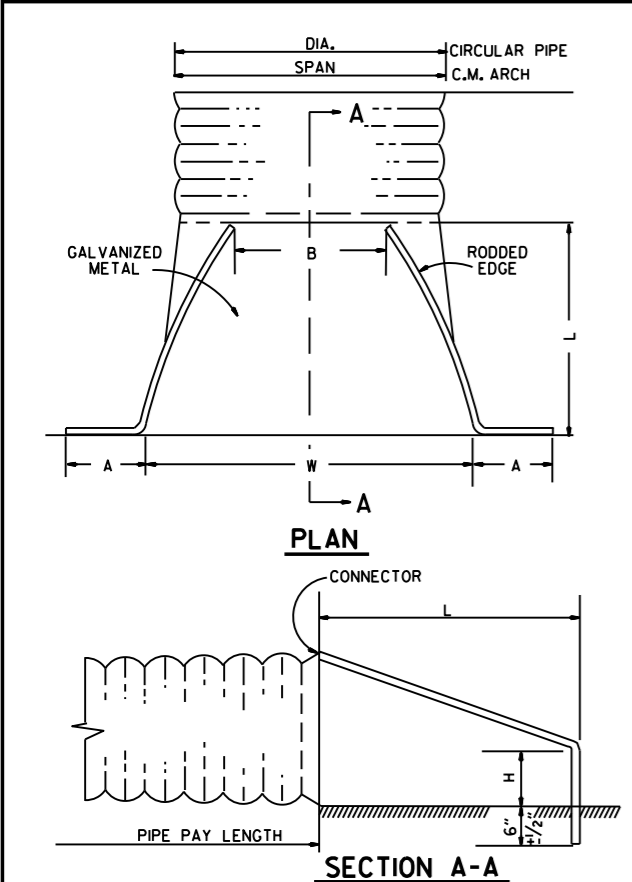
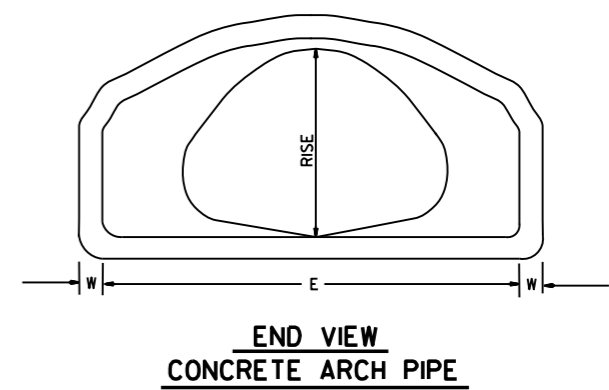
DIA.	WALL	A	B	C	D	E	S	DIA. + 1"	P	R-1	R-2	G-T	WT.	h
18"	2 1/2"	9"	2'-3"	3'-10"	6'-1"	3'-0"	3:1	19"	29"	15 1/2"	12"	2"	1000	1'-0 1/2"
24"	3"	9 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"	3:1	25"	33 3/8"	16 1/8"	14"	2 1/2"	1600	1'-1 1/2"
30"	3 1/2"	1'-0"	4'-6"	1'-7 3/4"	6'-1 3/4"	5'-0"	3:1	31"	37"	18 1/2"	15"	3 1/4"	1940	1'-4 5/8"
36"	4"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	6'-0"	3:1	37"	47 1/8"	24 3/8"	20"	3 1/2"	4100	1'-8"
42"	4 1/2"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	3:1	43"	53 3/8"	27 1/2"	22"	3 3/4"	5380	2'-2 1/2"
48"	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	3:1	49"	56 1/2"	28 1/2"	22"	3 1/2"	6550	2'-6"
54"	5 1/2"	2'-4"	6'-6"	1'-10"	8'-4"	7'-6"	3:1	55"	65 1/2"	33 3/8"	24"	4"	8750	2'-10 1/2"
60"	6"	2'-10"	6'-6"	1'-10"	8'-4"	8'-0"	3:1	61"	72 1/2"	36 1/8"	24"	4"	9270	3'-5"
72"	7"	3'-10"	6'-6"	1'-10"	8'-4"	9'-0"	3:1	73"	77 3/8"	38 3/8"	24"	5"	13250	4'-6"



### ARCH PIPE

EQUIV. DIA.	• SPAN		• RISE		W	A	B	C	D	E	P	R2	G-T	S
	AASHTO M 206	AHD NOMINAL	AASHTO M 206	AHD NOMINAL										
INCHES														
15	18	18	11	11	2"	4"	2'-0"	4'-0"	6'-0"	3'-0"	29"	12"	1 1/2"	2 1/2:1
18	22	22	13 1/2	14	2 1/2"	5"	2'-0"	4'-1"	6'-1"	3'-6"	32 1/8"	13"	2 1/2"	2 1/2:1
21	26	26	15 1/2	16	2 3/4"	7"	2'-3"	3'-10"	6'-1"	4'-0"	34 1/8"	14"	2 1/2"	2 1/2:1
24	28 1/2	29	18	18	3"	9"	2'-3"	3'-10"	6'-1"	5'-0"	36 3/8"	15"	2 1/2"	2 1/2:1
30	36 1/4	36	22 1/2	23	3 1/2"	10"	3'-1"	3'-0 1/2"	6'-1 1/2"	6'-0"	47 1/8"	20"	3"	2 1/2:1
36	43 3/4	44	26 3/8	27	4"	10 1/2"	4'-0"	2'-11 1/2"	6'-1 1/2"	6'-6"	54 3/8"	22"	3 1/2"	2 1/2:1
42	51 1/8	51	31 3/8	31	4 1/2"	11 1/2"	4'-7"	1'-10 1/4"	6'-5 1/4"	7'-2"	59 1/2"	23"	3 3/4"	2 1/2:1
48	58 1/2	59	36	36	5"	1'-3"	5'-3"	2'-10 3/4"	8'-1 3/4"	7'-10"	70 3/8"	24"	4 1/4"	2 1/2:1
54	65	65	40	40	5 1/2"	1'-7"	5'-3"	2'-11"	8'-2"	8'-6"	72 1/8"	24"	4 3/4"	2 1/2:1
60	73	73	45	45	6"	1'-10"	5'-6"	2'-8"	8'-2"	9'-0"	77 3/8"	24"	5"	2 1/2:1

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

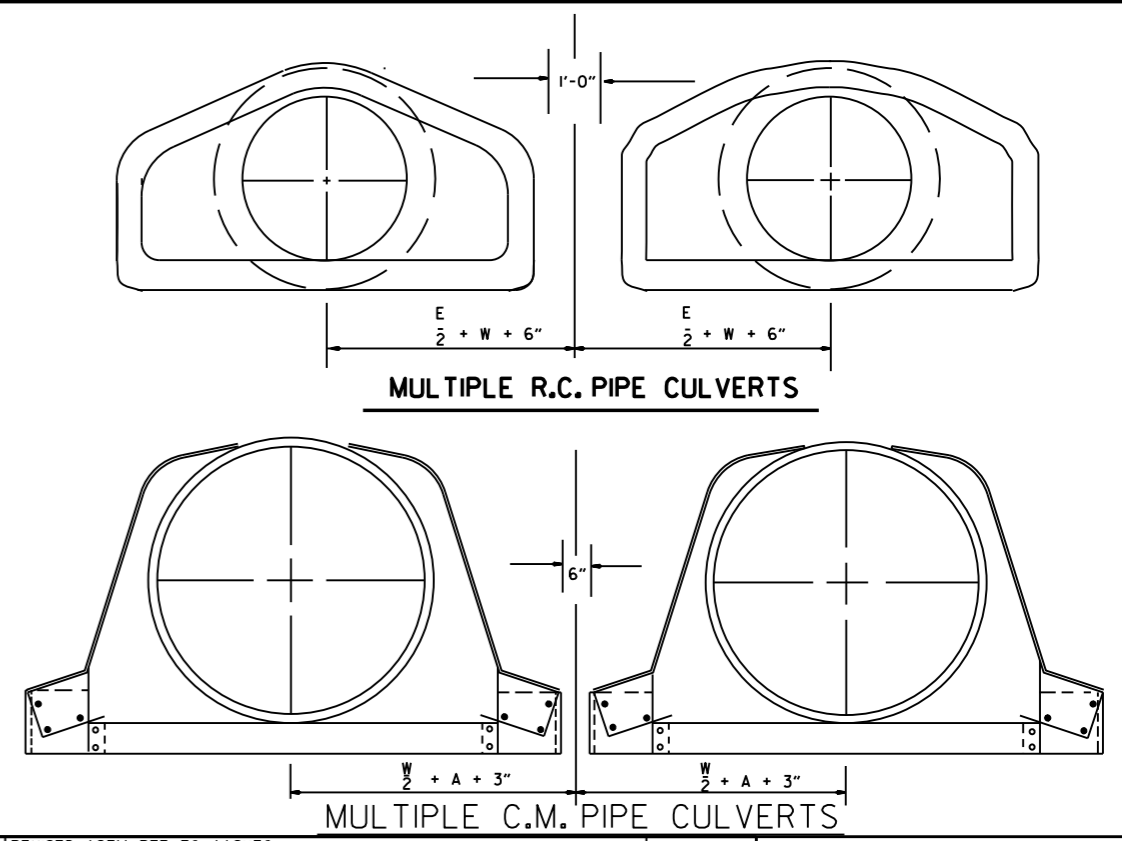


### CIRCULAR PIPE

D. DIA.	GAUGE	A	B. MAX.	H	L	W	S
12	16	6	6	6	21	24	2 1/2:1
15	16	7	8	6	26	30	2 1/2:1
18	16	8	10	6	31	36	2 1/2:1
21	16	9	12	6	36	42	2 1/2:1
24	16	10	13	6	41	48	2 1/2:1
30	14	12	16	8	51	60	2 1/2:1
36	14	14	19	9	60	72	2 1/2:1
42	12	16	22	11	69	84	2 1/2:1
48	12	18	27	12	78	90	2 1/2:1
54	12	18	30	12	84	102	2:1
60	12	18	33	12	87	114	1 3/4:1
66	12	18	36	12	87	120	1 1/2:1
72	12	18	39	12	87	126	1 1/3:1

### C.M. ARCH PIPE

EQUIV. DIA.	SPAN	RISE	INCHES				S	GAUGE	
			A	B MAX.	H	L			
15"	17	13	7	9	6	19	30	2 1/2:1	16
18"	21	15	7	10	6	23	36	2 1/2:1	16
21"	24	18	8	12	6	28	42	2 1/2:1	16
24"	28	20	9	14	6	32	48	2 1/2:1	16
30"	35	24	10	16	6	39	60	2 1/2:1	14
36"	42	29	12	18	8	46	75	2 1/2:1	14
42"	49	33	13	21	9	53	85	2 1/2:1	12
48"	57	38	18	26	12	63	90	2 1/2:1	12
54"	64	43	18	30	12	70	102	2 1/4:1	12
60"	71	47	18	33	12	77	114	2 1/4:1	12



10-18-96	REVISED ASTM REF. TO AASHTO		ARKANSAS STATE HIGHWAY COMMISSION
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	FLARED END SECTION
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	STANDARD DRAWING FES-2
DATE	REVISION	FILMEN	

### END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS



4'-0" LENGTH DROP INLET DROP INLET EXTENSION

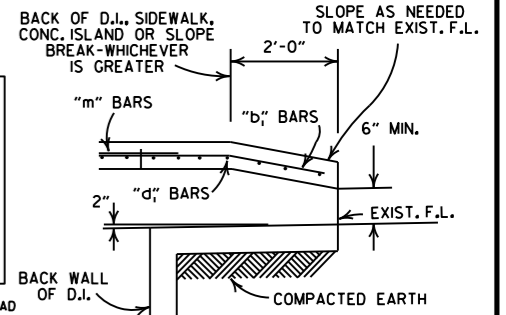
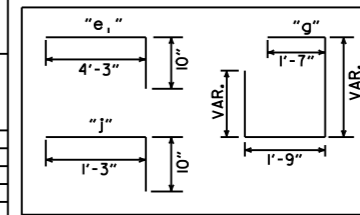
PIPE SIZE	MIN. WIDTH	HEIGHT 5'-0"		PLUS OR MINUS PER LIN. FT. OF HEIGHT		4'-0"		8'-0"	
		CLASS A CONC.	REINF. STEEL	CLASS A CONC.	REINF. STEEL	CLASS A CONC.	REINF. STEEL	CLASS A CONC.	REINF. STEEL
18"	2'-6"	1.77	156	0.28	22	0.58	38	0.87	72
24"	2'-6"	1.79	156	0.28	22				
30"	3'-2"	2.39	205	0.30	26				
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				
						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

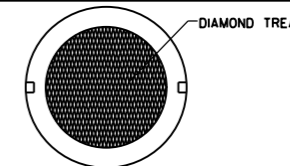
INSIDE DIA. PIPE	CLASS A CONC.	REINF. STEEL
INCHES	CU. YDS.	POUNDS
18	0.05	2
24	0.09	3
30	0.13	4
42	0.24	8

BAR DIAGRAM



BACK OPENING

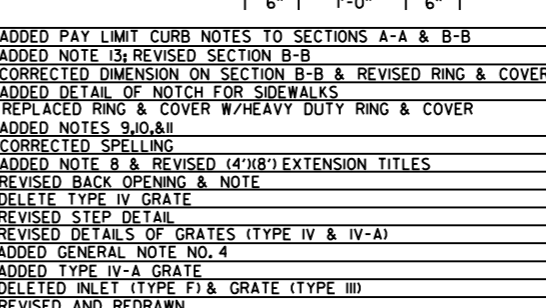
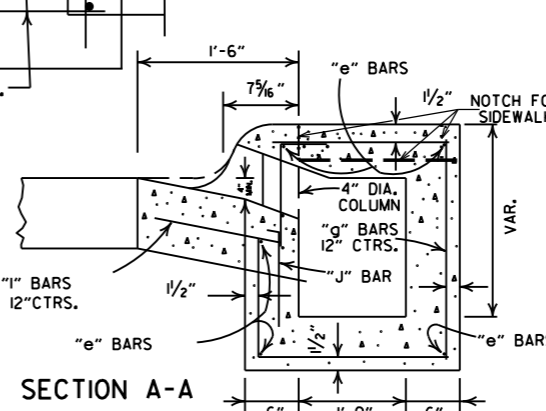
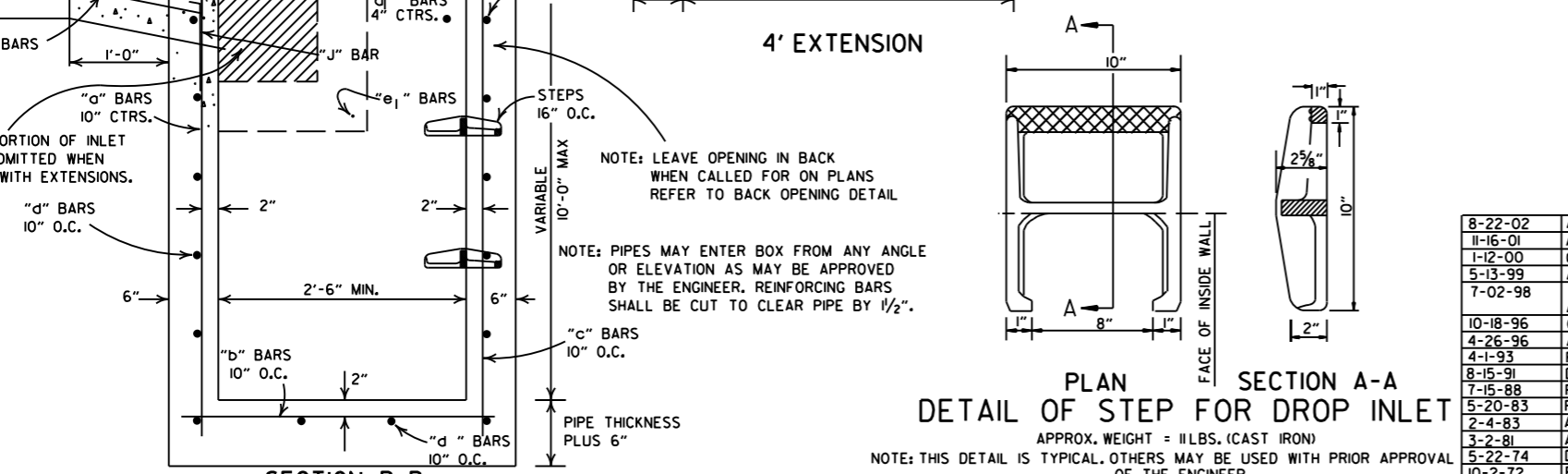
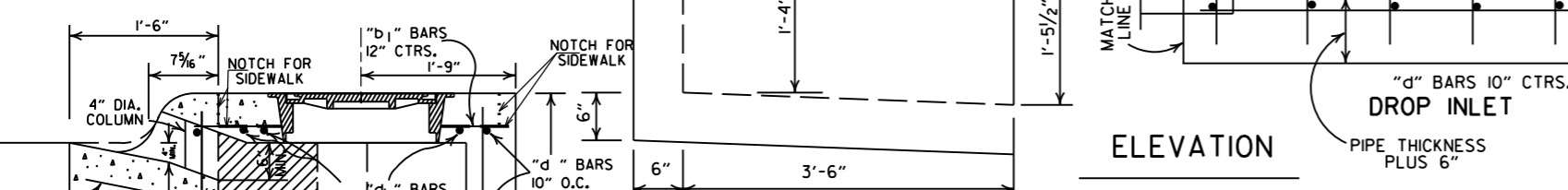
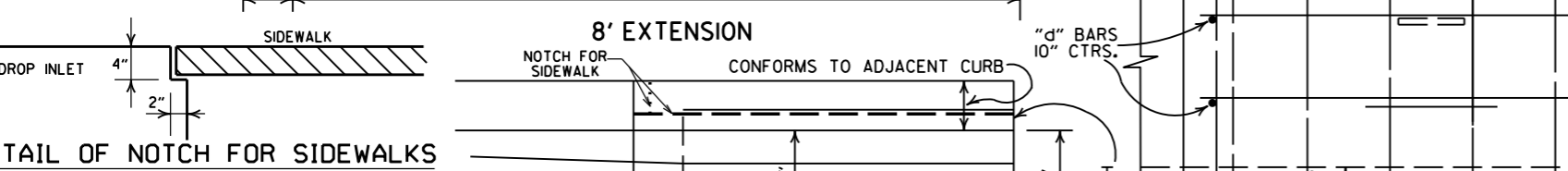
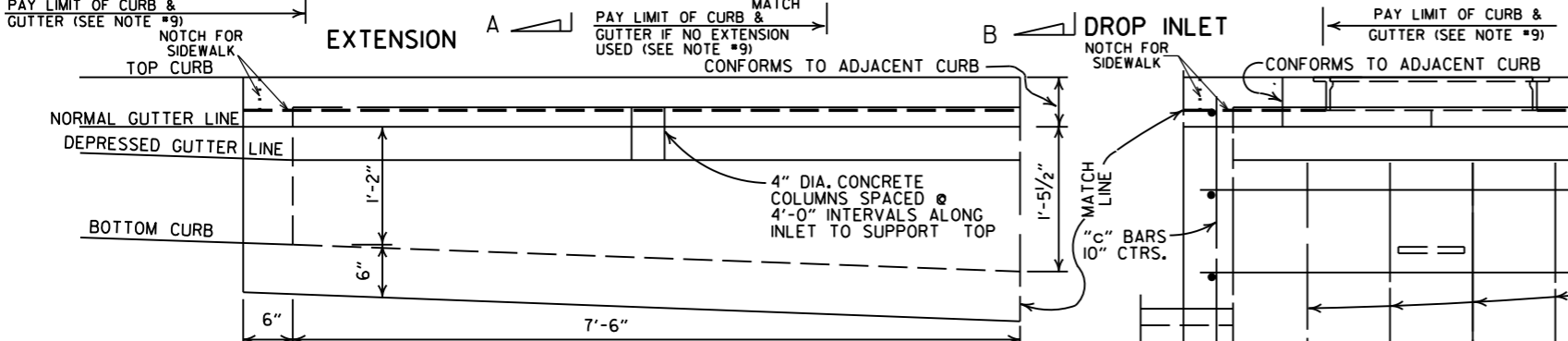
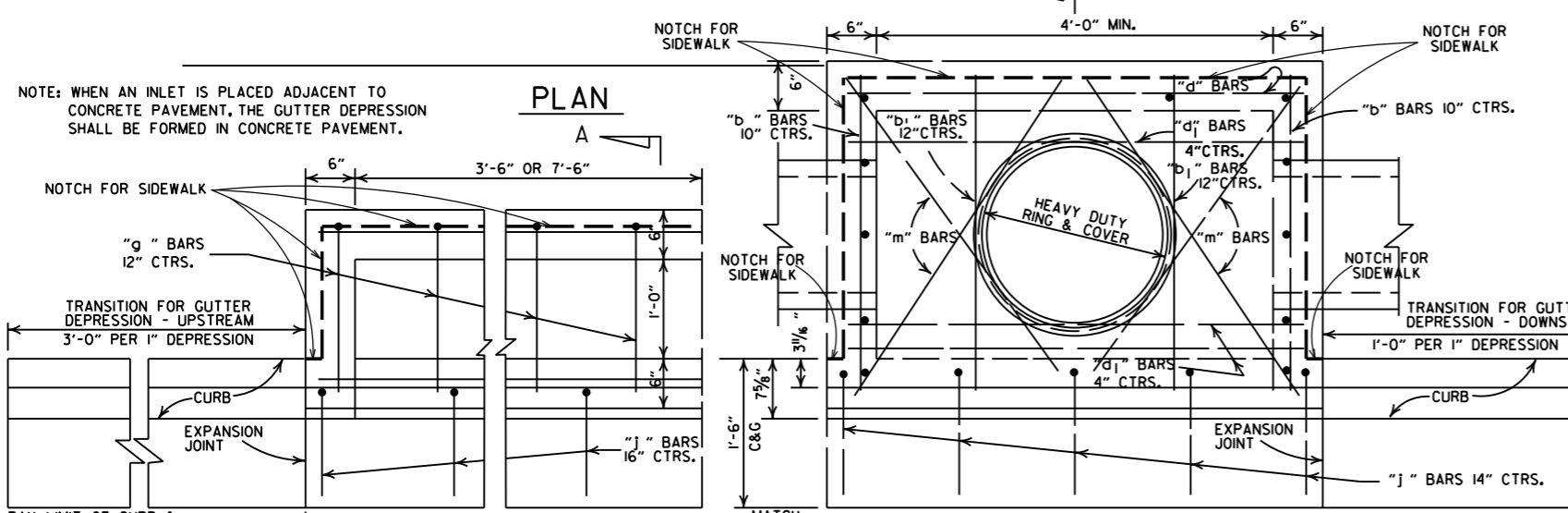
WHEN OPENING IN BACK IS CALLED FOR ON PLANS EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET (TYPE C).



APPROXIMATE TOTAL WEIGHT = 333 LBS.

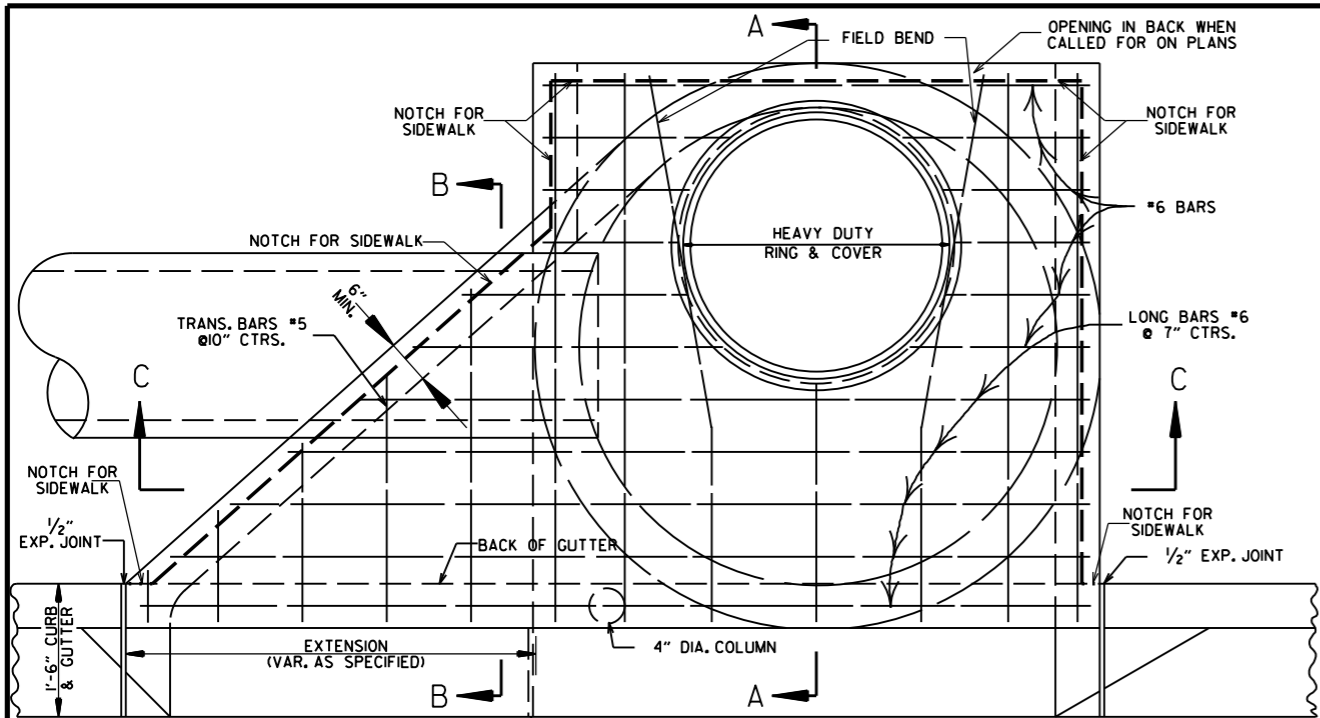
HEAVY DUTY RING & COVER

- GENERAL NOTES:
- ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER.
  - STEPS SHALL BE INSTALLED IN ALL INLETS 4'-0" HIGH AND OVER OF AS APPROVED BY THE ENGINEER.
  - ALL REINF. BARS SHALL BE #4 AND HAVE 1/2" COVER.
  - DROP INLETS AND EXTENSION ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
  - THIS DROP INLET MAY BE CONSTRUCTED ON NEW OR EXISTING R.C. BOX CULVERT AS SHOWN ON F.P.C.-9.
  - WHEN PLANS CALL FOR DROP INLET OVER 10'-0" HIGH, FLOOR AND WALLS SHALL BE CONSTRUCTED AS SHOWN FOR TYPE "RM" DROP INLET (FPC-9D).
  - HEAVY DUTY RING SHALL ALWAYS BE INSTALLED WITH FLANGE ON TOP.
  - DURING CONSTRUCTION OF THE ROADWAY THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
  - 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.
  - 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.
  - HEAVY DUTY RING AND COVER SHALL NOT BE PAINTED.
  - 4"x2" NOTCH SHALL BE FORMED IN ALL DROP INLETS TO SUPPORT SIDEWALK CONSTRUCTION. REFER TO DETAIL OF NOTCH FOR SIDEWALKS.
  - 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.

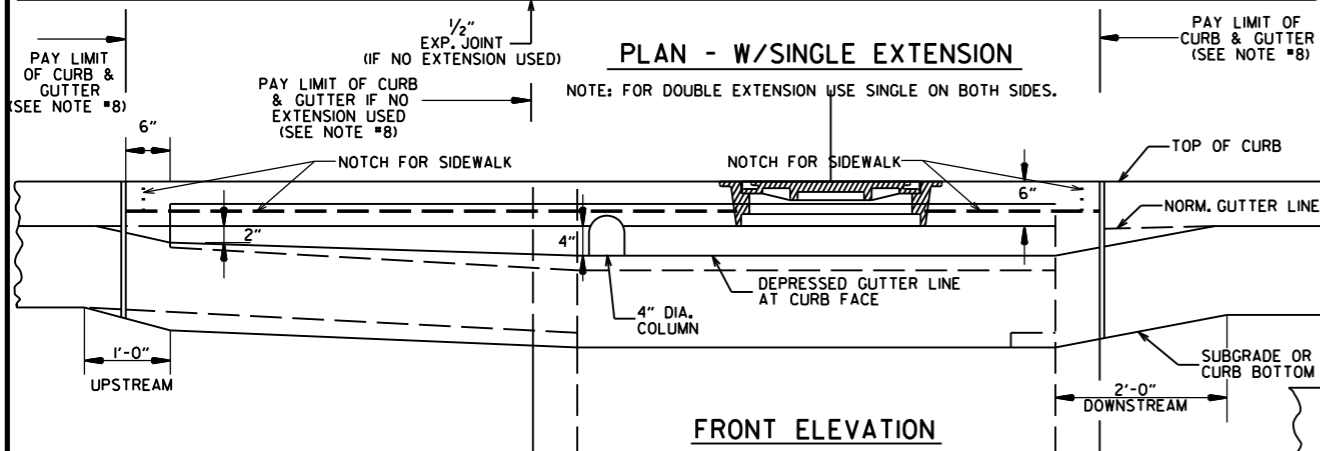


DATE	REV.	REVISION	DATE FILMED
8-22-02		ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01		ADDED NOTE 13; REVISED SECTION B-B	
1-12-00		CORRECTED DIMENSION ON SECTION B-B & REVISED RING & COVER	
5-13-99		ADDED DETAIL OF NOTCH FOR SIDEWALKS	
7-02-98		REPLACED RING & COVER W/HEAVY DUTY RING & COVER	
		ADDED NOTES 9,10,&11	
10-18-96		CORRECTED SPELLING	
4-26-96		ADDED NOTE 8 & REVISED (4'x8') EXTENSION TITLES	10-18-96
4-1-95		REVISED BACK OPENING & NOTE	
8-15-91		DELETE TYPE IV GRATE	
7-15-88		REVISED STEP DETAIL	
5-20-83		REVISED DETAILS OF GRATES (TYPE IV & IV-A)	
2-4-83		ADDED GENERAL NOTE NO. 4	
3-2-81		ADDED TYPE IV-A GRATE	
5-22-74		DELETED INLET (TYPE F) & GRATE (TYPE III)	
10-2-72		REVISED AND REDRAWN	

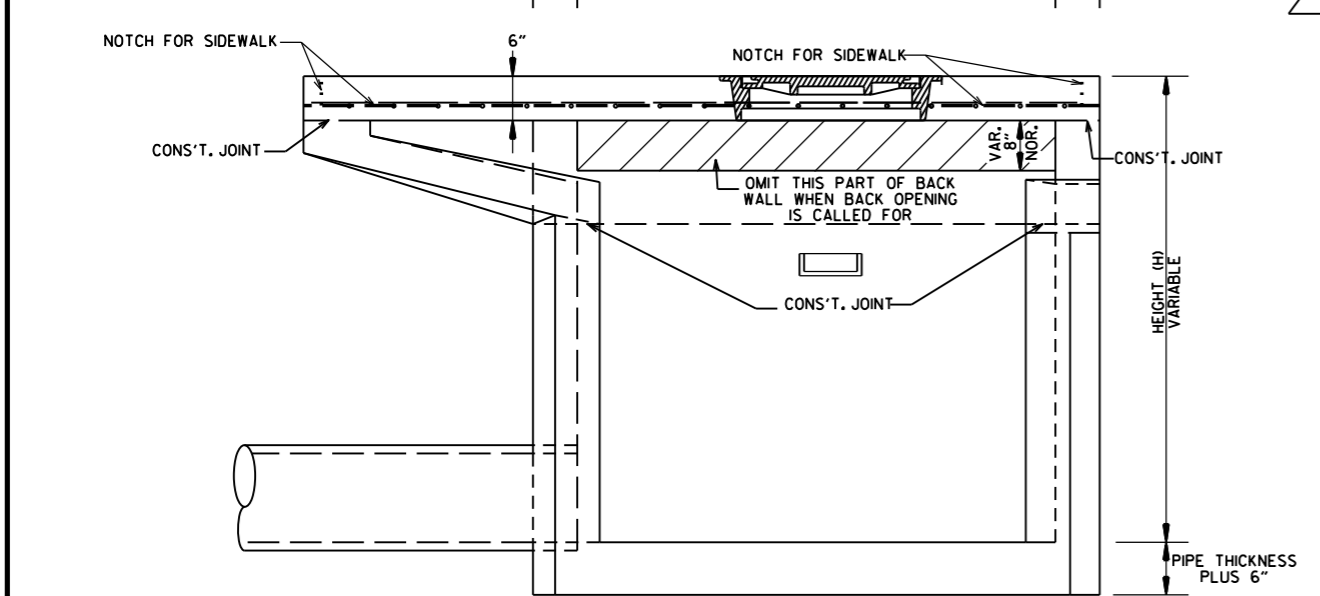
ARKANSAS STATE HIGHWAY COMMISSION  
 DETAILS OF DROP INLETS  
 (TYPE C)  
 STANDARD DRAWING FPC-9E



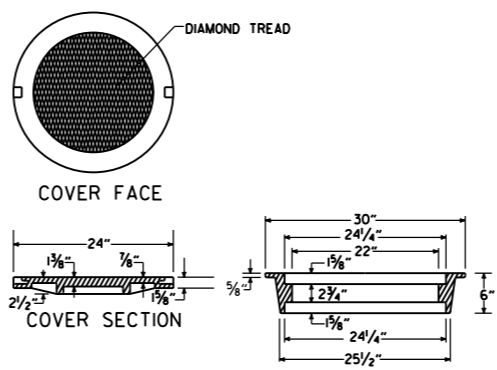
PLAN - W/SINGLE EXTENSION



FRONT ELEVATION



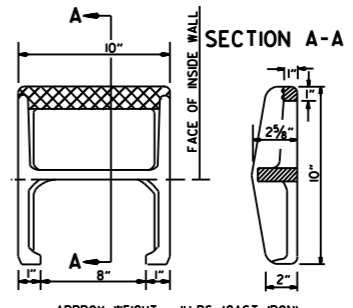
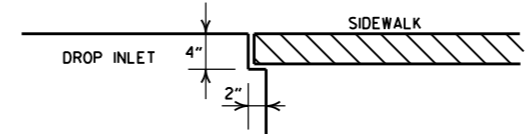
SECTION C-C



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.

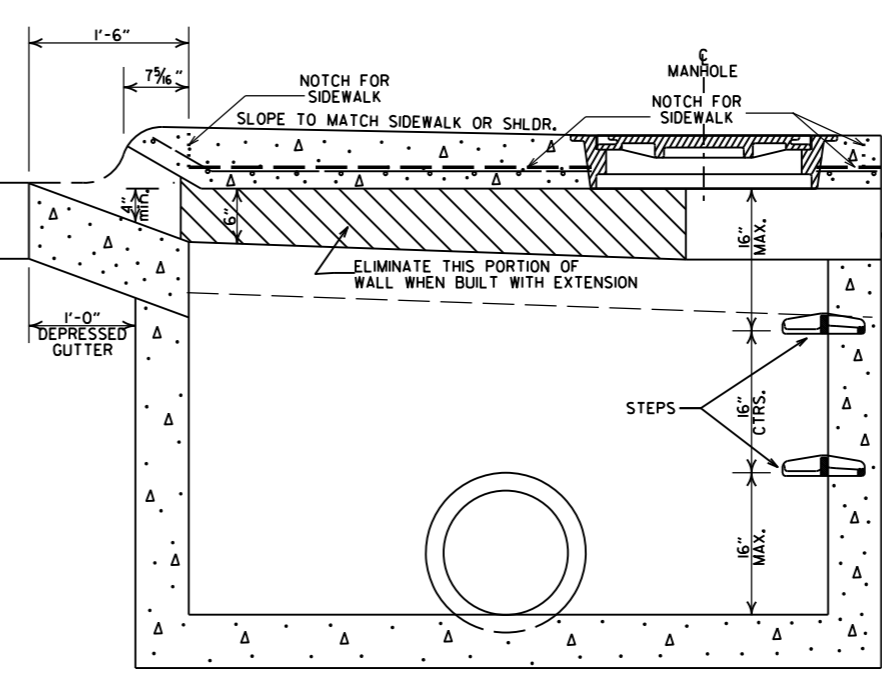
DETAIL OF NOTCH FOR SIDEWALKS



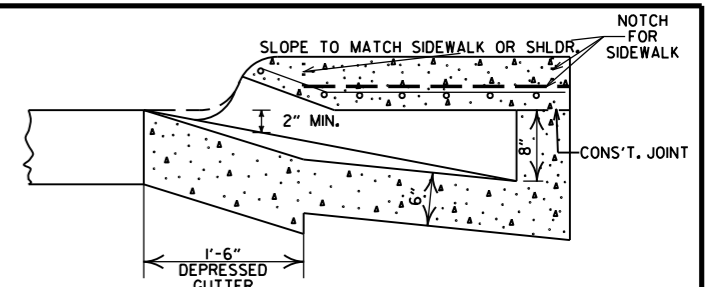
SECTION A-A

APPROX. WEIGHT = 11 LBS. (CAST IRON)  
PLAN  
NOTE: THIS DETAIL IS TYPICAL. OTHERS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

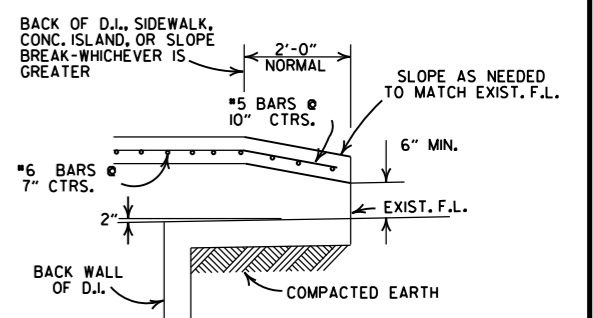
DETAIL OF STEP FOR DROP INLET



SECTION A-A



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

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

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

DATE	REVISIONS	DATE FILMED
8-22-02	ADDED PAY LIMIT CURB NOTES TO SECTIONS A-A & B-B	
11-16-01	ADDED NOTE 13	
1-12-00	REVISED HEAVY DUTY RING & COVER	
5-13-99	ADDED NOTCH DETAIL FOR SIDEWALKS	
7-02-98	REP. NOTE 8, REV. PLAN DET., REV. PICTURE FOR NEW RING & COVER, ADDED HEAVY DUTY RING & COVER AND DETAIL OF STEP FOR DROP INLET	
4-26-96	ADDED NOTE 11 AND OPENING DIMENSION	
10-12-95	CORRECTED #6 BAR SPACING	
7-20-95	CORRECTED DIAMETER OF D.I. IN BOX	
2-2-95	TYPE C TO TWO (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
4-23-89	ADDED NOTE 8 MINIMUM WALL THICKNESS	5-13-89
7-15-88	ADDED EXTEND NOTE TO SECTION A-A	6-30-88
1-14-87	MODIFIED WALL THICKNESS	7-83-87
6-12-87	ISSUED	4-6-87

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF DROP INLET (TYPE MO)

STANDARD DRAWING FPC-9M

**REINFORCED CONCRETE ARCH PIPE DIMENSIONS**

EQUIV. DIA.	SPAN		RISE	
	AASHTO M 206	ARDDOT NOMINAL	AASHTO M 206	ARDDOT 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	43¾	44	26¾	27
42	51½	51	31¾	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	87½	87
120	154	154	96¾	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.

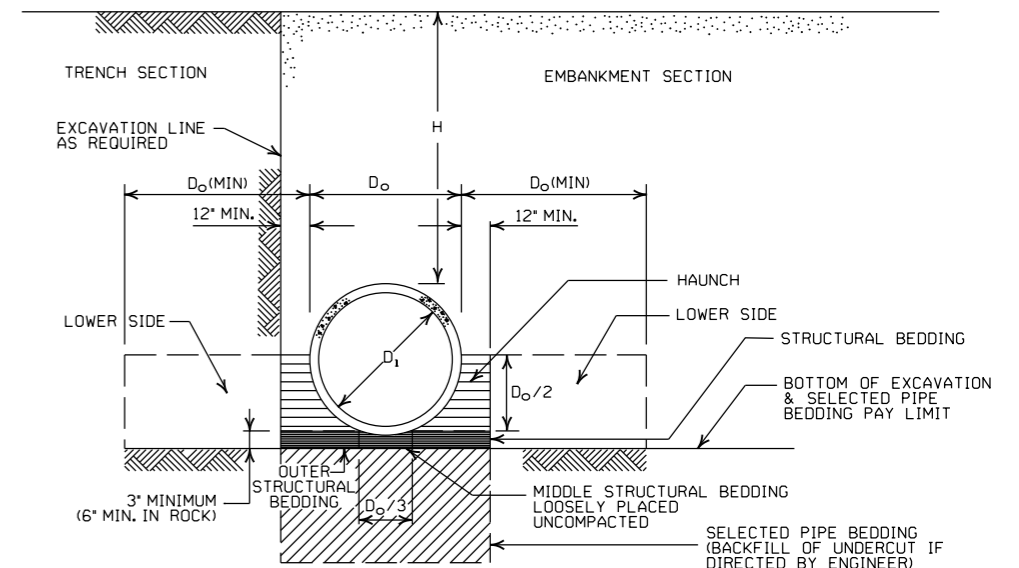
**- LEGEND -**

- D<sub>i</sub> = NORMAL INSIDE DIAMETER OF PIPE
- D<sub>o</sub> = OUTSIDE DIAMETER OF PIPE
- H = FILL COVER HEIGHT OVER PIPE (FEET)
- MIN. = MINIMUM
- [Symbol] = 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 DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION), WITH APPLICABLE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. UNLESS OTHERWISE NOTED IN THE PLANS, SECTION AND SUBSECTION REFER TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. CONCRETE PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FIFTH EDITION (2010) WITH 2010 INTERIMS.
3. ALL PIPE SHALL CONFORM TO SECTION 606. CIRCULAR R.C. PIPE CULVERTS SHALL CONFORM TO AASHTO M170. R.C. ARCH PIPE CULVERTS SHALL CONFORM TO AASHTO M206 AND HORIZONTAL ELLIPTICAL PIPE CULVERTS SHALL CONFORM TO AASHTO M207.
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM PASSAGE OF EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES. THE MAXIMUM ALLOWABLE TRENCH WIDTH SHALL BE THE MINIMUM WIDTH PRACTICABLE FOR WORKING CONDITIONS.
6. MULTIPLE PIPE CULVERTS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 24 INCHES BETWEEN STRINGS OF PIPE. REFER TO STD. DWG. FES-2 FOR MINIMUM CLEARANCE WHERE FLARED END SECTIONS ARE USED.
7. IMPERVIOUS MATERIAL SHOULD BE PLACED AS DIRECTED BY THE ENGINEER AT THE ENDS OF THE CULVERT TO PREVENT LOSS OF STRUCTURAL BEDDING WHEN PERVIOUS MATERIAL IS USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. NOT MORE THAN ONE LIFTING HOLE MAY BE PROVIDED IN CONCRETE PIPE TO FACILITATE HANDLING. HOLE MAY BE CAST IN PLACE, CUT INTO THE FRESH CONCRETE AFTER FORMS ARE REMOVED, OR DRILLED. THE HOLE SHALL NOT BE MORE THAN TWO INCHES IN DIAMETER OR TWO INCHES SQUARE. CUTTING OR DISPLACEMENT OF REINFORCEMENT WILL NOT BE PERMITTED. SPALLED AREAS AROUND THE HOLE SHALL BE REPAIRED IN A WORKMANLIKE MANNER. LIFTING HOLE SHALL BE FILLED WITH MORTAR, CONCRETE, OR OTHER METHOD AS APPROVED BY THE ENGINEER.
9. WHEN DIRECTED BY THE ENGINEER, UNSUITABLE MATERIAL THAT IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATED TRENCH (BELOW THE AREA IDENTIFIED AS "STRUCTURAL BEDDING" ABOVE) WILL BE EXCAVATED AND REPLACED WITH SELECTED PIPE BEDDING. THE QUANTITY OF MATERIAL REQUIRED TO BACKFILL THE UNDERCUT AREA UP TO THE SELECTED PIPE BEDDING PAY LIMIT DESIGNATED ABOVE WILL BE MEASURED AND PAID FOR AS "SELECTED PIPE BEDDING."
10. WHEN THE EXISTING MATERIAL EXCAVATED FOR THE PIPE TRENCH IS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING THE PIPE (ABOVE THE AREA IDENTIFIED ABOVE AS THE HAUNCH), BORROW MATERIAL OR MATERIAL FROM THE ROADWAY EXCAVATION WILL BE USED TO BACKFILL THE PIPE. IF SUITABLE MATERIAL IS NOT AVAILABLE, THE ENGINEER MAY AUTHORIZE THE USE OF "SELECTED PIPE BACKFILL."

**MINIMUM HEIGHT OF FILL "H" OVER CIRCULAR R.C. PIPE CULVERTS**

INSTALLATION TYPE	CLASS OF PIPE			
	CLASS III	CLASS IV	CLASS V	CLASS V
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
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
TYPE 2 OR TYPE 3	FEET	
	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
TYPE 2	13	21
TYPE 3	10	16

NOTE: TYPE 1 INSTALLATION WILL NOT BE ALLOWED FOR ARCH & HORIZONTAL ELLIPTICAL PIPE CULVERTS.

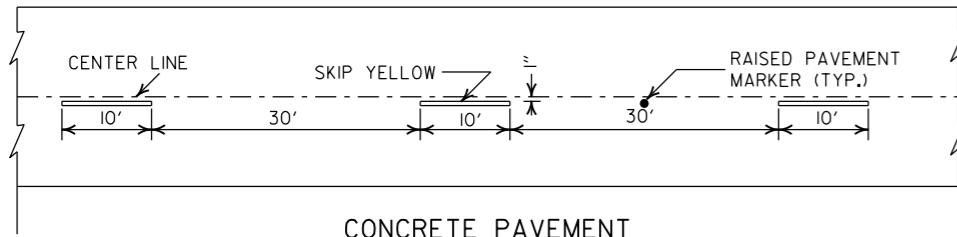
DATE	REVISION	DATE FILMED
2-27-14	REVISED GENERAL NOTE 1.	
12-15-11	REVISED FOR LRFD DESIGN SPECIFICATIONS	
5-18-00	REVISED TYPE 3 BEDDING & ADDED NOTE	
3-30-00	REVISED INSTALLATIONS	
11-06-97	ISSUED	

**ARKANSAS STATE HIGHWAY COMMISSION**

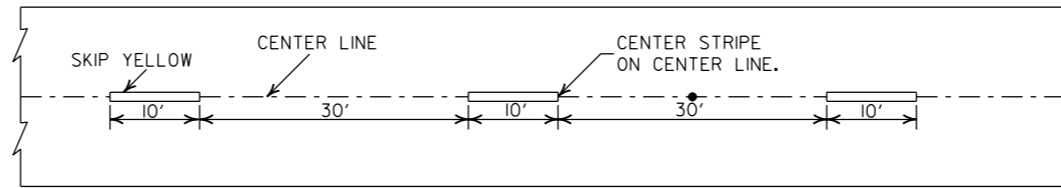
**CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING**

STANDARD DRAWING PCC-1



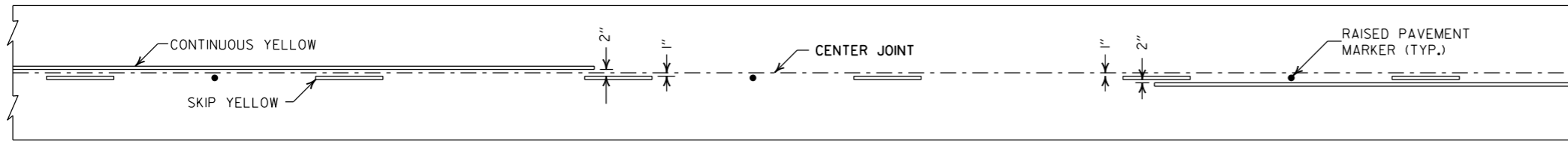


CONCRETE PAVEMENT

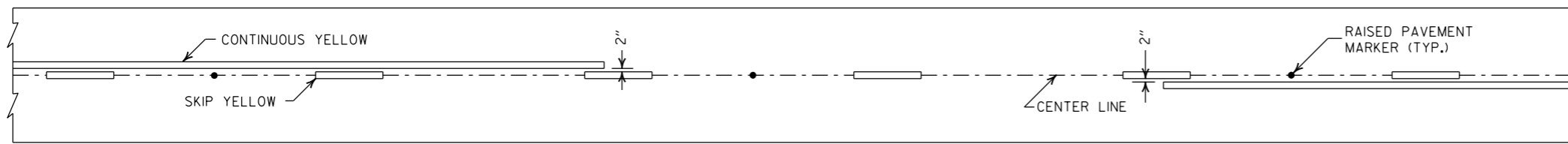


ASPHALT PAVEMENT

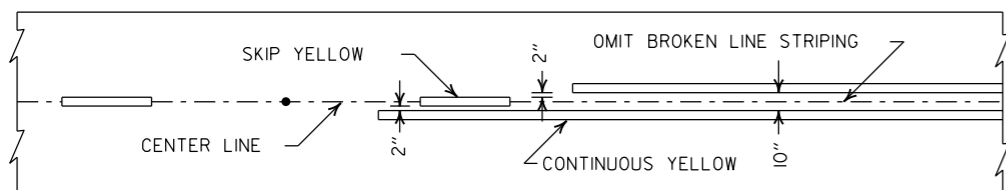
**BROKEN LINE STRIPING**



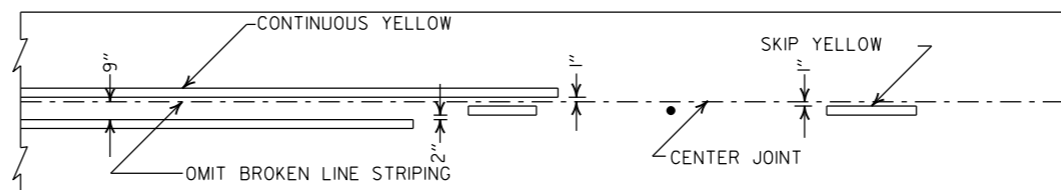
**SOLID LINE STRIPING ON CONCRETE PAVEMENT**



**SOLID LINE STRIPING ON ASPHALT PAVEMENT**

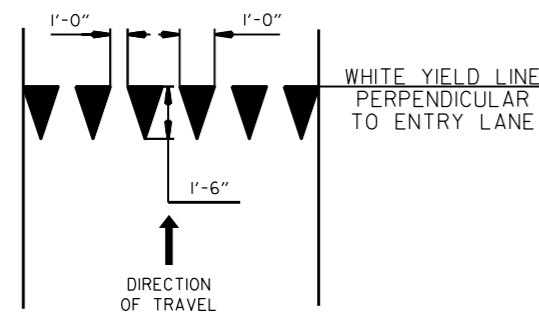


ASPHALT PAVEMENT

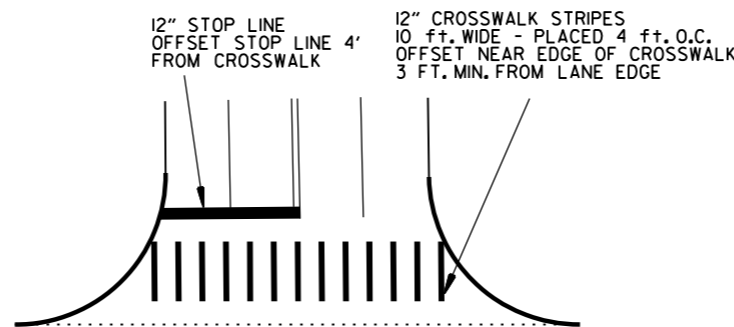


CONCRETE PAVEMENT

**STRIPING AT ADJACENT NO PASSING LANES**



**YIELD LINE DETAIL**

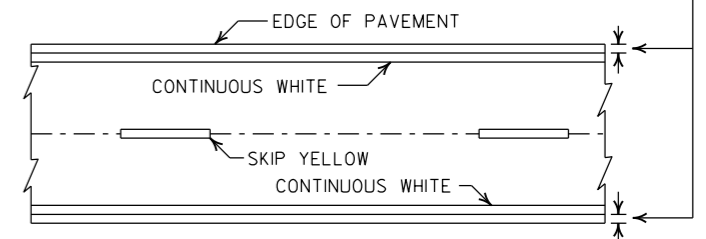


**CROSSWALK AND STOP LINE DETAILS**

**NOTES:**

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

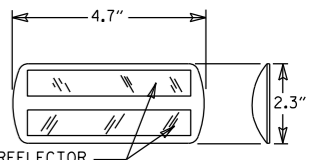
2" FOR ASPHALT OR CONCRETE PAVEMENT  
6" FOR BITUMINOUS SURFACE TREATMENT



**PAVEMENT EDGE LINE MARKING**

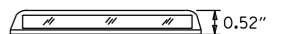
NOTE:  
THE RED LENS OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

TYPE II  
RED/CLEAR OR  
YELLOW/YELLOW



PRISMATIC REFLECTOR

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



**DETAIL OF STANDARD RAISED PAVEMENT MARKERS**

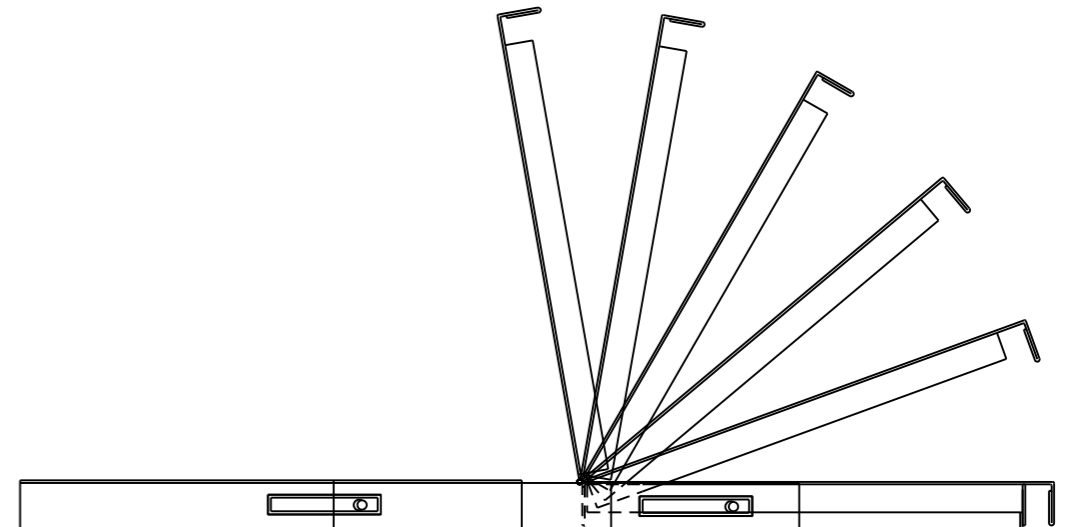
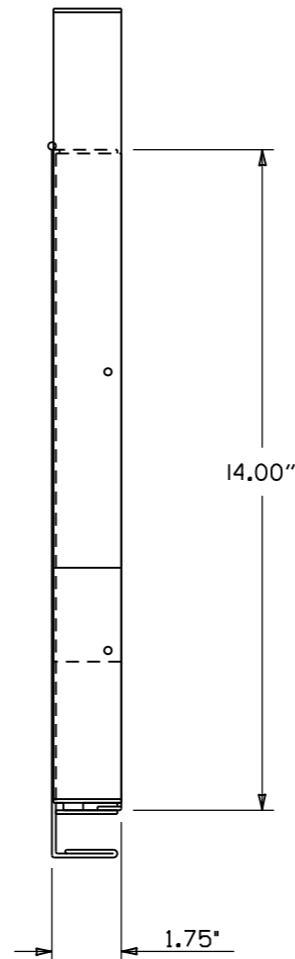
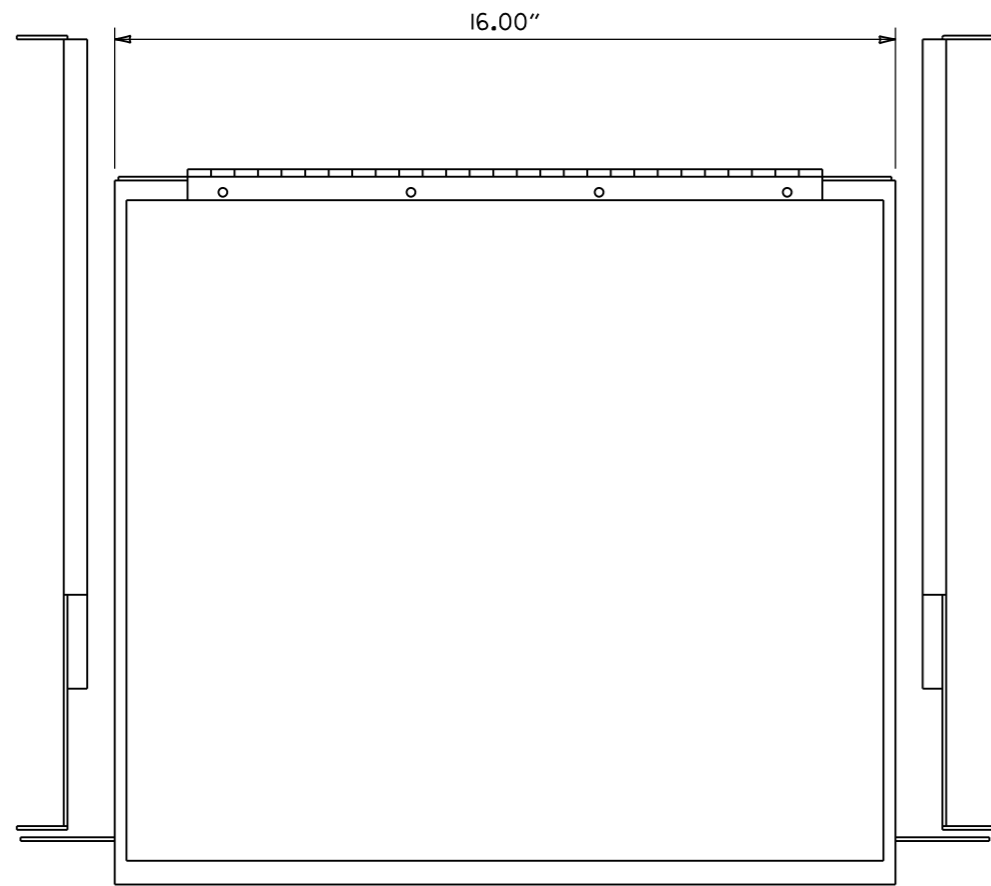
DATE	REVISION	FILMED
2-27-20	REVISED STOP LINE DETAILS	
6-1-17	ADDED YIELD LINE DETAIL	
5-12-16	REVISED LINE WIDTHS, SPACING, & NOTES	
9-12-13	REVISED DETAIL OF STANDARD RAISED PAVEMENT MARKERS	
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTL.	
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

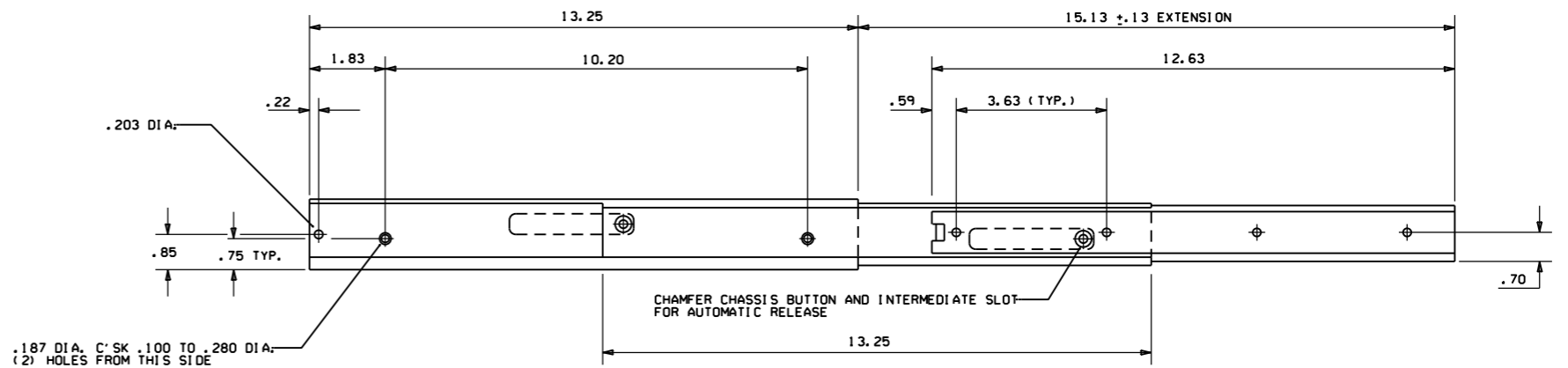
# DRAWER PLAN VIEW



- 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.



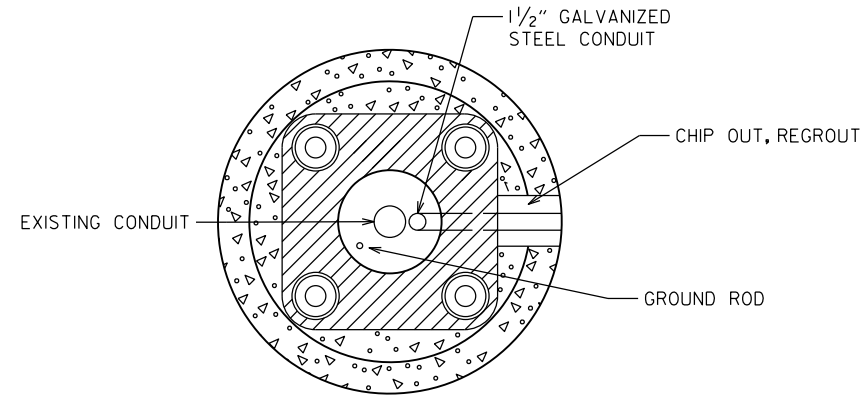
# FRONT VIEW



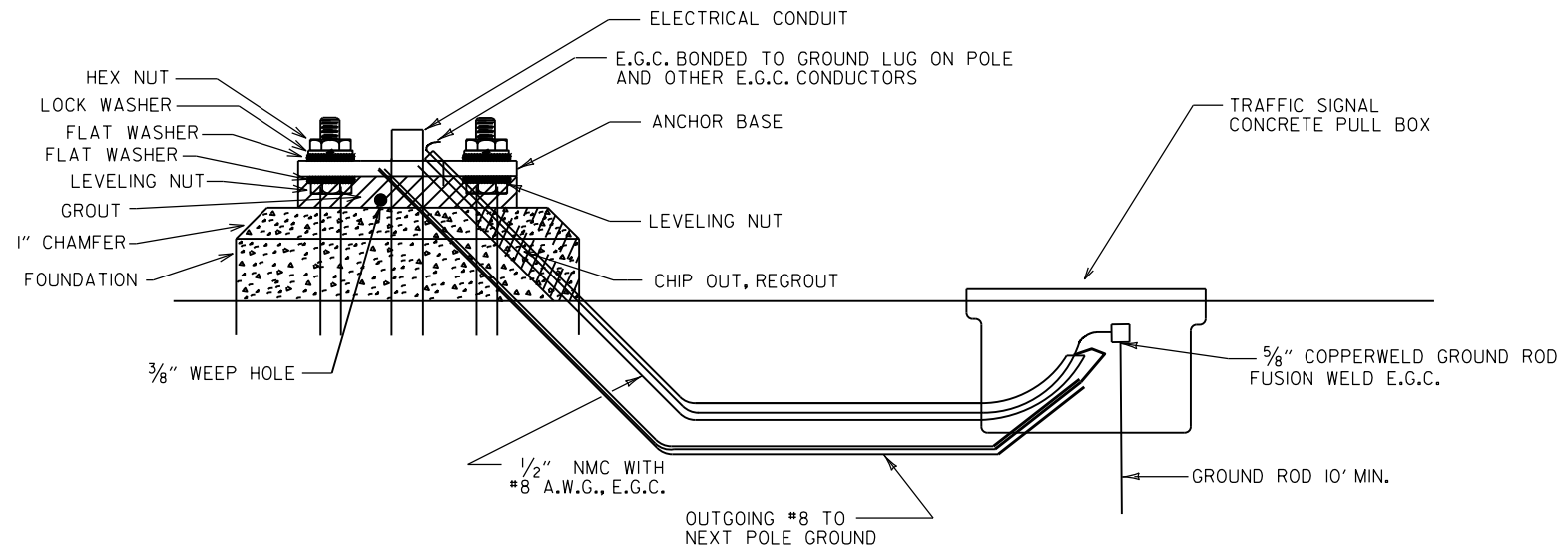
# RIGHT SIDE ASSEMBLY

			ARKANSAS STATE HIGHWAY COMMISSION
			<b>CONTROLLER CABINET UTILITY DRAWER</b>
9-12-13	ISSUED AS STANDARD DRAWING		
6-15-05	ISSUED		
DATE	REVISION	DATE FILM	STANDARD DRAWING SD-5

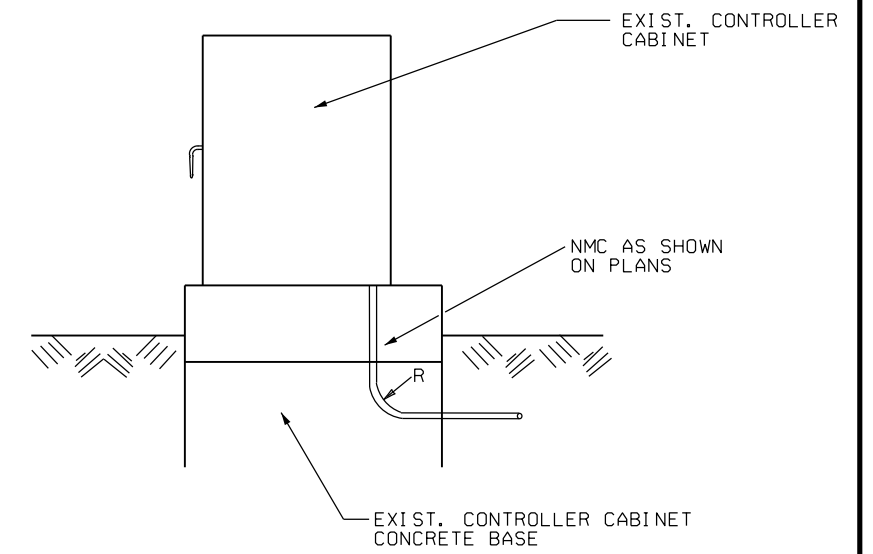
# CONDUIT ENTRY TO EXISTING POLE BASE



# ANCHOR BASE

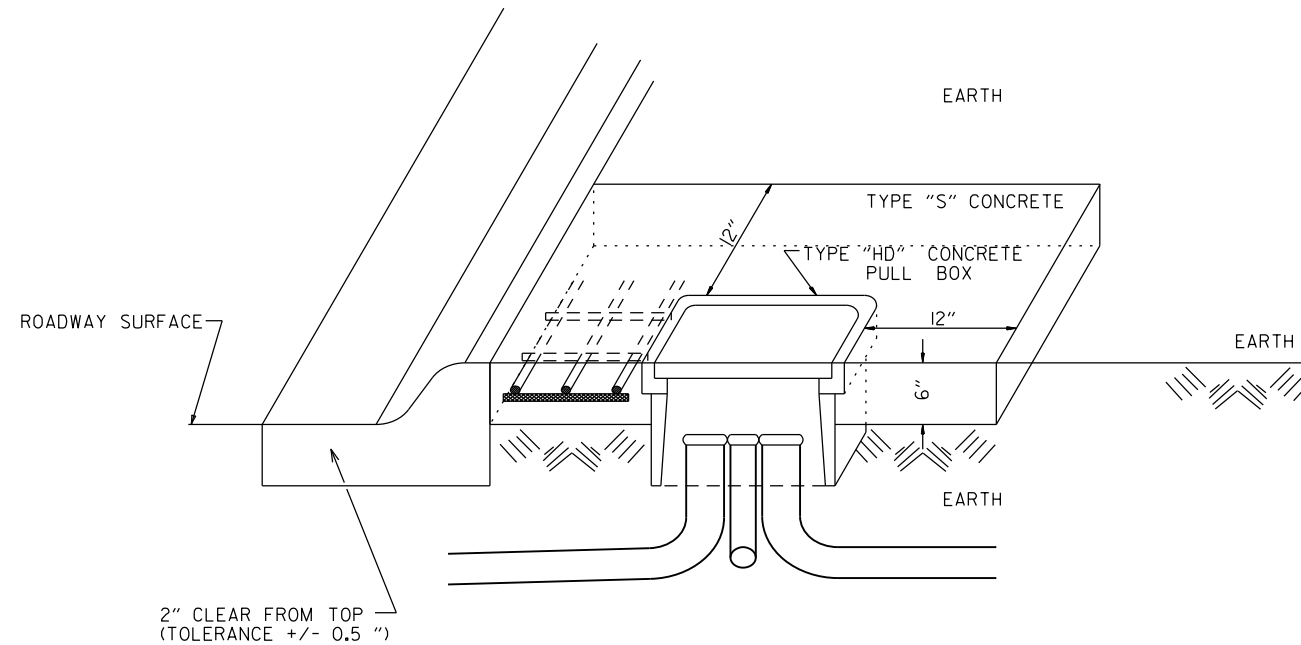


# CONDUIT ENTRY TO EXISTING CONTROLLER CABINET

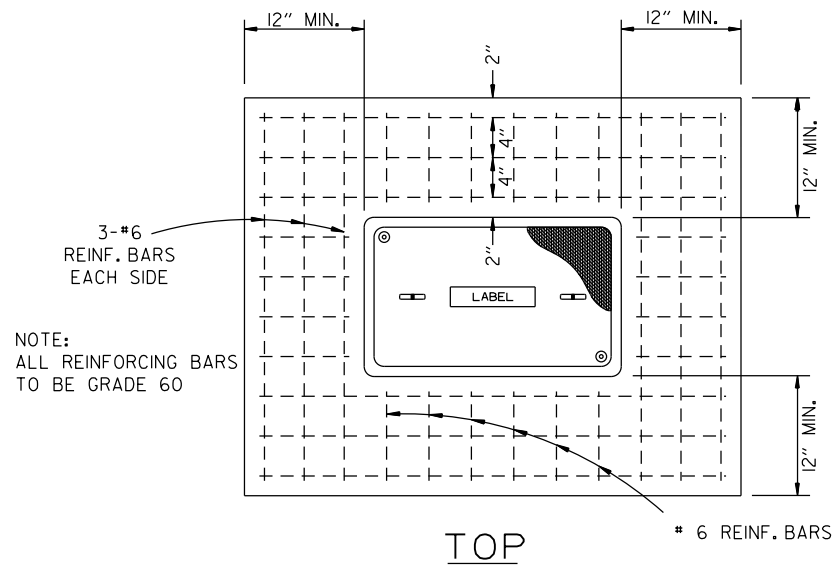


NOTE: ENTRY TO CABINET SHALL BE THROUGH A CUT IN THE BASE SUFFICIENT TO PROVIDE ADEQUATE CONDUIT RADIUS FOR ITEM.

# TYPE "HD" CONCRETE PULL BOX DETAIL

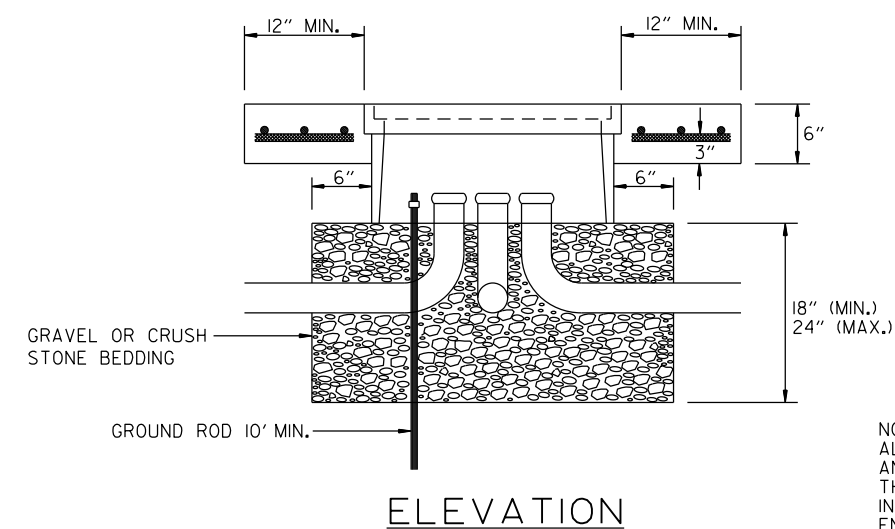


NOTE: ALL TYPE 1 HD, TYPE 2 HD, AND TYPE 3 HD CONCRETE PULL BOXES ARE INSTALLED WITH AN APRON OF CONCRETE 12" WIDE AND 6" IN DEPTH. ALL PAYMENT SHALL BE INCLUDED IN THE PRICE OF THE TYPE HD CONCRETE PULL BOX. THE CONCRETE PULL BOX SHALL BE INSTALLED FLUSH TO SURROUNDING GRADE UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER. THE CONCRETE SHALL BE CLASS "S". THREE #6 REINFORCING BARS IN THE APRON ON ALL SIDES OF THE CONCRETE PULL BOX IS REQUIRED IN CONCRETE.



NOTE: ALL REINFORCING BARS TO BE GRADE 60

TOP

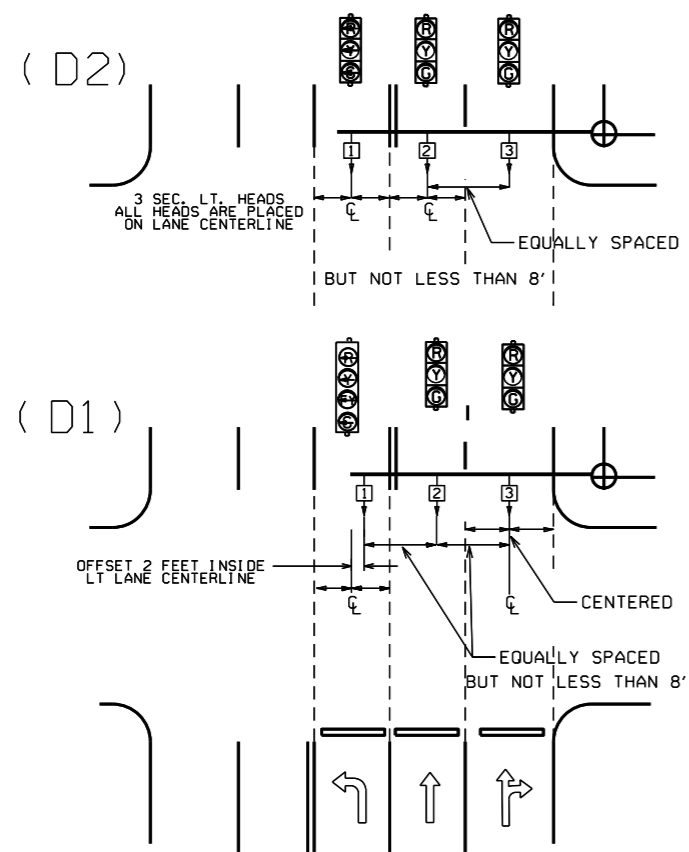
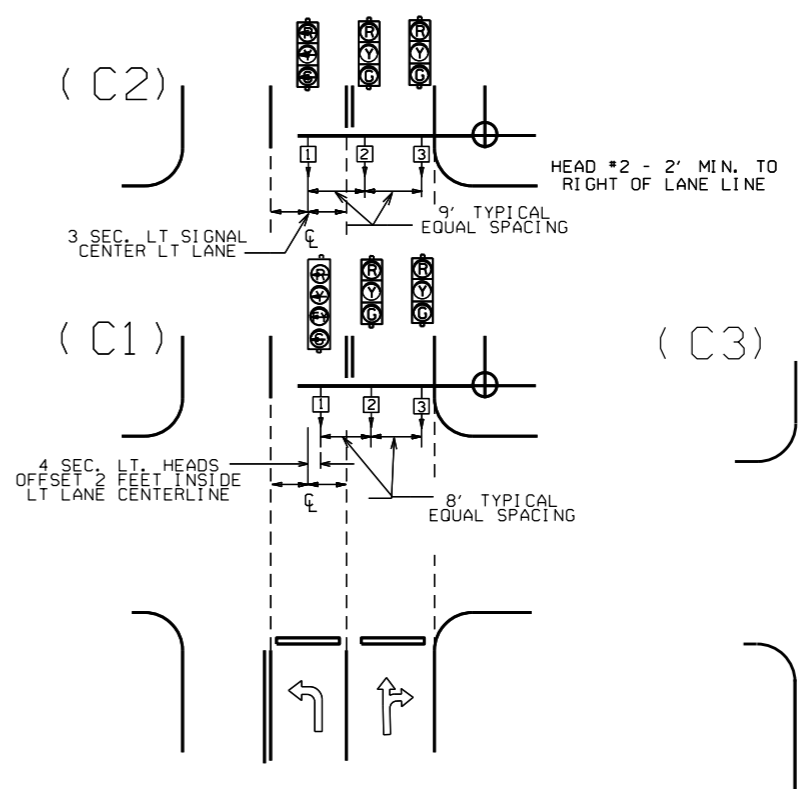
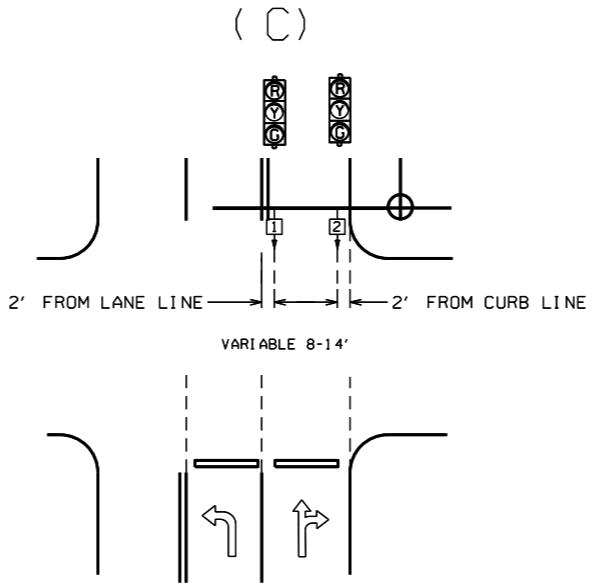
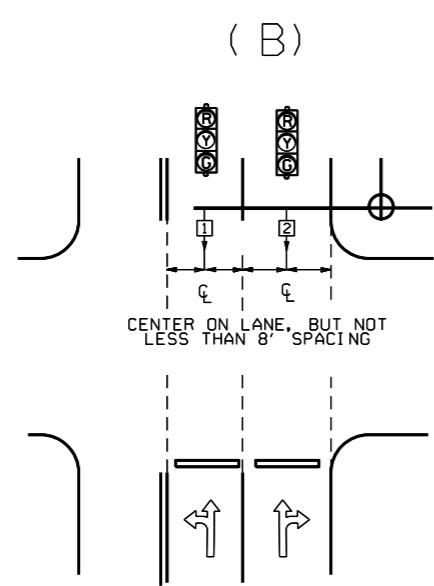
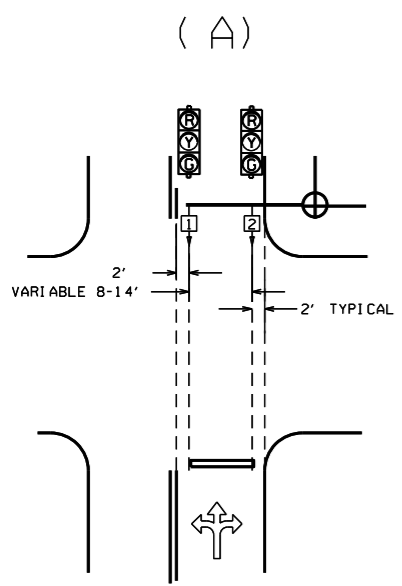


DATE	REVISION	FILMED
02-13-24	REVISED NOTES AND TYPE "HD" CONCRETE PULL BOX DETAILS	
11-16-17	REVISED NOTES	
09-02-15	REVISED PULL BOX DEPTH	
09-12-13	ISSUED AS STANDARD DRAWING	
05-21-09	REVISED GROUNDING	
07-31-08	ADDED & REVISED CONDUIT ENTRY	
06-23-04	REVISED CLEARANCE AT CURB ENTRY	
01-04-02	ADDED REINFORCING TO BOX APRON	
07-02-01	REVISED	
12-27-99	REVISED NOTES	
11-18-98	ISSUED	

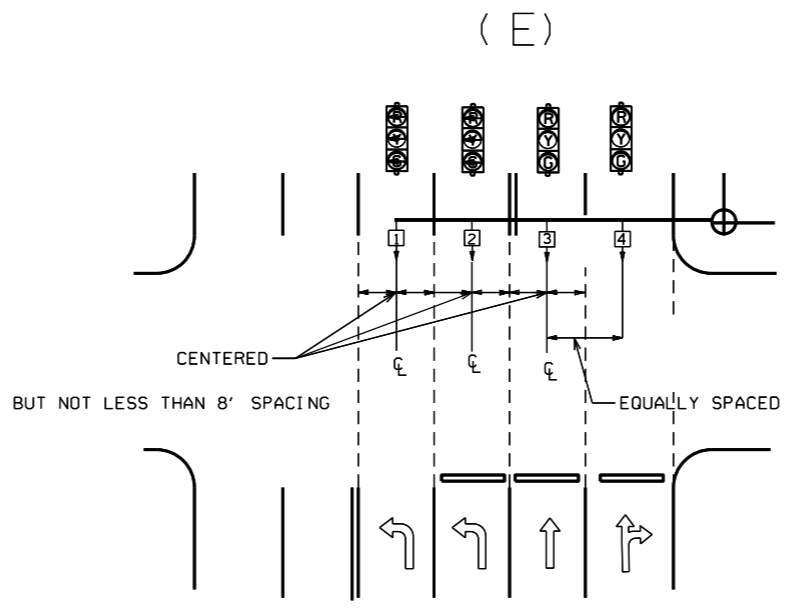
ARKANSAS STATE HIGHWAY COMMISSION

HEAVY DUTY PULL BOX

STANDARD DRAWING SD-6



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.



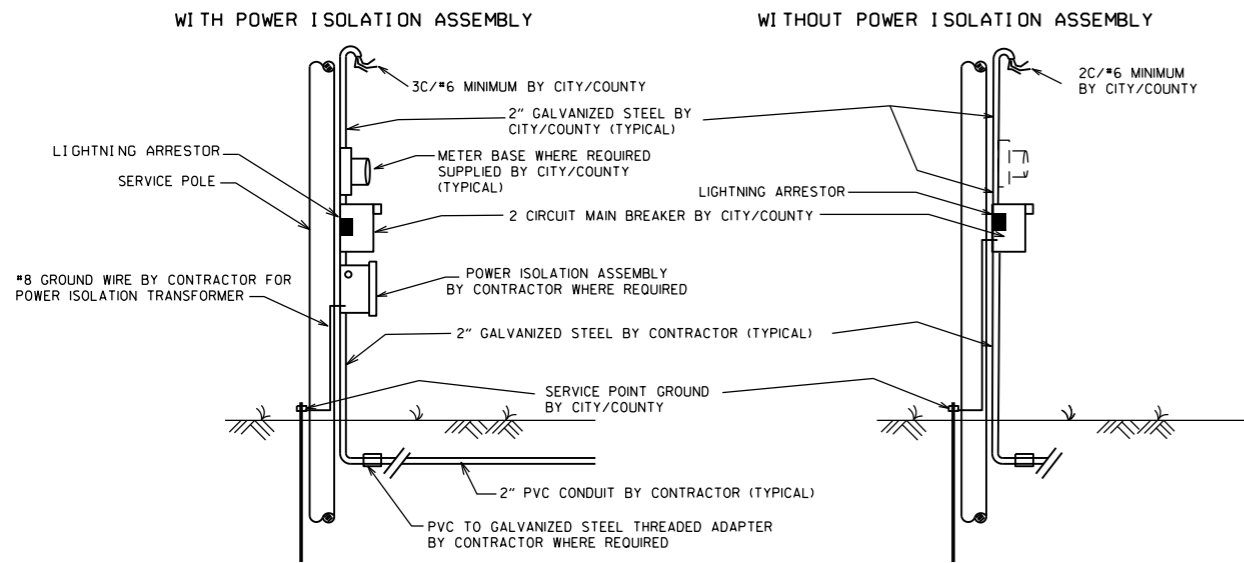
GENERAL NOTES:

- 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.
- THREE SECTION "PROTECTED" LEFT TURN HEADS SHOULD BE PLACED ON THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.
- 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.
- SIGNAL HEAD SPACING SHALL, IN NO CASE, BE LESS THAN EIGHT (8') FEET BETWEEN HEADS ON CENTER, MEASURED HORIZONTALLY PERPENDICULAR TO THE APPROACH.
- 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.
- MAXIMUM MOUNTING HEIGHT OF SIGNAL FACES LOCATED BETWEEN 40 FEET AND 53 FEET FROM STOP BAR SHALL BE IN ACCORDANCE WITH FIGURE 4D-5 OF 2009 MUTCD.

℄ = CENTER OF LANE FROM APPROACH SIDE

			ARKANSAS STATE HIGHWAY COMMISSION
12-8-16	REVISED NOTE 6		SIGNAL HEAD PLACEMENT
9-12-13	ISSUED AS STANDARD DRAWING		
3-11-10	2009 MUTCD		STANDARD DRAWING SD-8
12-9-99	ISSUED		
DATE	REVISION	DATE FILM	

# MAIN BREAKER NOT NEAR CONTROLLER CABINET SECONDARY REQUIRED



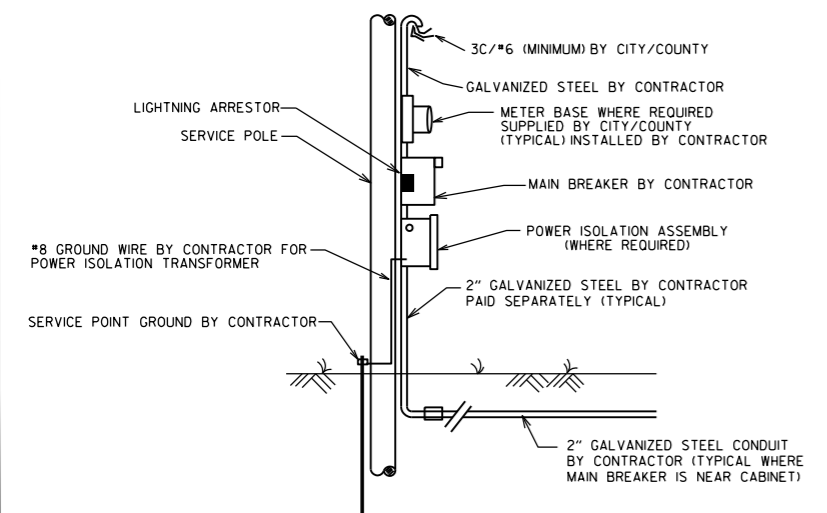
NOTES TO CONTRACTOR AND AGENCY RESPONSIBLE FOR MAINTENANCE OF THE INTERSECTION (CITY/COUNTY):

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/COUNTY'S RESPONSIBILITY VARIES ACCORDINGLY AS INDICATED ON THESE DETAILS.

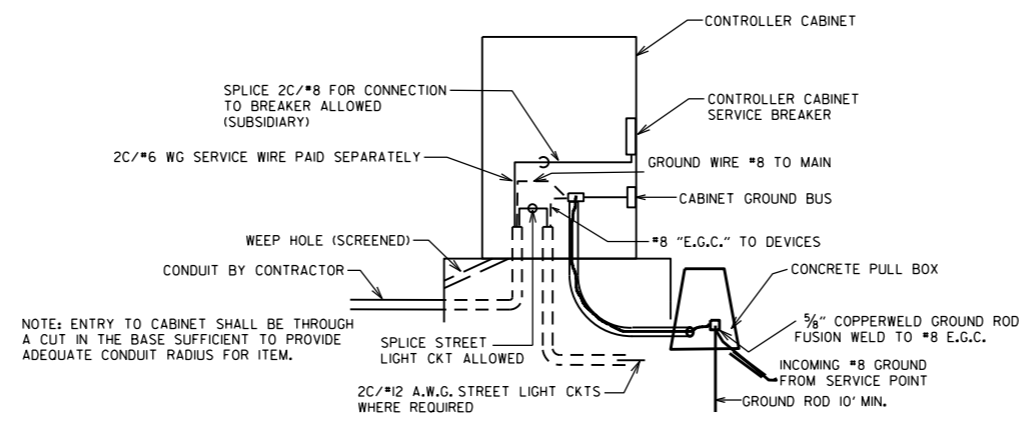
ALL SITUATIONS: ELECTRICAL SERVICE SHALL BE PROVIDED BY THE CITY/COUNTY TO A SERVICE POLE WITH EXTERNAL RAIN-TIGHT BREAKER (MAIN BREAKER) AT A MUTUALLY ACCEPTABLE POINT WITHIN THE RIGHT-OF-WAY. SERVICE POINT INCLUDES GALVANIZED STEEL CONDUIT TO A POINT 18" BELOW GROUND LINE, TWO CIRCUIT MAIN BREAKER, LIGHTNING ARRESTOR, POWER ISOLATION ASSEMBLY WHERE REQUIRED, METER LOOP IF REQUIRED BY LOCAL UTILITY COMPANY, ELECTRICAL CONDUCTORS AND WEATHERHEAD. WHERE STREET LIGHTING IS INCLUDED AS PART OF SIGNAL INSTALLATION STREET LIGHTING CIRCUIT (2C/#12 A.W.G. 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.

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.

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.



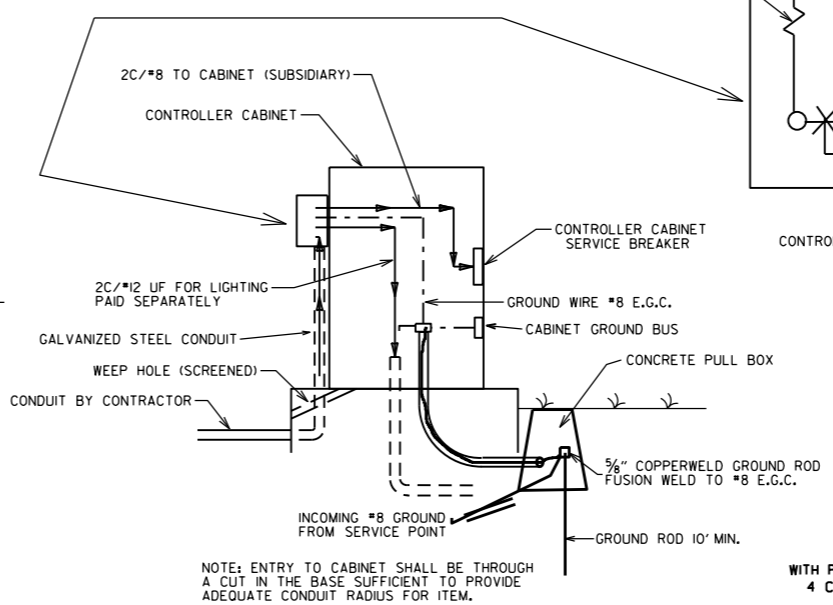
# MAIN BREAKER NEAR CONTROLLER CABINET SECONDARY NOT REQUIRED



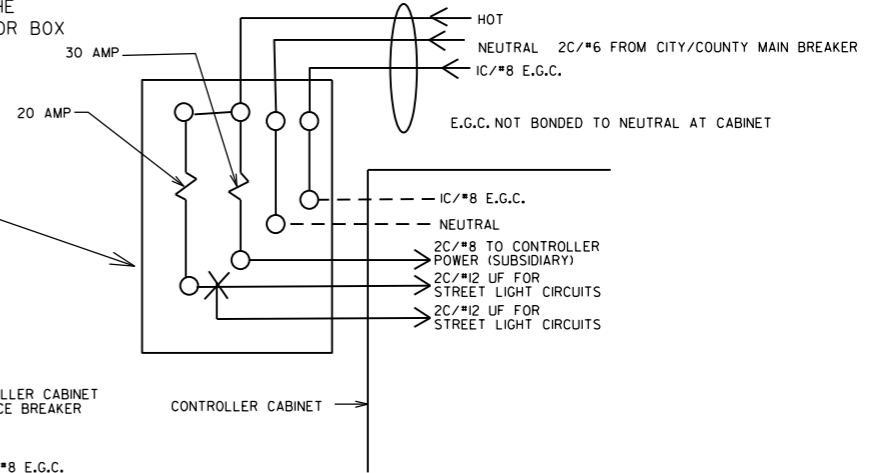
NOTE: ENTRY TO CABINET SHALL BE THROUGH A CUT IN THE BASE SUFFICIENT TO PROVIDE ADEQUATE CONDUIT RADIUS FOR ITEM.

GROUND ROD - A 10' X 5/8" GROUND ROD SHALL BE INSTALLED IN THE CONCRETE PULL BOX FOR EACH POLE AND THE CONTROLLER. PAYMENT FOR THE GROUND ROD AND 1/2" NMC SHALL BE INCLUDED IN ITEM 70L. THE CONCRETE PULL BOX AND CONDUCTOR BOX SHALL BE PAID FOR SEPARATELY.

# SECONDARY BREAKER BY CONTRACTOR (SUBSIDIARY)



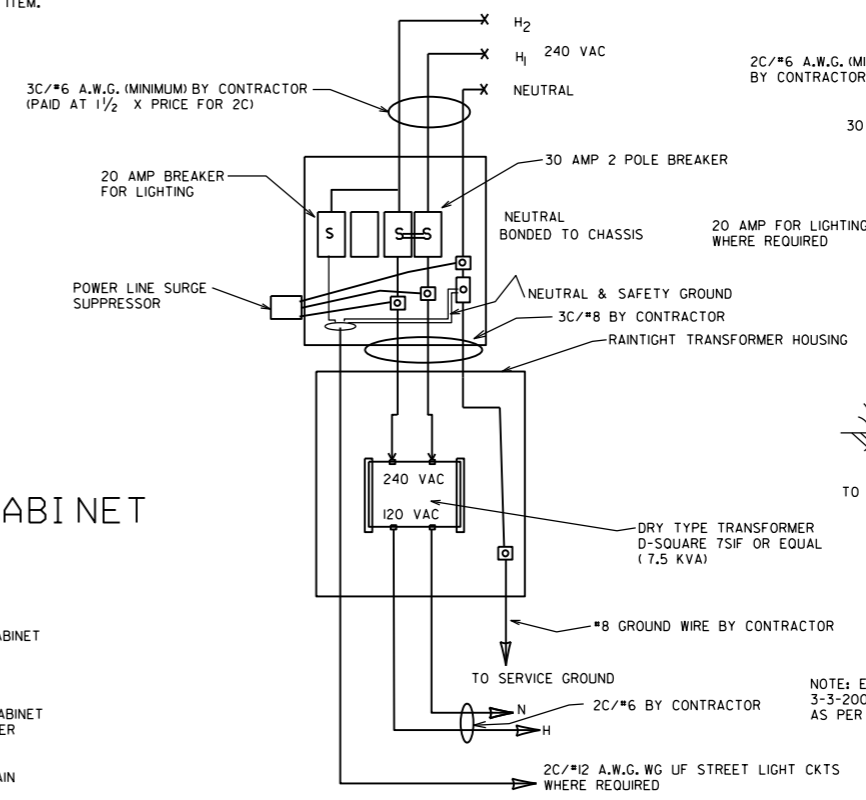
NOTE: ENTRY TO CABINET SHALL BE THROUGH A CUT IN THE BASE SUFFICIENT TO PROVIDE ADEQUATE CONDUIT RADIUS FOR ITEM.



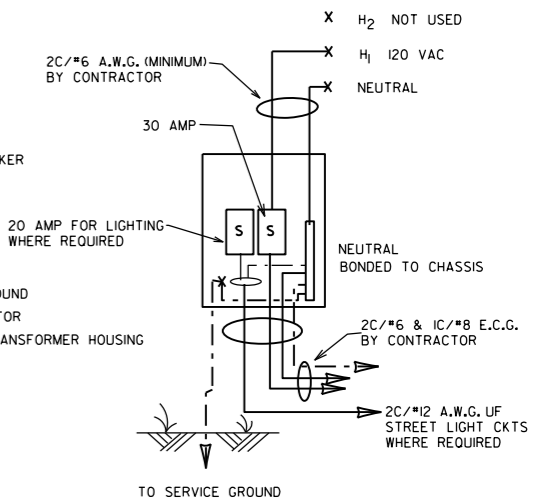
# MAIN BREAKER WIRING (TYPICAL)

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




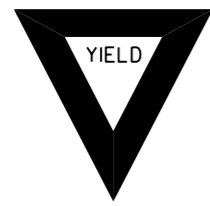







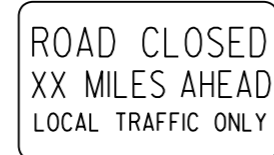
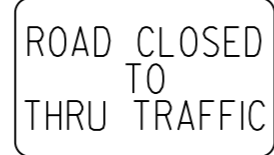

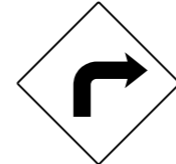



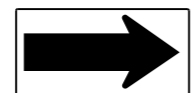

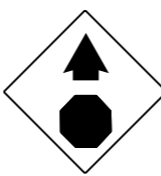
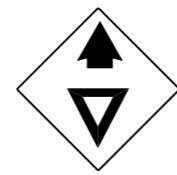
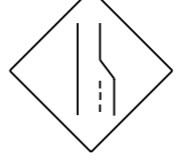

















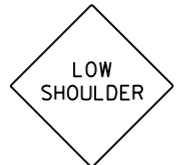
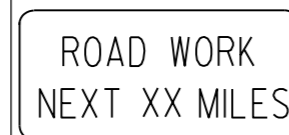
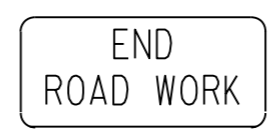
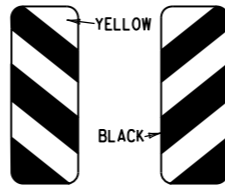


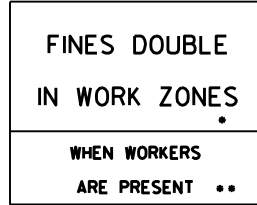
NOTE: ELECTRICAL GROUND CONDUCTOR (E.G.C.) ADDED 3-3-2003, CONSISTING OF A 1C/#8 A.W.G. CU GREEN WIRE AS PER NATIONAL ELECT. CODES.

DATE	REVISION	FILMED
11-07-19	REVISED	
11-16-17	REVISED NOTES	
09-12-13	ISSUED AS STANDARD DRAWING	
04-18-13	ADDED LIGHTNING ARRESTOR	
05-21-09	REVISED GROUNDING	
07-31-08	REVISED GROUNDING	
03-03-03	ADDED EGC NOTE	
09-26-01	REVISED	
12-27-99	REVISED	
07-28-99	REVISED	
02-05-99	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION  
SERVICE POINT  
STANDARD DRAWING SD-9





<p>RI-1</p>  <p>STANDARD 30"x30" EXPRESSWAY 36"x36" SPECIAL 48"x48"</p>	<p>RI-2</p>  <p>STD. 36"x36"x36" EXPWY. 48"x48"x48" FWY. 60"x60"x60"</p>	<p>R2-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>W3-5</p>  <p>STD. 36"x36" EXPWY. 48"x48" FWY. 48"x48"</p>	<p>W3-5a</p>  <p>STD. 36"x36" EXPWY. 48"x48" FWY. 48"x48"</p>	<p>R4-1</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	<p>R4-2</p>  <p>STD. 24"x30" EXPWY. 36"x48" FWY. 48"x60"</p>	
<p>R5-1</p>  <p>STD. 30"x30" EXPWY. 36"x36" SPECIAL 48"x48"</p>	<p>R11-2</p>  <p>48"x30"</p>	<p>R11-3A</p>  <p>60"x30"</p>	<p>R11-4</p>  <p>60"x30"</p>	<p>W21-5a</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W1-1</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W1-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	
<p>W1-3</p>  <p>STD. 48"x48"</p>	<p>W1-4</p>  <p>STD. 48"x48"</p>	<p>W1-6</p>  <p>STD. 48"x24" SPECIAL 60"x30"</p>	<p>W1-8</p>  <p>STD. 18"x24" SPECIAL 24"x30" EXPWY. 30"x36" FWY. 36"x48"</p>	<p>W3-1</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W3-2</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W4-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	
<p>W5-1</p>  <p>STD. 36"x36" SPECIAL 48"x48"</p>	<p>W6-3</p>  <p>EXPWY. 36"x36" SPECIAL 48"x48"</p>	<p>W8-7</p>  <p>EXPWY. 36"x36" FWY. 48"x48"</p>	<p>W9-2</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W13-1</p>  <p>STD. 24"x24"</p>	<p>W20-1</p>  <p>STD. 48"x48"</p>	<p>W20-2</p>  <p>STD. 48"x48"</p>	<p>W20-3</p>  <p>STD. 48"x48"</p>
<p>W20-4</p>  <p>STD. 48"x48"</p>	<p>W20-5</p>  <p>STD. 48"x48"</p>	<p>W20-7a</p>  <p>18" 500 FEET 24" W16-2</p> <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W21-2</p>  <p>STD. 30"x30" SPECIAL 36"x36"</p>	<p>W21-5</p>  <p>STD. 30"x30" SPECIAL 36"x36"</p>	<p>W24-1</p>  <p>STD. 36"x36"</p>	<p>W1-4b</p>  <p>STD. 48"x48"</p>	<p>R56-1</p>  <p>STD. 18"x18"</p>
<p>W8-11</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>W8-9</p>  <p>STD. 36"x36" FWY. 48"x48"</p>	<p>G20-1</p>  <p>60"x24"</p>	<p>G20-2</p>  <p>48"x24"</p>	<p>OM-3L OM-3R</p>  <p>12"x36"</p>	<p>M4-9</p>  <p>STD. 30"x24" SPECIAL 48"x36" SPECIAL 60"x48"</p>	<p>M4-10</p>  <p>48"x18"</p>	<p>R55-1</p>  <p>36"x60"</p> <p>• USE 6" C LETTERS •• USE 4" D LETTERS</p>

ADVANCE DISTANCES  
(XXXX)

500 FT	1/2 MILE
1000 FT	3/4 MILE
1500 FT	1 MILE AHEAD

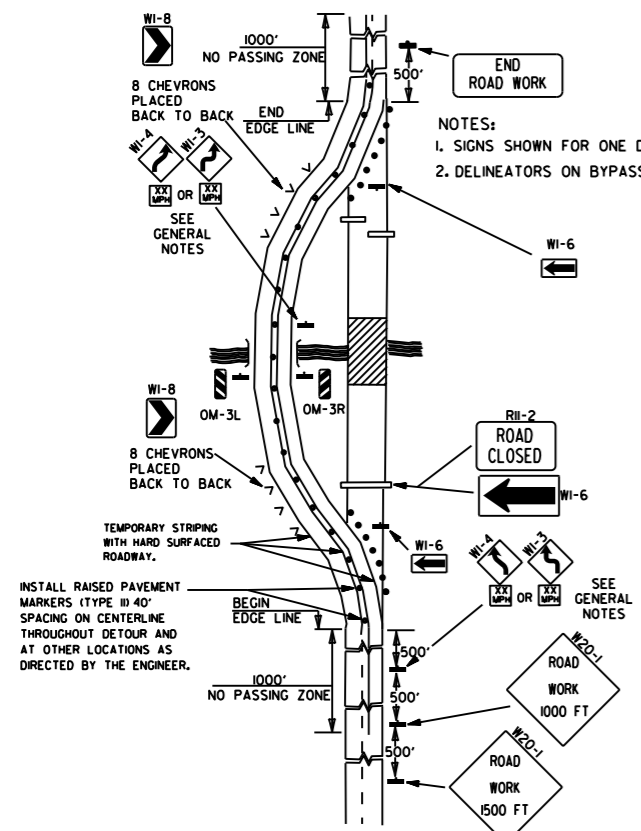
GENERAL NOTES:

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
- 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.
- R55-1 SIGNS SHALL BE PLACED AT LEAST 1500' BUT NOT MORE THAN 1 MILE IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500' IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

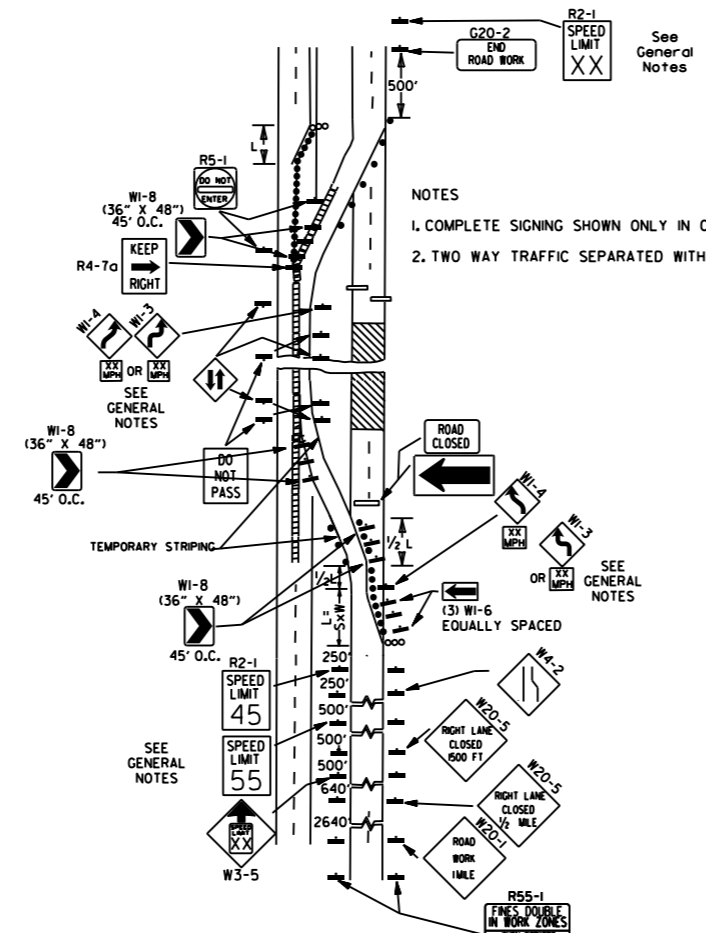
• NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED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

DATE	REVISION	FILMED
11-07-19	REVISED FOR MASH	
4-13-17	DELETED RSP-1 & ADDED W21-5a	
9-2-15	REVISED REDUCED SPEED LIMIT AHEAD SIGNS REVISED ROAD WORK NEXT XX MILES	
12-15-11	REVISED W24-1	
11-17-10	DELETED W8-9a & ADDED W8-9	
10-15-09	ADDED REFERENCE TO MASH & ADDED SIGN W24-1	
4-17-08	REVISED SIGN DESIGNATIONS	
11-18-04	REVISED NOTES	
10-9-03	REVISED NOTE 1	
11-16-01	REVISED NOTE 7	
9-28-00	REVISED NOTE	
11-18-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-03-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS HWY. SIGN & TO NOTE 7	
10-12-95	ADDED R55-1	
6-8-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	6-8-95
2-2-95	REVISED PER PART VI, MUTCD SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

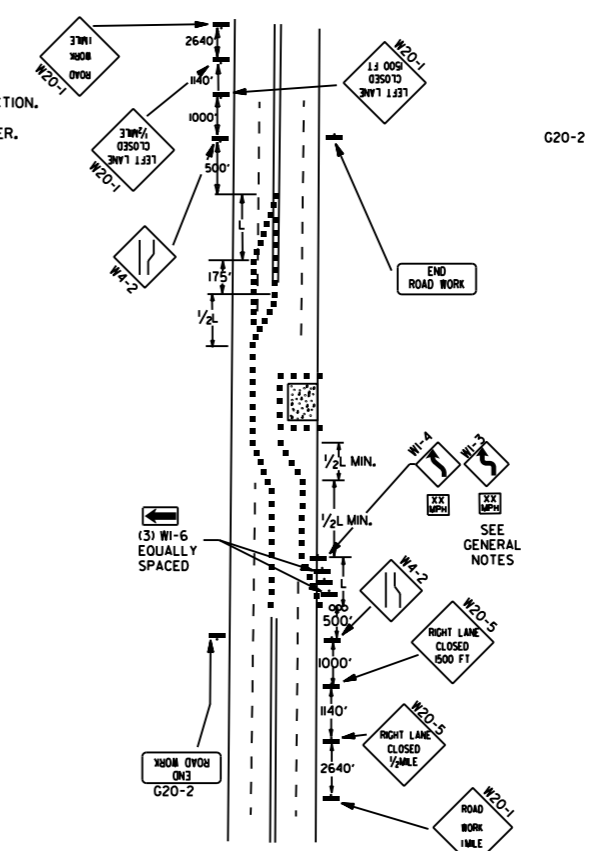
ARKANSAS STATE HIGHWAY COMMISSION  
STANDARD TRAFFIC CONTROLS  
FOR HIGHWAY CONSTRUCTION  
STANDARD DRAWING TC-1



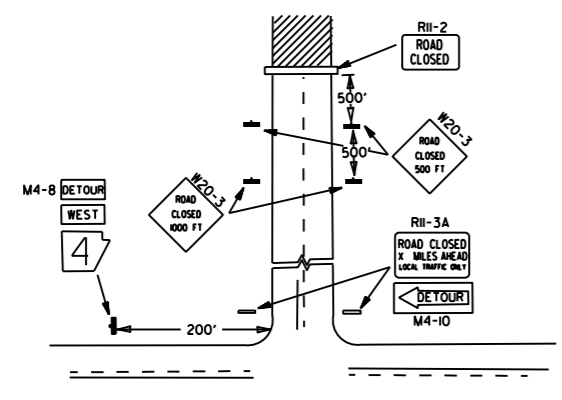
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.



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

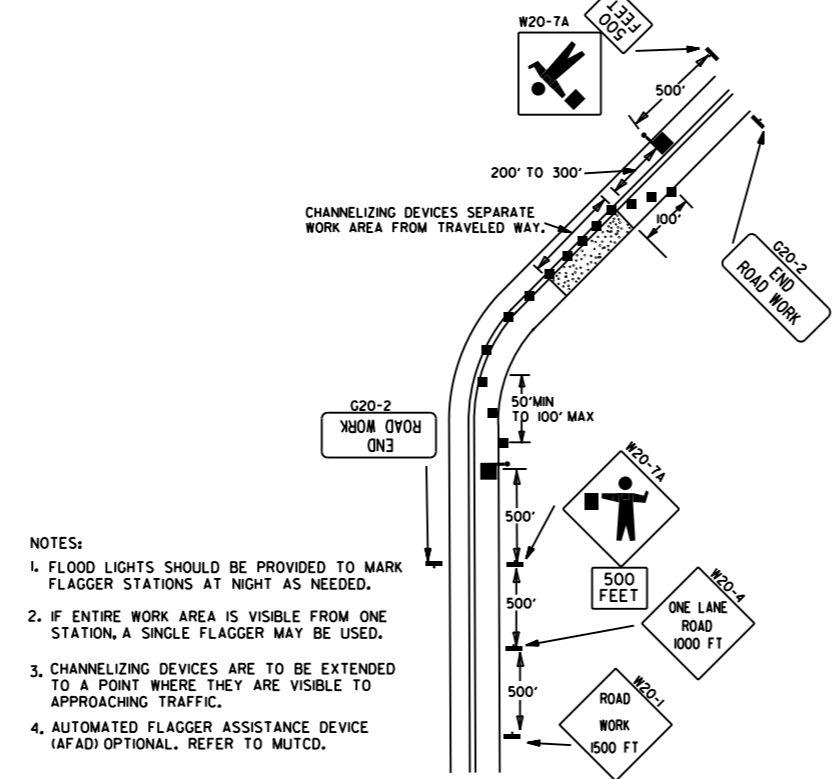


(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



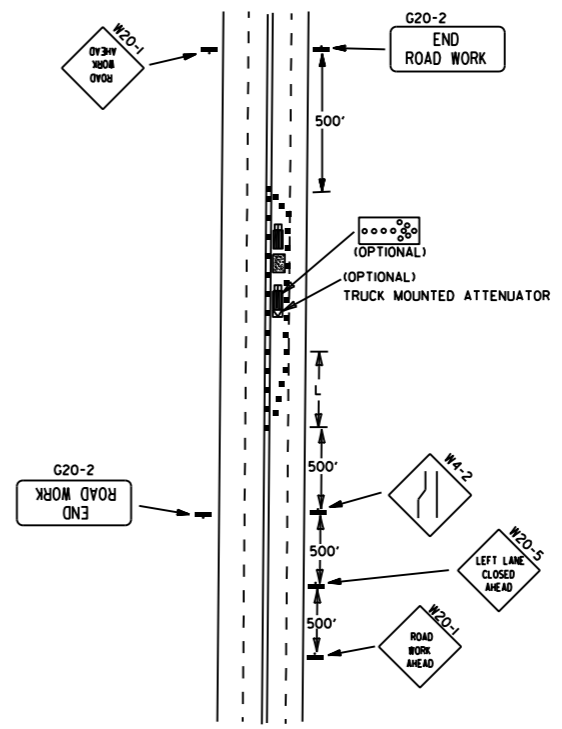
NOTES:  
 1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.  
 2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.

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

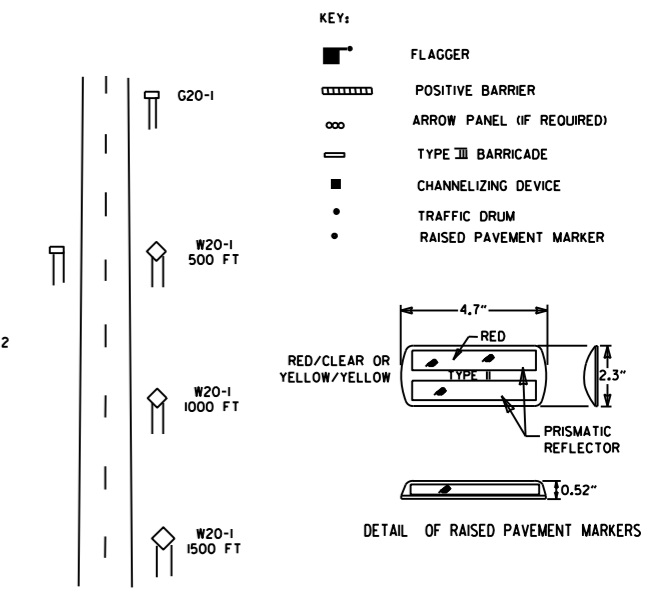


NOTES:  
 1. FLOOD LIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.  
 2. IF ENTIRE WORK AREA IS VISIBLE FROM ONE STATION, A SINGLE FLAGGER MAY BE USED.  
 3. CHANNELIZING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.  
 4. AUTOMATED FLAGGER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



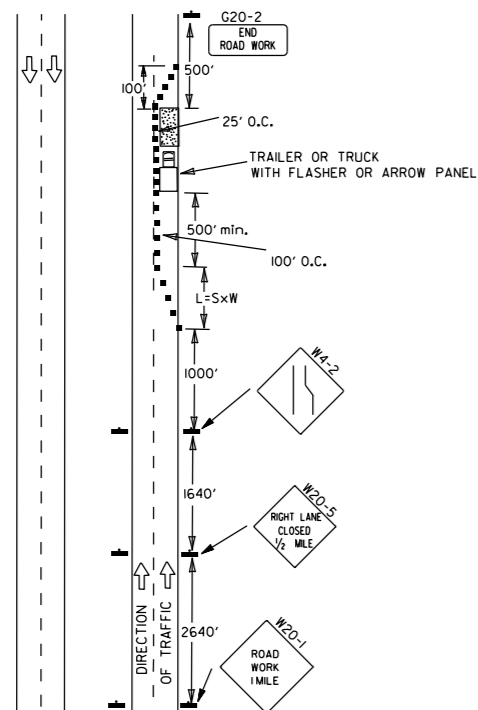
(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.



TYPICAL ADVANCE WARNING SIGN PLACEMENT  
 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:
- THE MAINTENANCE DIVISION SHALL CONDUCT A BALL BANK STUDY TO DETERMINE THE ADVISORY SPEED LIMIT PRIOR TO OPENING TO TRAFFIC. THE ADVISORY SPEED WILL BE POSTED ON W1-3 OR W1-4 CURVE WARNING SIGNS. USE W1-4 WHEN SPEED IS GREATER THAN 30MPH AND W1-3 WHEN 30MPH OR LESS.
  - WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1(45)MPH 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.
  - WHEN THE EXISTING SPEED LIMIT IS 65MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 55MPH, THE R2-1(65) SHALL BE OMITTED. ADDITIONAL R2-1(55)MPH 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.
  - 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.
  - WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
  - PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
  - TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
  - DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE ARDOT QUALIFIED PRODUCTS LIST.
  - ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).

DATE	REVISION	FILED
05-20-21	REVISED NOTE 7	
11-07-19	REVISED NOTE 1, ADDED NOTE 9	
9-2-15	REVISED NOTE 2, ADDED NOTE 8, REVISED DRAWING (A) & REPLACED R2-5A WITH W3-5	
9-12-13	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON W1-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	



(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

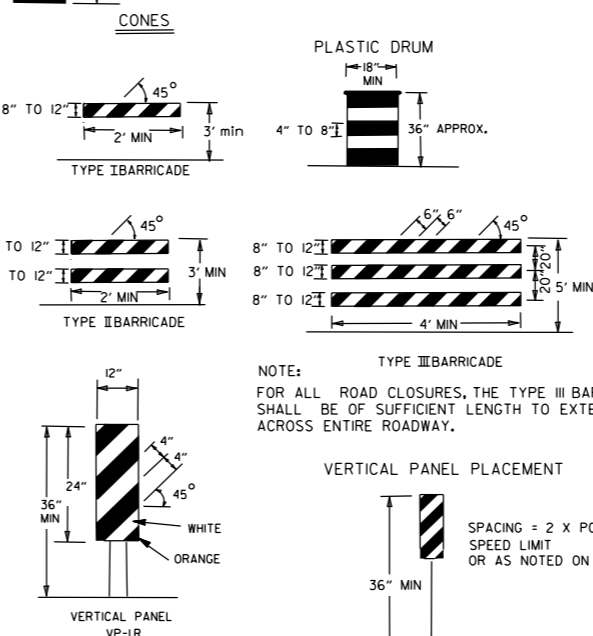
GENERAL NOTES:

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-(55) SHALL BE OMITTED AND THE W3-5 SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1(45MPH) SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/4 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-(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-(65) SHALL BE OMITTED. ADDITIONAL R2-1(55MPH) SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1/4 MILE INTERVALS. AT THE END OF THE WORK AREA A R2-(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 SHOULD 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(1/4 MILE) SIGNS ARE NOT REQUIRED IN ADVANCE OF LANE CLOSURES THAT BEGIN INSIDE THE PROJECT LIMITS.
8. FLAGGERS SHALL USE STOP/SLOW PADDLES FOR CONTROLLING TRAFFIC THROUGH WORK ZONES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
9. ALL PLASTIC DRUMS AND CONES SHALL MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
10. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY AFFIXING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER. WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT BEHIND A POSITIVE BARRIER, THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS, EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
11. ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).

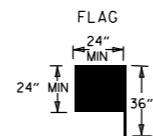
(C) TYPICAL APPLICATION - CONSTRUCTION OPERATIONS OF INTERMEDIATE TO LONG TERM DURATION ON A 4-LANE DIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.

CHANNELIZING DEVICES

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



FLAG SHALL BE OF GOOD GRADE RED MATERIAL



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

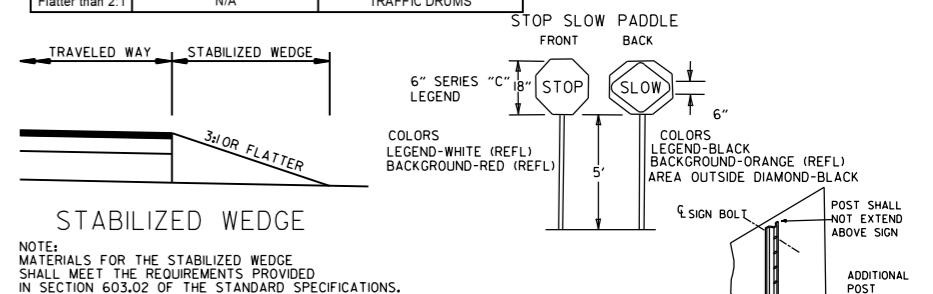
TRAFFIC CONTROL DEVICES

VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL	
		≤ 45 MPH	> 45 MPH
≤ 1"	CENTERLINE	W8-11	W8-11
> 1" ≤ 3"	CENTERLINE	W8-11 AND CENTERLINE LANE STRIPING	W8-11 AND CENTERLINE LANE STRIPING
> 3"	CENTERLINE	STANDARD LANE CLOSURE <sup>(6)</sup>	STANDARD LANE CLOSURE <sup>(6)</sup>
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9 AND TRAFFIC DRUMS <sup>(1)</sup>	W8-9 AND TRAFFIC DRUMS <sup>(1)</sup>
> 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(1)</sup>	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(1)</sup>
> 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(1)</sup>	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(2)</sup>
> 18"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(1)</sup>	A STABILIZED WEDGE, W8-17, EDGE LINE STRIPING AND TRAFFIC DRUMS <sup>(3)</sup>
> 24"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER <sup>(4)</sup> & EDGE LINES	PRECAST CONCRETE BARRIER <sup>(4)</sup> & EDGE LINES

INTERSTATE		
VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL
≤ 3"	CENTERLINE	W8-11 AND LANE STRIPING
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(2)</sup>
> 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS <sup>(2)</sup>
> 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER & EDGE LINES

INTERSTATE AND NON-INTERSTATE		
FORESLOPE	HEIGHT	TRAFFIC CONTROL
1:1	> 2 FT	PRECAST CONCRETE BARRIER
2:1	≤ 5 FT	TRAFFIC DRUMS
2:1	> 5 FT	PRECAST CONCRETE BARRIER
Flatter than 2:1	N/A	TRAFFIC DRUMS

- GENERAL NOTES:
1. WHEN THE SHOULDER AREA IS USED AS PART OF THE TRAVELED LANE AND THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, THEN VERTICAL PANELS SHALL BE USED.
  2. WHEN THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, A STABILIZED WEDGE SHALL BE USED.
  3. PRECAST CONCRETE BARRIER WALL CAN BE USED IN LIEU OF A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS, IF AND WHERE DIRECTED BY THE ENGINEER.
  4. A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS CAN BE USED IN LIEU OF PRECAST CONCRETE BARRIER WALL, IF AND WHERE DIRECTED BY THE ENGINEER.
  5. W21-5, W21-5a, AND/OR W21-5b SIGNS SHALL BE USED WHERE THE ROADWAY IS UNOBSTRUCTED IF AND WHERE DIRECTED BY THE ENGINEER. TIME LIMITATIONS MUST CONFORM TO SECTION 603 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).

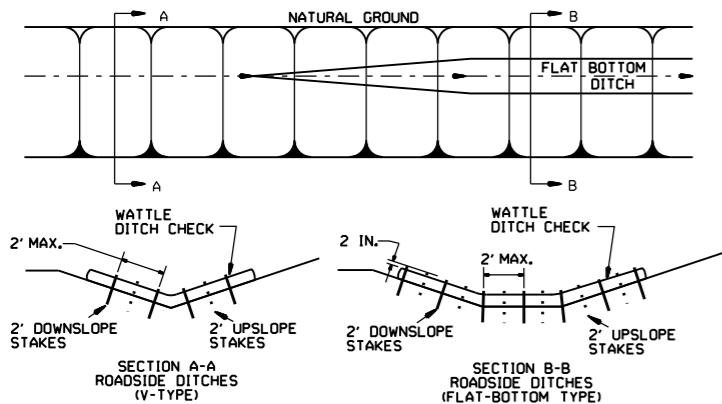


NOTE: MATERIALS FOR THE STABILIZED WEDGE SHALL MEET THE REQUIREMENTS PROVIDED IN SECTION 603.02 OF THE STANDARD SPECIFICATIONS.

DATE	REVISION	FILED
08-12-21	REVISED TRAFFIC CONTROL DEVICES AND NOTES	
05-20-21	REVISED NOTE 10	
2-27-20	REVISED TRAFFIC CONTROL DEVICES DETAILS	
11-07-19	REVISED NOTE 9, ADDED NOTE II	
7-25-19	REVISED TRAFFIC CONTROL DEVICES DETAILS	
9-2-15	REVISED NOTE 2 & REPLACED R2-5A WITH W3-5	
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1 & REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

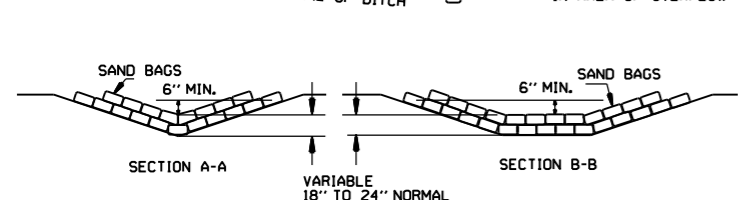
**GENERAL NOTES**

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

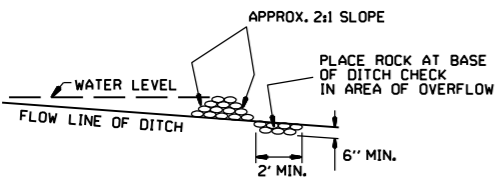


**WATTLE DITCH CHECK (E-1)**

NUMBER OF SAND BAGS AND ARRANGEMENT VARIABLE WITH ON-SITE CONDITIONS. PLACE SAND BAGS AT BASE OF DITCH CHECK IN AREA OF OVERFLOW.

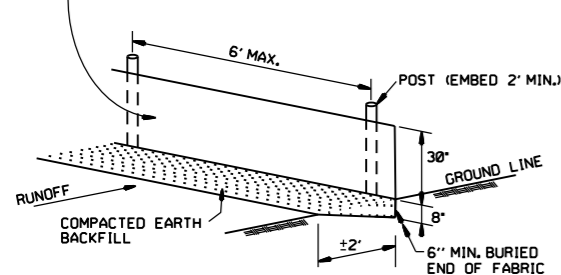


**SAND BAG DITCH CHECK (E-5)**

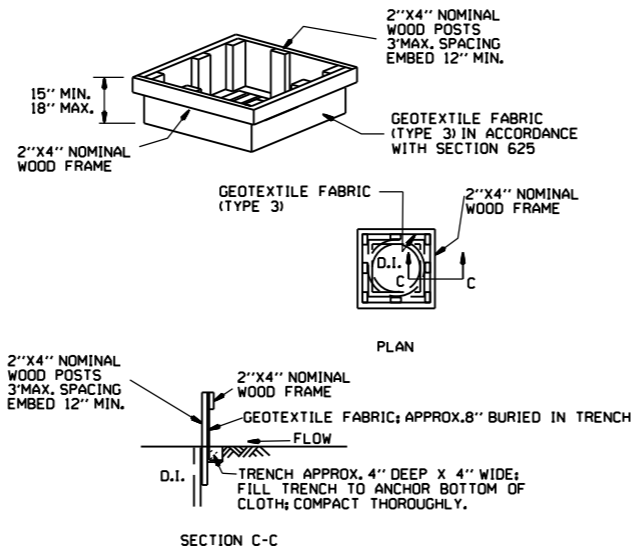


**ROCK DITCH CHECK (E-6)**

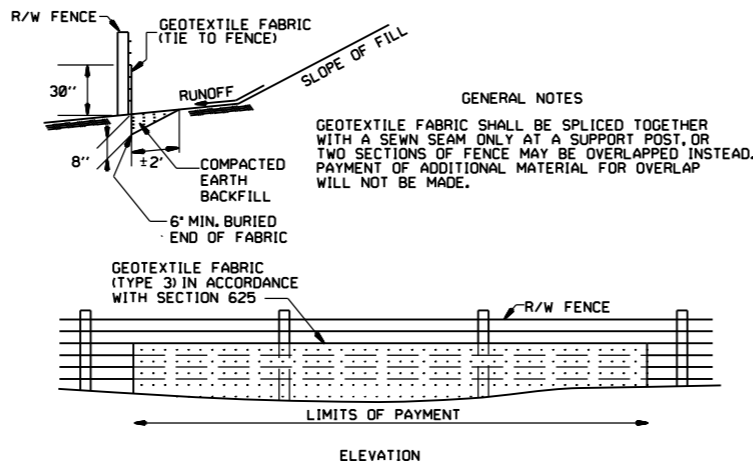
**GENERAL NOTES**  
 GEOTEXTILE FABRIC (TYPE 4) IN ACCORDANCE WITH SECTION 625  
 GEOTEXTILE FABRIC SHALL BE SPLICED TOGETHER WITH A SEWN SEAM ONLY AT A SUPPORT POST OR TWO SECTIONS OF FENCE MAY BE OVERLAPPED INSTEAD. PAYMENT OF ADDITIONAL MATERIAL FOR OVERLAP WILL NOT BE MADE.



**SILT FENCE (E-11)**

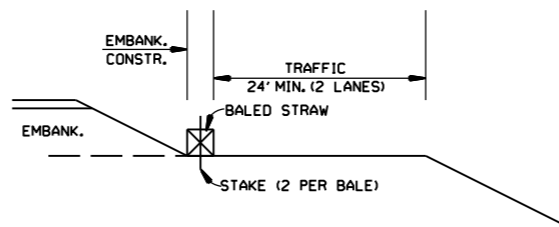


**DROP INLET SILT FENCE (E-7)**

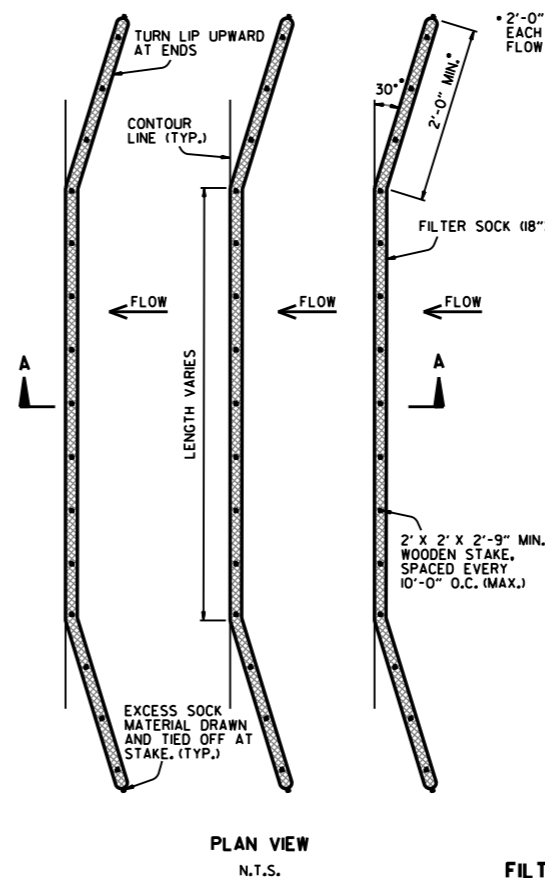


**SILT FENCE ON R/W FENCE (E-4)**

**GENERAL NOTES**  
 1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 30 INCHES IN LENGTH.  
 2. NO GAPS SHALL BE LEFT BETWEEN BALES.  
 3. BALED STRAW FILTER BARRIERS COMPLETED AND ACCEPTED WILL BE MEASURED BY THE BALE IN PLACE AS AUTHORIZED BY THE ENGINEER AND WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER BALE FOR BALED STRAW DITCH CHECKS.

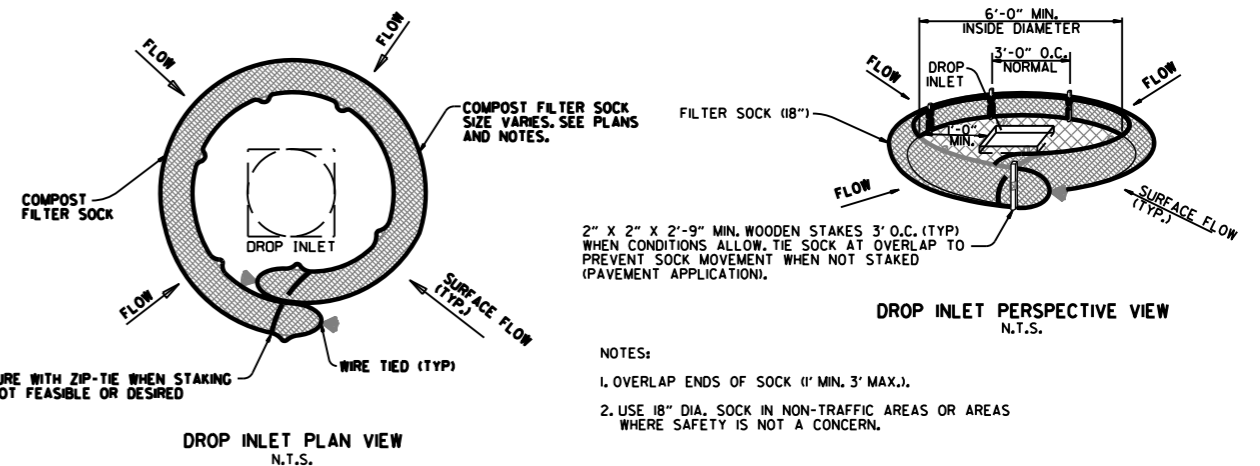


**BALED STRAW FILTER BARRIER (E-2)**



**FILTER SOCK ALONG SLOPE (E-3)**

**NOTES:**  
 1. FILTER SOCKS CAN BE PLACED AT THE TOP, ON THE FACE, AND AT THE TOE OF SLOPES AS SEDIMENT-TRAPPING DEVICES FOR SHEET FLOW RUNOFF.  
 2. FILTER SOCKS ARE TYPICALLY SUPPLIED AND INSTALLED WITH 18 INCH DIAMETERS. DIAMETER TOLERANCE IS 2 INCHES, AS FILTER SOCKS TEND TO FLATTEN OUT WHEN PLACED.  
 3. STEEL POSTS MAY BE USED AND SHALL BE ROLLED FROM HIGH CARBON STEEL AND HAVE A MINIMUM OF 1.25 LB./FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH-GRADE WEATHER RESISTANT BROWN OR BLACK STEEL PAINT. STEEL POSTS SHALL BE EQUIPPED WITH ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR STEEL POSTS, BUT PRICE WILL BE CONSIDERED SUBSIDIARY TO "FILTER SOCK (18")."  
 4. FILTER SOCKS MAY BE UP TO 250 FEET LONG. WHEN USED ON LONG SLOPES, FILTER SOCKS MAY BE JOINTED OR STAGGERED AS SHOWN IN DETAILS.  
 5. INSPECT FILTER SOCKS AFTER EACH RUNOFF EVENT. REMOVE AND REPLACE IF SIGNS OF UNDERCUTTING OR DOWNSTREAM RILLS ARE OBSERVED.



**COMPOST FILTER SOCK DROP INLET PROTECTION (E-13)**

**NOTES:**  
 1. OVERLAP ENDS OF SOCK (1' MIN. 3' MAX.).  
 2. USE 18" DIA. SOCK IN NON-TRAFFIC AREAS OR AREAS WHERE SAFETY IS NOT A CONCERN.

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

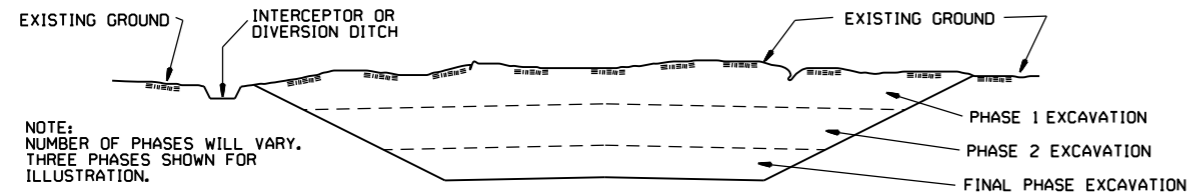
ARKANSAS STATE HIGHWAY COMMISSION  
 TEMPORARY EROSION CONTROL DEVICES  
 STANDARD DRAWING TEC-1

## CLEARING AND GRUBBING

### CONSTRUCTION SEQUENCE

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

## EXCAVATION



NOTE:  
NUMBER OF PHASES WILL VARY.  
THREE PHASES SHOWN FOR  
ILLUSTRATION.

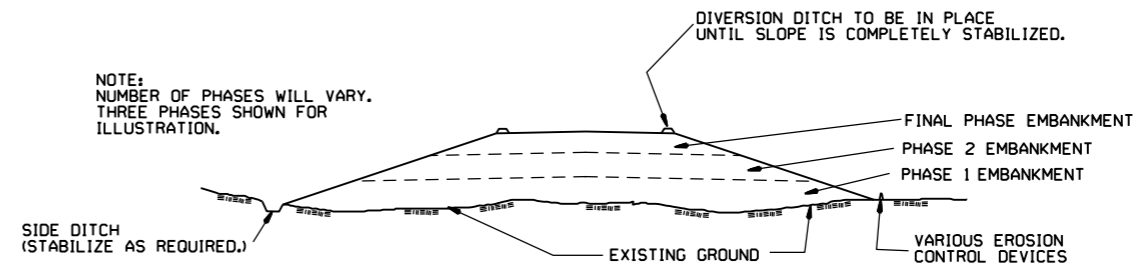
### GENERAL NOTE

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

### CONSTRUCTION SEQUENCE

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

## EMBANKMENT



NOTE:  
NUMBER OF PHASES WILL VARY.  
THREE PHASES SHOWN FOR  
ILLUSTRATION.

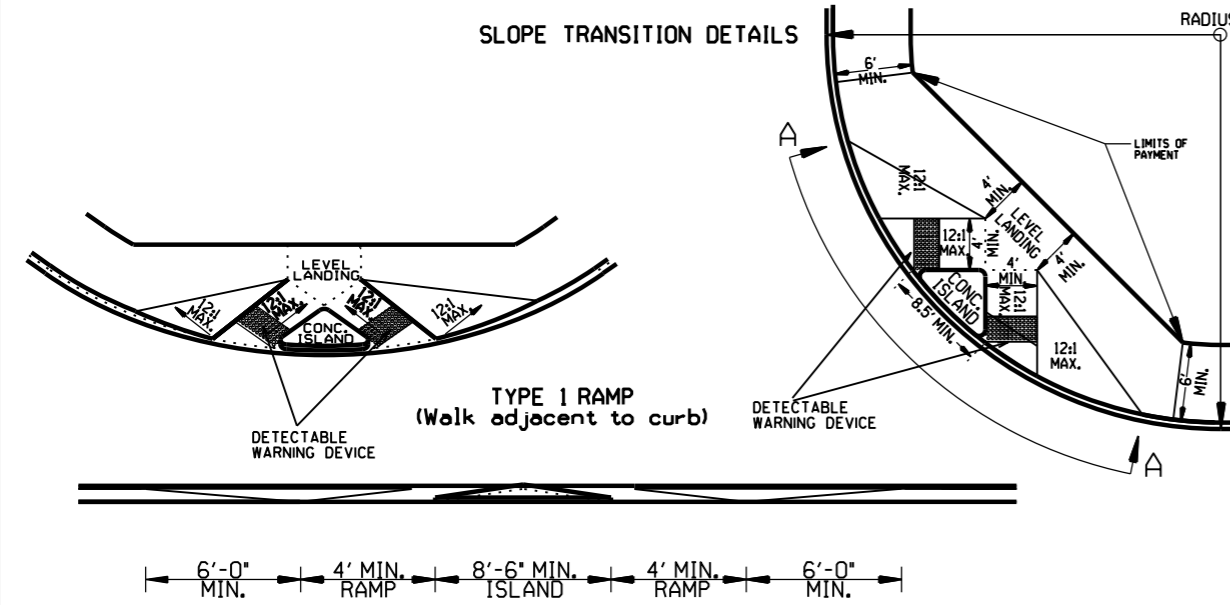
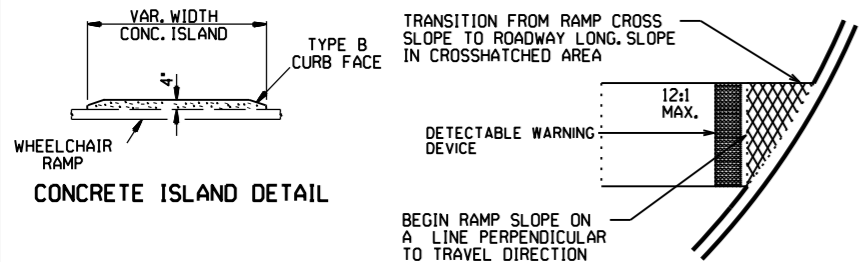
### GENERAL NOTE

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

### CONSTRUCTION SEQUENCE

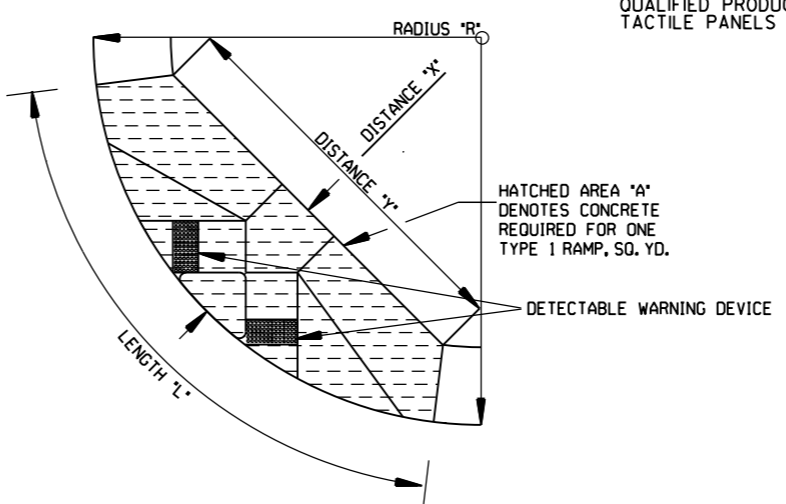
1. CONSTRUCT DIVERSION DITCHES, DITCH CHECKS, SEDIMENT BASINS, SILT FENCES, OR OTHER EROSION CONTROL DEVICES AS SPECIFIED.
2. PLACE PHASE 1 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING. PROVIDE DIVERSION DITCHES AND SLOPE DRAINS IF EMBANKMENT CONSTRUCTION IS TO BE TEMPORARILY ABANDONED FOR A PERIOD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

			ARKANSAS STATE HIGHWAY COMMISSION
			TEMPORARY EROSION CONTROL DEVICES
11-03-94	CORRECTED SPELLING		
6-2-94	Drawn & Issued		6-2-94
DATE	REVISION		FILMED
			STANDARD DRAWING TEC-3



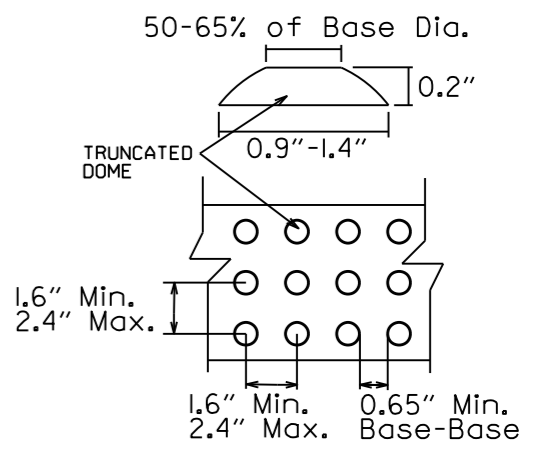
**TYPE 1 RAMP DIMENSIONS AND QUANTITIES**

RADIUS 'R'	DISTANCE 'X'	DISTANCE 'Y'	LENGTH 'L'	RAMP AREA 'A'
FEET	FEET	FEET	FEET	SQ. YD.
15	11.67	18.82	32.18	26.21
20	11.52	22.28	35.46	30.07
25	11.43	26.60	38.77	33.80
30	11.37	30.26	40.93	36.90
35	11.33	33.51	43.11	39.77
40	11.30	36.45	45.26	42.45
45	11.27	39.16	47.34	44.97
50	11.25	41.69	49.36	47.35
55	11.24	44.07	51.31	49.63
60	11.22	46.33	53.21	51.80



**GENERAL NOTES FOR DETECTABLE WARNING DEVICES**

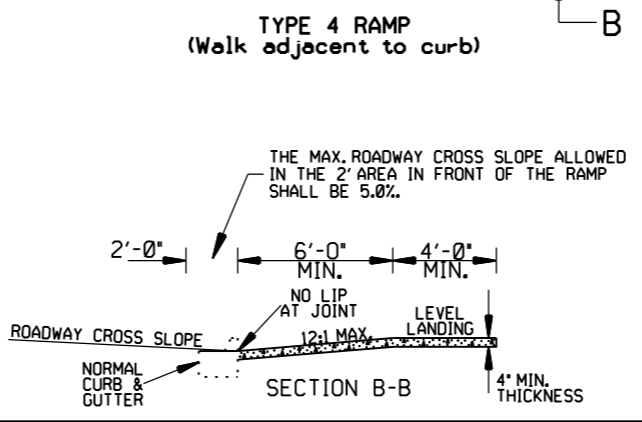
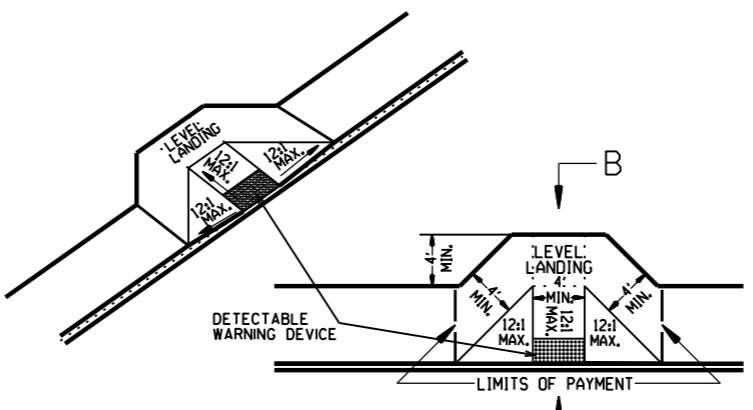
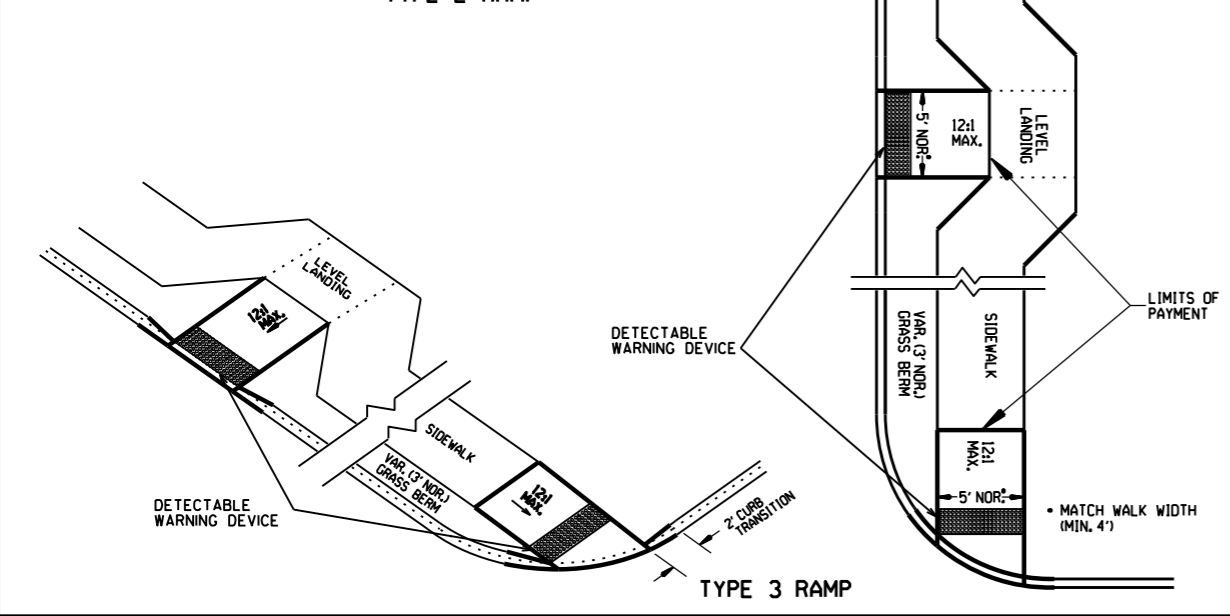
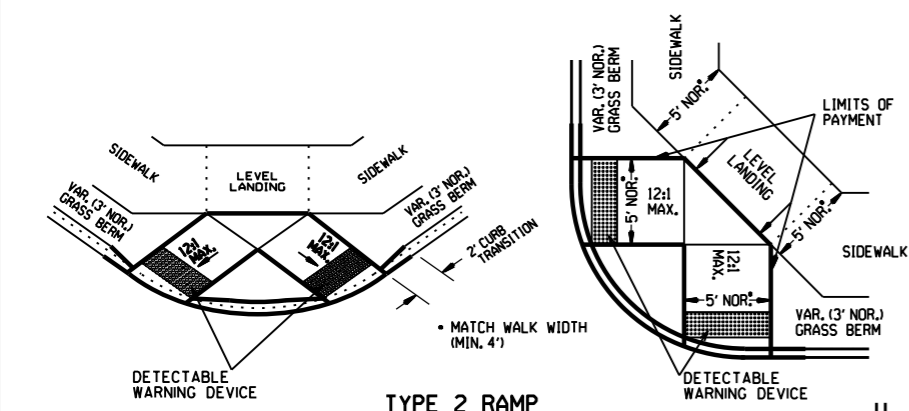
THE DETECTABLE WARNING DEVICE SHALL BE LOCATED SO THAT THE NEAREST EDGE OF THE DEVICE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB. TRUNCATED DOMES IN THE DETECTABLE WARNING SURFACE SHALL MEET THE REQUIREMENTS OF THE GEOMETRIC CONFIGURATION SHOWN. DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES. DETECTABLE WARNING DEVICE SHALL BE 24 INCHES IN THE DIRECTION OF TRAVEL AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE. DETECTABLE WARNING DEVICE SHALL BE ON THE ADOPT QUALIFIED PRODUCTS LIST FOR CAST-IN-PLACE TACTILE PANELS (ADA DETECTABLE WARNING).



**DETECTABLE WARNING DEVICE DETAIL**



**NOTE:** THE CROSS SLOPE OF THE RAMPS, LEVEL LANDINGS, AND SIDEWALKS SHALL NOT EXCEED 2.0% UNLESS REQUIRED TO MATCH STREET LONGITUDINAL GRADE.



**GENERAL NOTES:**

IN NEW CONSTRUCTION, UNLESS OTHERWISE INDICATED ON THE PLANS, WHEELCHAIR RAMPS ARE TO BE PROVIDED AT ALL CORNERS OF CURBED STREET INTERSECTIONS AND MID-BLOCK CROSSWALK LOCATIONS. IN ALTERATIONS WHEELCHAIR RAMPS ARE TO BE PROVIDED AT CURBED STREET INTERSECTIONS WITH PEDESTRIAN TRAFFIC AND MID-BLOCK CROSSWALK LOCATIONS. THE LENGTH OF THE RAMP SHALL BE SUCH THAT THE SLOPE DOES NOT EXCEED 12:1. THE SURFACE TEXTURE OF THE RAMP SHALL CONFORM TO A CLASS 6 FINISH ACCORDING TO SECTION 802.19. THE NORMAL GUTTER GRADE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP. ALL PAYMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION. THE MINIMUM THICKNESS OF THE RAMP, WALK, & LANDING SHALL BE 4". THE MINIMUM WIDTH OF THE RAMPS SHALL BE THE WALK WIDTH OR 36", WHICHEVER IS GREATER. RAMPS SHALL BE MODIFIED AS NECESSARY TO INSURE THAT THEY ARE PARALLEL TO A LINE DRAWN FROM THE CENTER OF ONE RAMP TO THE CENTER OF THE RAMP ON THE OPPOSITE SIDE OF THE INTERSECTION. THE DIMENSIONS AND QUANTITIES SHOWN ON THIS DRAWING ARE FOR A 90° INTERSECTION ONLY. DIMENSIONS AND QUANTITIES FOR SKEWED INTERSECTIONS WILL VARY, AND ARE TO BE DETERMINED BY THE ENGINEER.

**RAMP SELECTION CRITERIA**

CHOICE	TYPE	DESCRIPTION
FIRST CHOICE	TYPE 1	CORNER LOCATIONS WITH THE WALK ADJACENT TO THE CURB (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 2	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE INSUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 3	CORNER LOCATIONS WITH THE WALK OFFSET FROM THE CURB A DISTANCE SUFFICIENT TO ALLOW THE REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS).
SECOND CHOICE	TYPE 4	TANGENT LOCATIONS (BOTH NEW CONSTRUCTION AND ALTERATIONS).
	TYPE 5	TANGENT LOCATIONS (ALTERATIONS ONLY).
THIRD CHOICE	TYPE 6	CORNER LOCATIONS (ALTERATIONS ONLY), THIS RAMP MAY BE USED ONLY IF THE TYPE 5 RAMPS CANNOT BE PLACED AT THE ENDS OF THE RADIUS.
FOURTH CHOICE		IF SITE CONSTRAINTS PREVENT THE CONSTRUCTION OF ANY OF THE TYPES LISTED, THEN AND ONLY THEN CAN THE 12:1 MAX. SLOPE ON THE RAMP BE EXCEEDED TO PROVIDE ACCESS TO THE STREET LEVEL (ALTERATIONS ONLY). THE SLOPE CAN BE STEEPENED TO A 10:1 MAX. FOR A MAX. LENGTH OF 5' OR A 8:1 MAX. FOR A MAX. LENGTH OF 2'. SLOPES STEEPER THAN 8:1 ARE NOT ALLOWED UNDER ANY CIRCUMSTANCES.

**NOTE:** IN ALTERATIONS, THE SELECTION OF THE TYPE OF WHEELCHAIR RAMP TO BE CONSTRUCTED SHALL BE BASED ON THE AMOUNT OF RIGHT-OF-WAY AVAILABLE, AND ON THE PRESENCE OF OTHER SITE CONSTRAINTS (UTILITIES, BUILDINGS, ETC.). THE TABLE ABOVE LISTS THE ORDER IN WHICH THE RAMPS ARE TO BE CONSIDERED. AN ALTERATION IS DEFINED AS A PROJECT THAT CHANGES OR AFFECTS THE USE OF A PEDESTRIAN PATHWAY (OVERLAYS, SIGNALIZATION PROJECTS, ETC.) BUT DOES NOT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY. ALL PROJECTS THAT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY WILL USUALLY BE CONSIDERED NEW CONSTRUCTION FOR THE PURPOSES OF THE CHART ABOVE.

DATE	REVISION	DATE FILM
11-10-05	REVISED TO NEW SIDEWALK POLICY	
10-9-03	REVISED GEN. NOTES & ADDED NOTE	
4-10-03	REV. DETECTABLE WARNING DEVICES	
8-22-02	ADD DETECTABLE WARNING DEVICES	
3-30-00	ADD SLOPE, TRANS. & REV. ISL. DIMS.	
11-8-98	REVISED NOTES	
8-12-98	REVISED TEXTURE	
7-02-98	REDRAWN & REISSUED	
10-18-96	CORRECTED DIMENSIONS	10-18-96
5-24-90	FROM 10:1 MAX. SLOPES	5-24-90
7-15-88	ADJUSTED MAX. SLOPE	652-7-15-88
7-14-88	INCLUD. "CONC. ISLD." IN PAY ITEM	-----
6-02-76	ISSUED-P.H.D.	299-7-28-76