DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	1	40
				(2)	HWY. 49 SIGNALS (HELENA-W. HELENA) (S)			

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

CONSTRUCTION PLANS FOR STATE HIGHWAY

HWY. 49 SIGNALS (HELENA-W. HELENA) (S)

PHILLIPS COUNTY

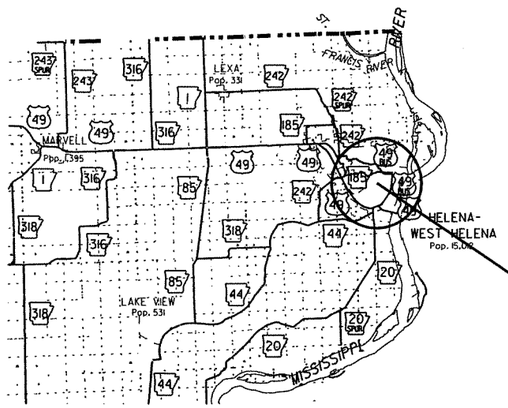
ROUTE 49 SECTIONS 10 & 11

ROUTE 49B SECTION 10B

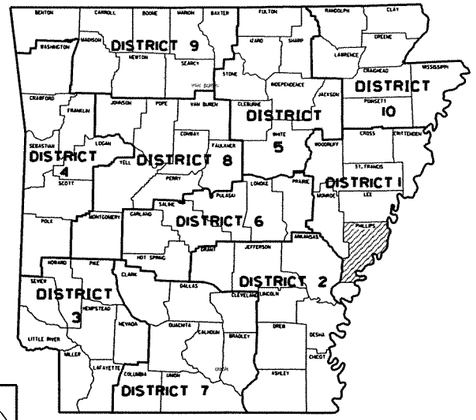
FED. AID PROJ. STP-9200(4) & STP-9200(5)

JOB 110555

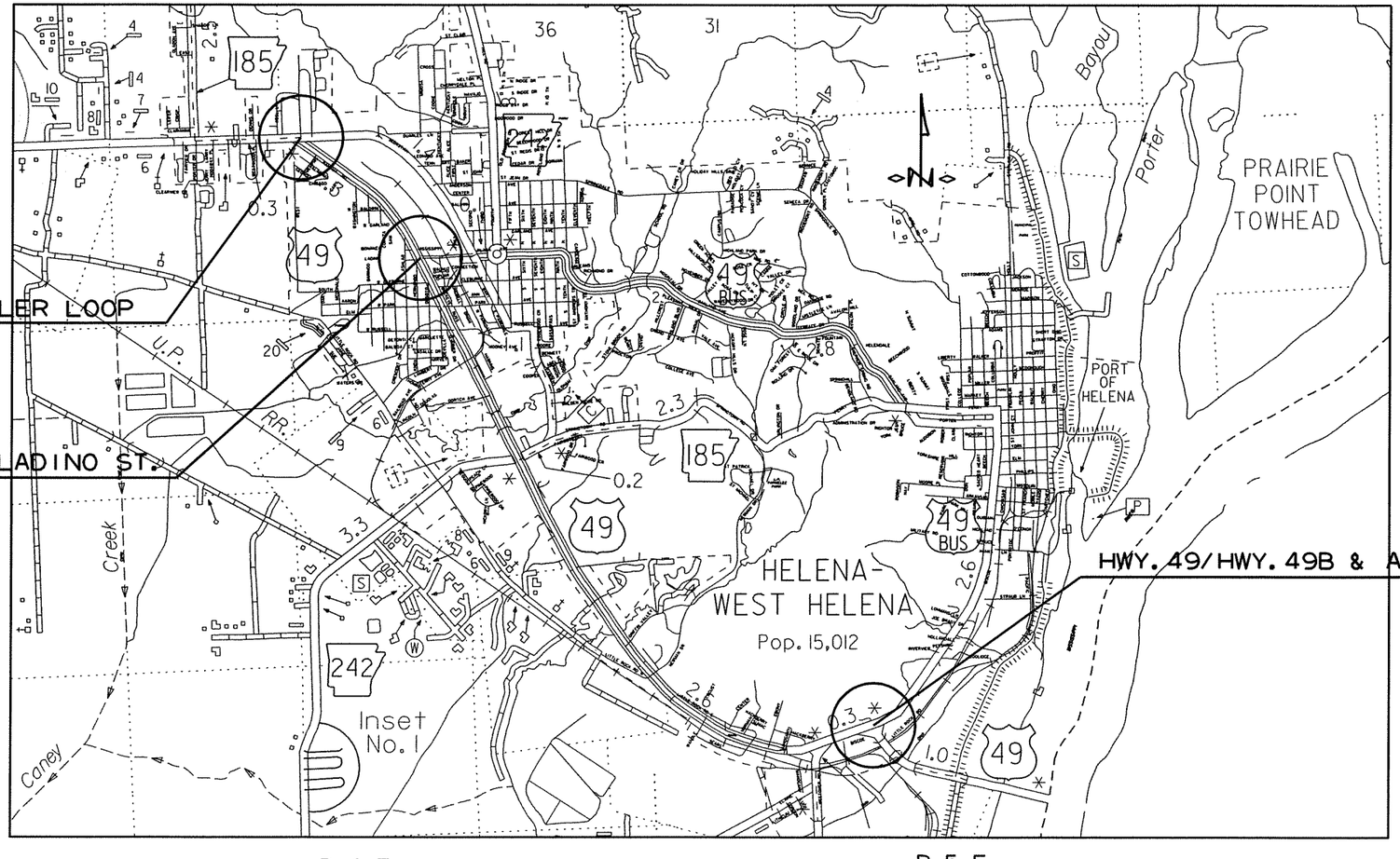
NOT TO SCALE



VICINITY MAP



ARK. HWY. DIST. NO. 1



MID-POINT OF 110536 PROJECT
LAT. = N 34°30' 10.5"
LONG. = W 90°36' 17.1"

MID-POINT OF 110555 PROJECT
LAT. = N 39°48' 52.3"
LONG. = W 90°33' 37.7"

P.E. 110555
NON-PART.

APPROVED

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 3917
FRANK VOZEL

9/12/12

DEPUTY DIRECTOR
AND CHIEF ENGINEER

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	2	40

(2) INDEX OF SHEETS AND GOV. SPECIFICATIONS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-11-12

INDEX OF SHEETS

SHEET NO.	TITLE	DRAWING NO.	DATE
1	TITLE SHEET		
2	INDEX OF SHEETS AND GOVERNING SPECIFICATIONS		
3	GENERAL NOTES		
4	INTERSECTION IMPROVEMENT DETAILS		
5-7	MAINTENANCE OF TRAFFIC DETAILS		
8-10	PERMANENT PAVEMENT MARKING DETAILS		
11	SUMMARY OF QUANTITIES AND REVISIONS		
12-15	SURVEY CONTROL DETAILS		
16	TRAFFIC SIGNAL NOTES		
17-28	SIGNALIZATION PLAN SHEETS		
29-33	SIGNALIZATION DETAILS		
34	CURBING DETAILS	CG-1	11-29-07
35	DETAILS OF DRIVEWAYS & ISLANDS	DR-1	11-29-07
36	PAVEMENT MARKING DETAILS	PM-1	11-17-10
37	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-1	12-15-11
38	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-2	3-11-10
39	STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION	TC-3	10-15-09
40	WHEELCHAIR RAMPS NEW CONSTRUCTION AND ALTERATIONS	WR-1	11-10-05

GOVERNING SPECIFICATIONS

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

NUMBER	TITLE
ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FOR FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT-EQUAL OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT-SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT-EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT-EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT-POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT-WAGE RATE DETERMINATION
100-2	MANUAL FOR ASSESSING SAFETY HARDWARE (MASH)
102-1	BIDDING REQUIREMENTS AND CONDITIONS
105-1	CONSTRUCTION CONTROL MARKINGS
105-2	EQUIPMENT AND MATERIAL STORAGE ON BRIDGE STRUCTURES
105-3	CONTROL OF WORK
107-1	WORKER VISIBILITY
108-1	LIQUIDATED DAMAGES
404-1	PRODUCTION VERIFICATION OF ASPHALT CONCRETE HOT MIX
404-2	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
409-1	MINERAL AGGREGATES
410-3	DENSITY TESTING FOR ACHM LEVELING COURSES AND BOND BREAKERS
603-1	MAINTENANCE OF TRAFFIC
604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
604-2	INSPECTION OF TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
711-1	CONCRETE PULL BOX
714-1	DESIGN AND MATERIAL REQUIREMENTS FOR TRAFFIC SIGNAL MAST ARMS AND POLES
715-1	DESIGN AND MATERIAL REQUIREMENTS FOR TRAFFIC SIGNAL PEDESTAL POLES
718-2	REFLECTORIZED PAINT PAVEMENT MARKINGS
719-2	THERMOPLASTIC PAVEMENT MARKING MATERIAL
JOB 110555	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 110555	CABINET DRAWER ASSEMBLY
JOB 110555	COORDINATION OF WORK
JOB 110555	DOCUMENTATION OF PAYMENTS MADE TO DISADVANTAGED BUSINESS ENTERPRISES
JOB 110555	EDGE CARD VIDEO PROCESSOR
JOB 110555	ELECTRICAL CONDUCTORS FOR LUMINAIRES
JOB 110555	ELECTRICAL CONDUCTORS-IN-CONDUIT
JOB 110555	INTERNET BIDDING
JOB 110555	LED COUNTDOWN PEDESTRIAN SIGNAL HEAD
JOB 110555	LED TRAFFIC SIGNAL HEAD
JOB 110555	LUMINAIRE ASSEMBLY (CUTOFF TYPE)
JOB 110555	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT
JOB 110555	SEQUENCE OF CONSTRUCTION
JOB 110555	SERVICE POINT ASSEMBLY
JOB 110555	STREET NAME SIGN (MAST ARM MOUNTED)
JOB 110555	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 110555	UTILITY ADJUSTMENTS
JOB 110555	VIDEO DETECTOR (COLOR)
JOB 110555	WARM MIX ASPHALT

DATE: 09-11-12 FILE NAME: t110555-job.dgn

LOCATION: HWY. 49 SIGNALS (HELENA - W. HELENA)(S)
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	3	40

(2) GENERAL NOTES

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

9-6-12

GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.

2. ALL PIPE LINES, POWER, TELEPHONE AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.

3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U. S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.

5. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.

6. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.

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

8. UNLESS OTHERWISE INDICATED, ALL DIMENSIONS SHOWN ARE TO THE FACE OF CURB.

9. THIS PROJECT IS COVERED UNDER A NATIONWIDE 14 SECTION 404 PERMIT. REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2003, FOR PERMIT REQUIREMENTS.

DATE: 08-29-12 FILE NAME: t110555-job.dgn

LOCATION: HWY. 49 SIGNALS (HELENA - W. HELENA)(S)
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	4	40

(2) INTERSECTION IMPROVEMENT DETAIL

CONCRETE ITEMS

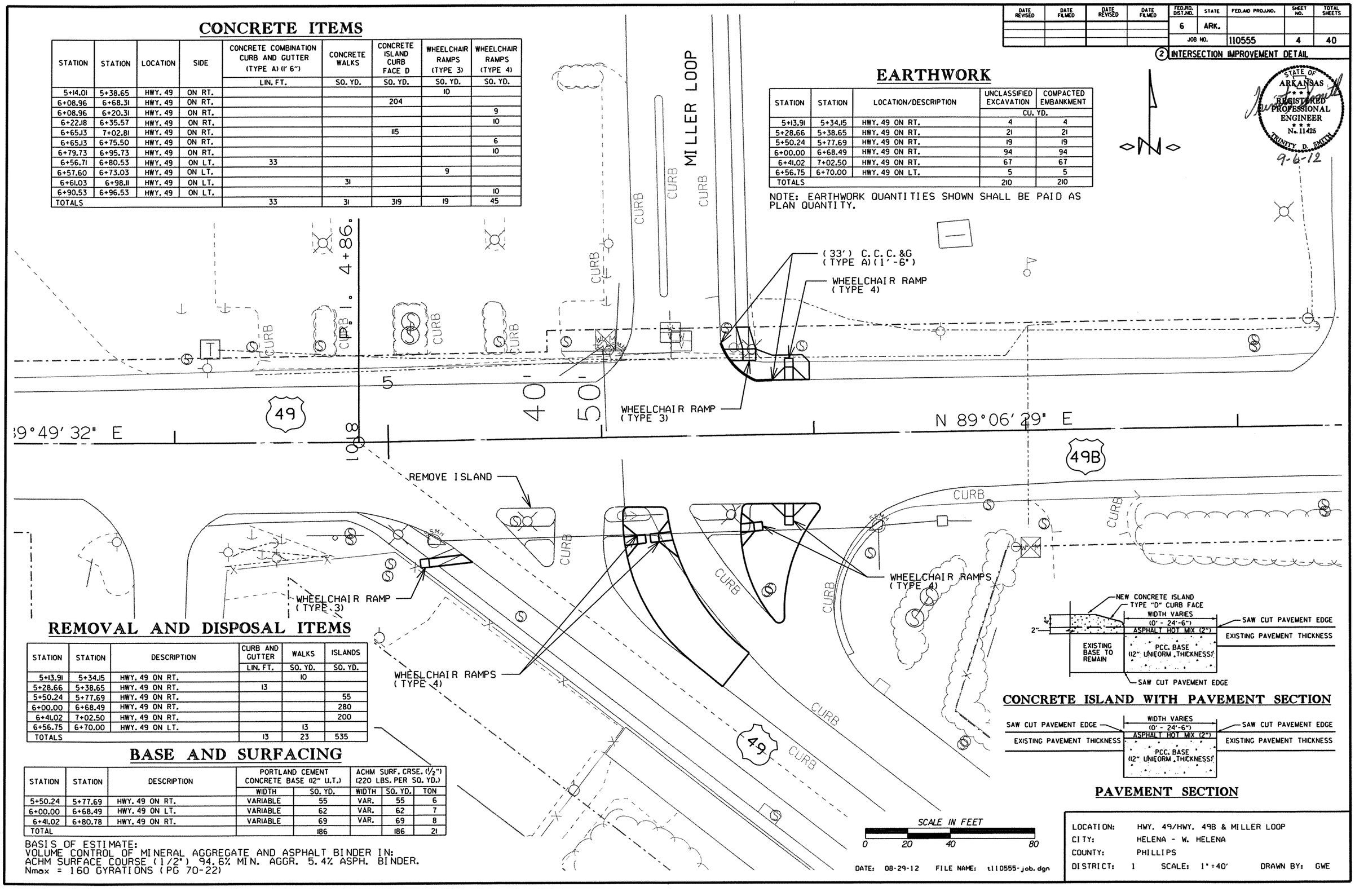
STATION	STATION	LOCATION	SIDE	CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1' 6")	CONCRETE WALKS	CONCRETE ISLAND CURB FACE D	WHEELCHAIR RAMPS (TYPE 3)	WHEELCHAIR RAMPS (TYPE 4)
				LIN. FT.	SQ. YD.	SQ. YD.	SQ. YD.	SQ. YD.
5+14.01	5+38.65	HWY. 49	ON RT.				10	
6+08.96	6+68.31	HWY. 49	ON RT.			204		
6+08.96	6+20.31	HWY. 49	ON RT.					9
6+22.18	6+35.57	HWY. 49	ON RT.					10
6+65.13	7+02.81	HWY. 49	ON RT.			115		
6+65.13	6+75.50	HWY. 49	ON RT.					6
6+79.73	6+95.73	HWY. 49	ON RT.					10
6+56.71	6+80.53	HWY. 49	ON LT.	33				
6+57.60	6+73.03	HWY. 49	ON LT.				9	
6+61.03	6+98.11	HWY. 49	ON LT.		31			
6+90.53	6+96.53	HWY. 49	ON LT.					10
TOTALS				33	31	319	19	45

EARTHWORK

STATION	STATION	LOCATION/DESCRIPTION	UNCLASSIFIED EXCAVATION	COMPACTED EMBANKMENT
			CU. YD.	
5+13.91	5+34.15	HWY. 49 ON RT.	4	4
5+28.66	5+38.65	HWY. 49 ON RT.	21	21
5+50.24	5+77.69	HWY. 49 ON RT.	19	19
6+00.00	6+68.49	HWY. 49 ON RT.	94	94
6+41.02	7+02.50	HWY. 49 ON RT.	67	67
6+56.75	6+70.00	HWY. 49 ON LT.	5	5
TOTALS			210	210

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12



REMOVAL AND DISPOSAL ITEMS

STATION	STATION	DESCRIPTION	CURB AND GUTTER	WALKS	ISLANDS
			LIN. FT.	SQ. YD.	SQ. YD.
5+13.91	5+34.15	HWY. 49 ON RT.		10	
5+28.66	5+38.65	HWY. 49 ON RT.	13		
5+50.24	5+77.69	HWY. 49 ON RT.			55
6+00.00	6+68.49	HWY. 49 ON RT.			280
6+41.02	7+02.50	HWY. 49 ON RT.			200
6+56.75	6+70.00	HWY. 49 ON LT.		13	
TOTALS			13	23	535

BASE AND SURFACING

STATION	STATION	DESCRIPTION	PORTLAND CEMENT CONCRETE BASE (12" U.T.)		ACHM SURF. CRSE. (1/2") (220 LBS. PER SQ. YD.)		
			WIDTH	SQ. YD.	WIDTH	SQ. YD.	TON
5+50.24	5+77.69	HWY. 49 ON RT.	VARIABLE	55	VAR.	55	6
6+00.00	6+68.49	HWY. 49 ON LT.	VARIABLE	62	VAR.	62	7
6+41.02	6+80.78	HWY. 49 ON RT.	VARIABLE	69	VAR.	69	8
TOTAL				186		186	21

BASIS OF ESTIMATE:
VOLUME CONTROL OF MINERAL AGGREGATE AND ASPHALT BINDER IN:
ACHM SURFACE COURSE (1/2") 94.6% MIN. AGGR. 5.4% ASPH. BINDER.
Nmax = 160 GYRATIONS (PG 70-22)

CONCRETE ISLAND WITH PAVEMENT SECTION

PAVEMENT SECTION

SCALE IN FEET
0 20 40 80

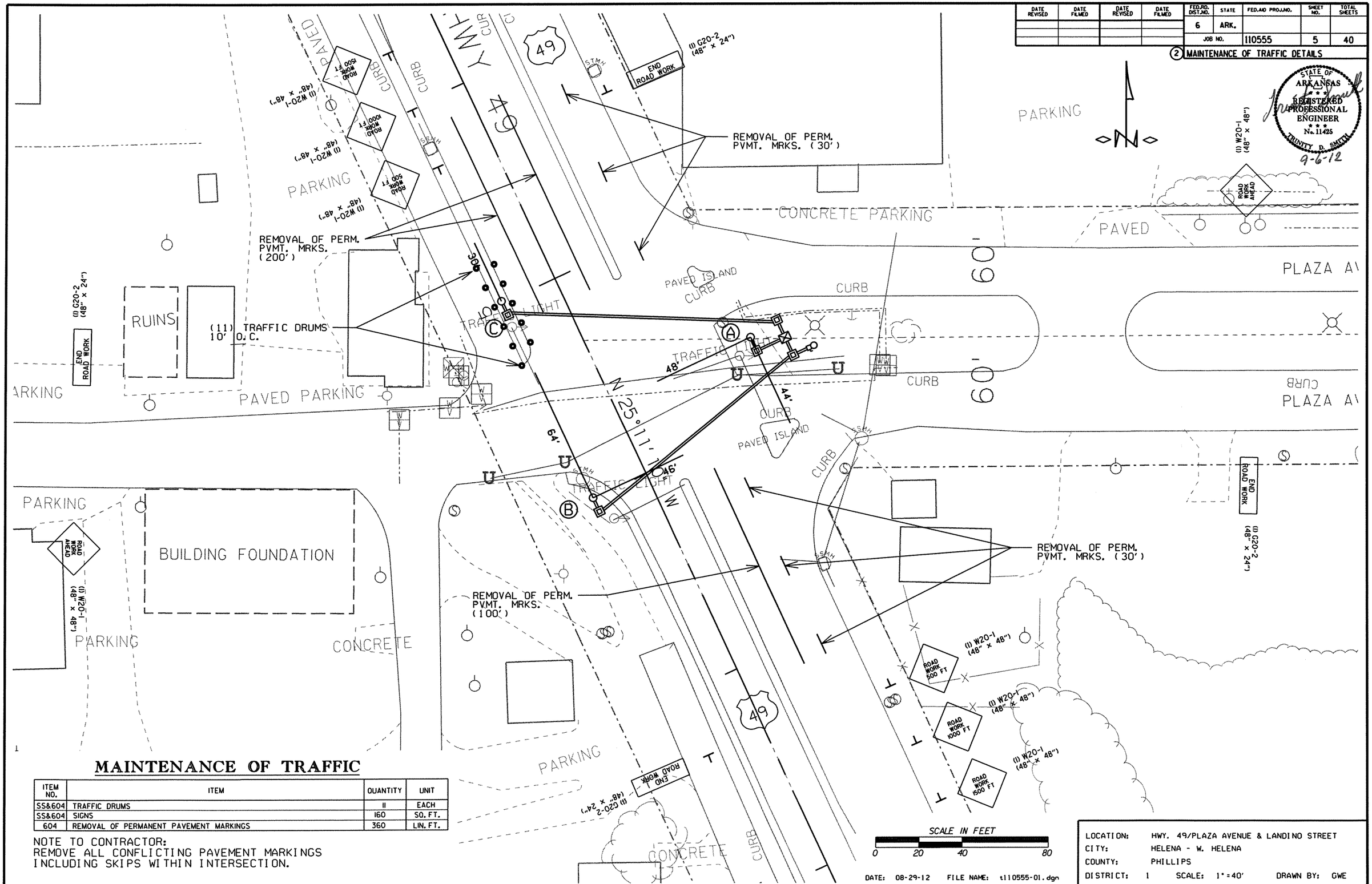
DATE: 08-29-12 FILE NAME: t110555-job.dgn

LOCATION: HWY. 49/HWY. 49B & MILLER LOOP
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: 1"=40' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	5	40

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12



MAINTENANCE OF TRAFFIC

ITEM NO.	ITEM	QUANTITY	UNIT
SS&604	TRAFFIC DRUMS	11	EACH
SS&604	SIGNS	160	SQ. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS	360	LIN. FT.

NOTE TO CONTRACTOR:
REMOVE ALL CONFLICTING PAVEMENT MARKINGS INCLUDING SKIPS WITHIN INTERSECTION.

LOCATION: HWY. 49/PLAZA AVENUE & LANDINO STREET
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: 1"=40' DRAWN BY: GWE

DATE: 08-29-12 FILE NAME: t110555-01.dgn

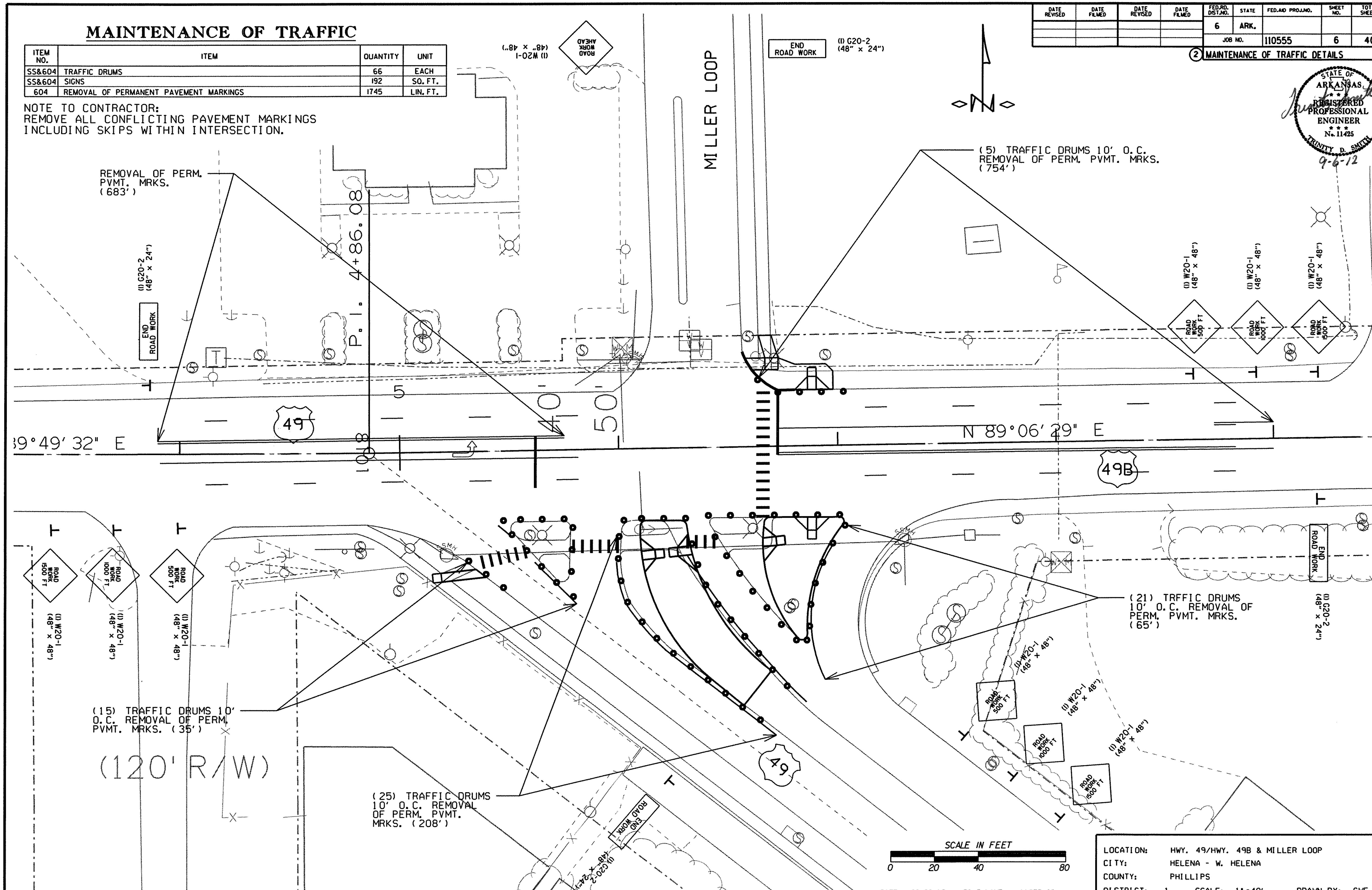
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	6	40

(2) MAINTENANCE OF TRAFFIC DETAILS

MAINTENANCE OF TRAFFIC

ITEM NO.	ITEM	QUANTITY	UNIT
SS&604	TRAFFIC DRUMS	66	EACH
SS&604	SIGNS	192	SQ. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS	1745	LIN. FT.

NOTE TO CONTRACTOR:
REMOVE ALL CONFLICTING PAVEMENT MARKINGS INCLUDING SKIPS WITHIN INTERSECTION.



STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
9-6-12

DATE: 08-29-12 FILE NAME: t11055-02.dgn

LOCATION:	HWY. 49/HWY. 49B & MILLER LOOP		
CITY:	HELENA - W. HELENA		
COUNTY:	PHILLIPS		
DISTRICT:	1	SCALE: 1"=40'	DRAWN BY: GWE

MAINTENANCE OF TRAFFIC

ITEM NO.	ITEM	QUANTITY	UNIT
SS&604	TRAFFIC DRUMS	17	EACH
SS&604	SIGNS	96	SQ. FT.
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS	550	LIN. FT.

NOTE TO CONTRACTOR:
REMOVE ALL CONFLICTING PAVEMENT MARKINGS
INCLUDING SKIPS WITHIN INTERSECTION.

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	7	40

(2) MAINTENANCE OF TRAFFIC DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

(9) TRAFFIC DRUMS 10' O.C.
REMOVAL OF PERM. PVMT. MRKS.
(280')

(8) TRAFFIC DRUMS 10' O.C.
REMOVAL OF PERM. PVMT.
MRKS. (270')

WELCOME CTR. DRWY.

PI 108+0.99

N 72°58' 07" E

HWY. 49

HWY. 49B

PAVED PARKING

ALL CURB

CURB

TRAFFIC

END ROAD WORK

ROAD WORK AHEAD

(1) W20-1 (48" x 48")

(1) G20-2 (48" x 24")

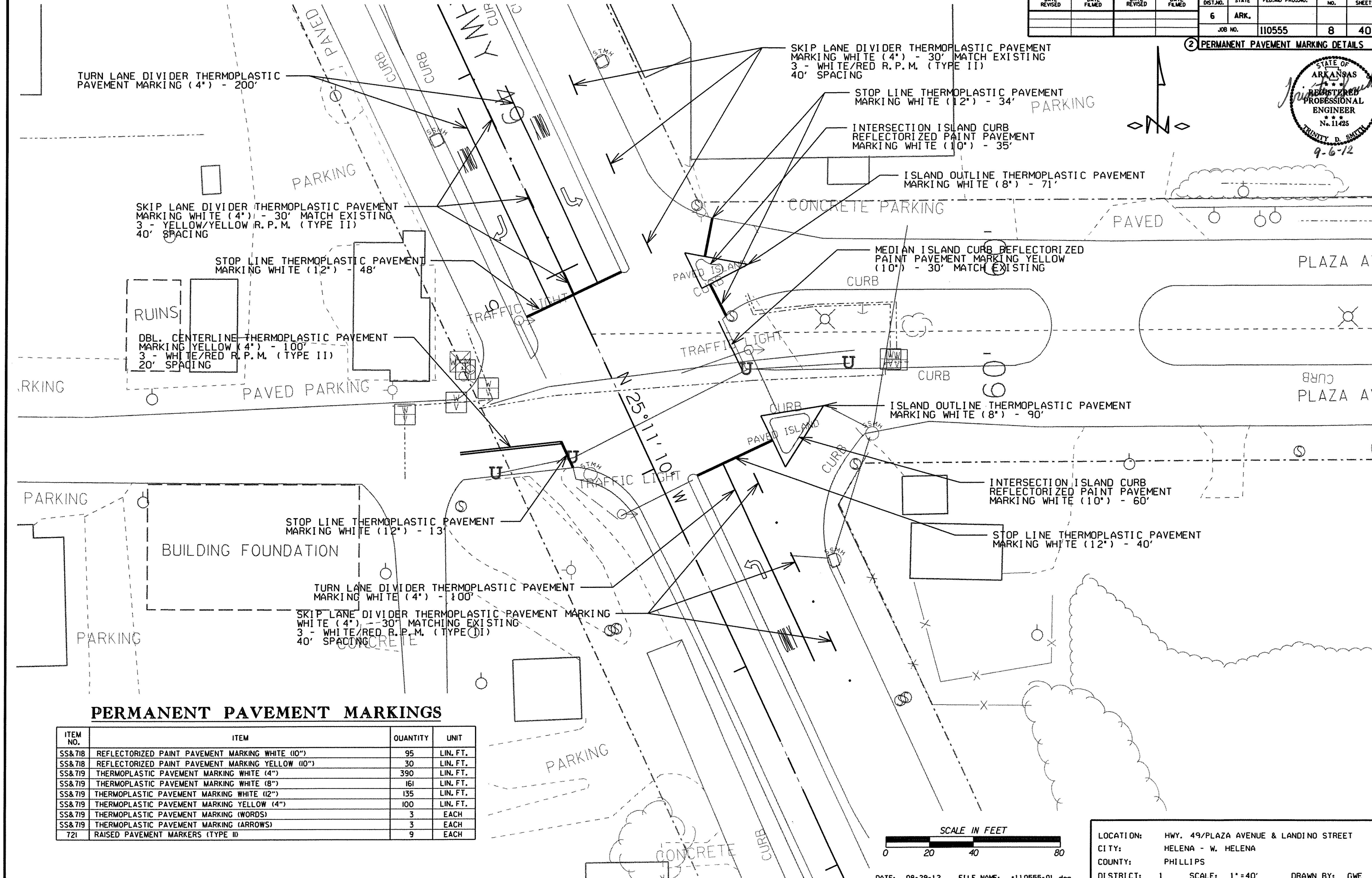
SCALE IN FEET
0 20 40 80

DATE: 08-29-12 FILE NAME: t110555-job.dgn

LOCATION: HWY. 49/HWY. 49B & AR WELCOME CENTER DRWY.
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: 1"=40' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	8	40

(2) PERMANENT PAVEMENT MARKING DETAILS



SKIP LANE DIVIDER THERMOPLASTIC PAVEMENT MARKING WHITE (4") - 30' MATCH EXISTING 3 - WHITE/RED R.P.M. (TYPE II) 40' SPACING
TURN LANE DIVIDER THERMOPLASTIC PAVEMENT MARKING (4") - 200'
STOP LINE THERMOPLASTIC PAVEMENT MARKING WHITE (12") - 34'
INTERSECTION ISLAND CURB REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10") - 35'
ISLAND OUTLINE THERMOPLASTIC PAVEMENT MARKING WHITE (8") - 71'
SKIP LANE DIVIDER THERMOPLASTIC PAVEMENT MARKING WHITE (4") - 30' MATCH EXISTING 3 - YELLOW/YELLOW R.P.M. (TYPE II) 40' SPACING
STOP LINE THERMOPLASTIC PAVEMENT MARKING WHITE (12") - 48'
MEDIAN ISLAND CURB REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (10") - 30' MATCH EXISTING
DBL. CENTERLINE THERMOPLASTIC PAVEMENT MARKING YELLOW (4") - 100' 3 - WHITE/RED R.P.M. (TYPE II) 20' SPACING
ISLAND OUTLINE THERMOPLASTIC PAVEMENT MARKING WHITE (8") - 90'
INTERSECTION ISLAND CURB REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10") - 60'
STOP LINE THERMOPLASTIC PAVEMENT MARKING WHITE (12") - 13'
STOP LINE THERMOPLASTIC PAVEMENT MARKING WHITE (12") - 40'
TURN LANE DIVIDER THERMOPLASTIC PAVEMENT MARKING WHITE (4") - 100'
SKIP LANE DIVIDER THERMOPLASTIC PAVEMENT MARKING WHITE (4") - 30' MATCHING EXISTING 3 - WHITE/RED R.P.M. (TYPE II) 40' SPACING
PARKING
PAVED PARKING
CONCRETE PARKING
PAVED
PLAZA AV
CURB
RUINS
BUILDING FOUNDATION
TRAFFIC LIGHT
PAVED ISLAND
CONCRETE
N 25°11'10" W
SCALE IN FEET
0 20 40 80

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

9-6-12

PERMANENT PAVEMENT MARKINGS

ITEM NO.	ITEM	QUANTITY	UNIT
SS&718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10")	95	LIN. FT.
SS&718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (10")	30	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")	390	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING WHITE (8")	161	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING WHITE (12")	135	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	100	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING (WORDS)	3	EACH
SS&719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)	3	EACH
721	RAISED PAVEMENT MARKERS (TYPE II)	9	EACH

DATE: 08-29-12 FILE NAME: t110555-01.dgn

LOCATION: HWY. 49/PLAZA AVENUE & LANDINO STREET
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: 1"=40' DRAWN BY: GWE

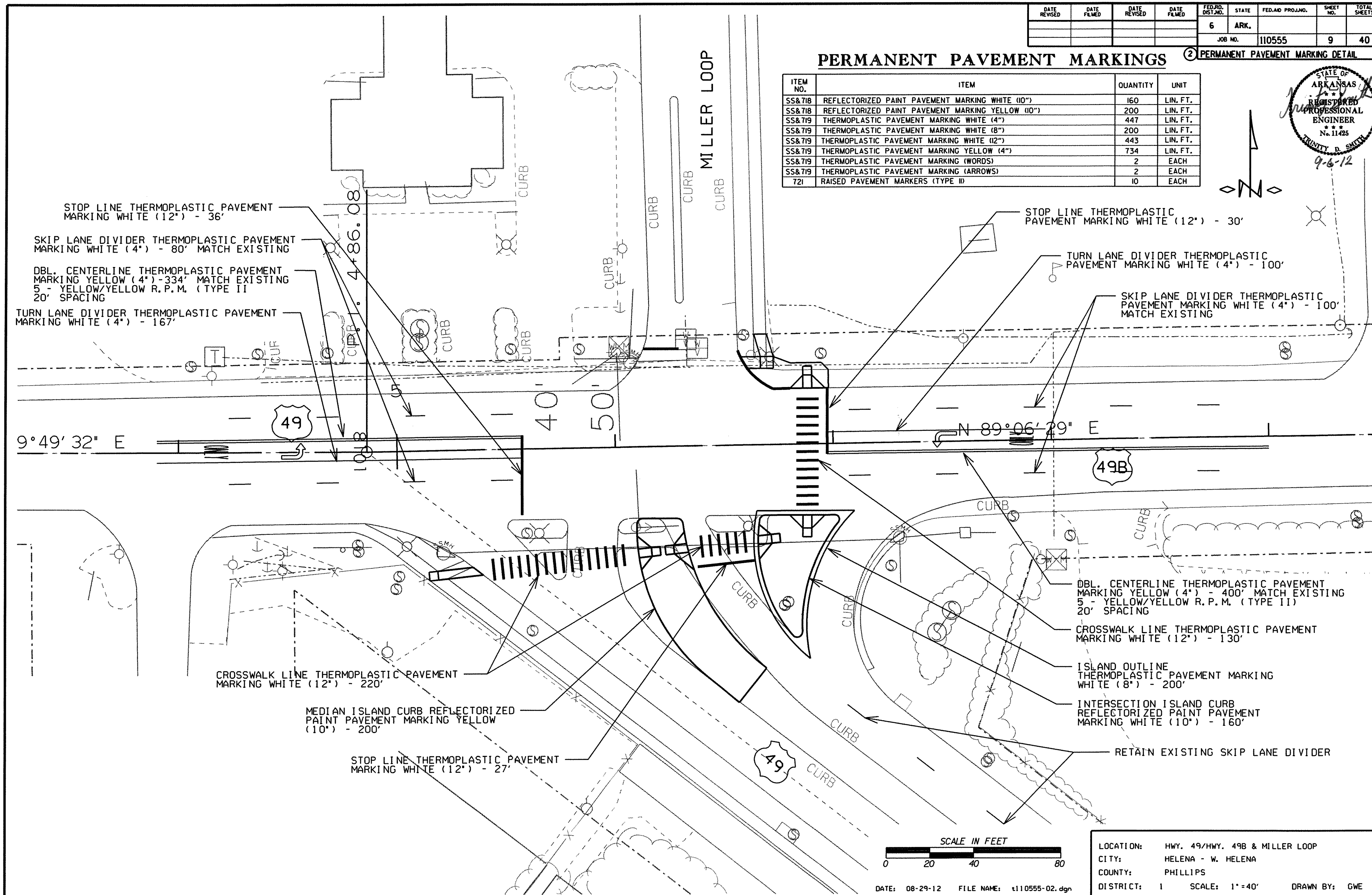
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	9	40

(2) PERMANENT PAVEMENT MARKING DETAIL

PERMANENT PAVEMENT MARKINGS

ITEM NO.	ITEM	QUANTITY	UNIT
SS&718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10")	160	LIN. FT.
SS&718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (10")	200	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")	447	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING WHITE (8")	200	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING WHITE (12")	443	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	734	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING (WORDS)	2	EACH
SS&719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)	2	EACH
721	RAISED PAVEMENT MARKERS (TYPE II)	10	EACH

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH
9-6-12



MILLER LOOP
CURB
STOP LINE THERMOPLASTIC PAVEMENT MARKING WHITE (12") - 36'
SKIP LANE DIVIDER THERMOPLASTIC PAVEMENT MARKING WHITE (4") - 80' MATCH EXISTING
DBL. CENTERLINE THERMOPLASTIC PAVEMENT MARKING YELLOW (4")-334' MATCH EXISTING 5 - YELLOW/YELLOW R.P.M. (TYPE II 20' SPACING
TURN LANE DIVIDER THERMOPLASTIC PAVEMENT MARKING WHITE (4") - 167'
4+86.08
40
50
49
9°49'32" E
N 89°06'29" E
49B
STOP LINE THERMOPLASTIC PAVEMENT MARKING WHITE (12") - 30'
TURN LANE DIVIDER THERMOPLASTIC PAVEMENT MARKING WHITE (4") - 100'
SKIP LANE DIVIDER THERMOPLASTIC PAVEMENT MARKING WHITE (4") - 100' MATCH EXISTING
DBL. CENTERLINE THERMOPLASTIC PAVEMENT MARKING YELLOW (4") - 400' MATCH EXISTING 5 - YELLOW/YELLOW R.P.M. (TYPE II) 20' SPACING
CROSSWALK LINE THERMOPLASTIC PAVEMENT MARKING WHITE (12") - 130'
ISLAND OUTLINE THERMOPLASTIC PAVEMENT MARKING WHITE (8") - 200'
INTERSECTION ISLAND CURB REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10") - 160'
RETAIN EXISTING SKIP LANE DIVIDER
CROSSWALK LINE THERMOPLASTIC PAVEMENT MARKING WHITE (12") - 220'
MEDIAN ISLAND CURB REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (10") - 200'
STOP LINE THERMOPLASTIC PAVEMENT MARKING WHITE (12") - 27'
SMH
SCALE IN FEET
0 20 40 80

DATE: 08-29-12 FILE NAME: t110555-02.dgn

LOCATION:	HWY. 49/HWY. 49B & MILLER LOOP
CITY:	HELENA - W. HELENA
COUNTY:	PHILLIPS
DISTRICT: 1	SCALE: 1"=40' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	10	40

(2) PERMANENT PAVEMENT MARKING DETAILS

PERMANENT PAVEMENT MARKINGS

ITEM NO.	ITEM	QUANTITY	UNIT
SS&719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")	120	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING WHITE (12")	47	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	400	LIN. FT.
721	RAISED PAVEMENT MARKERS (TYPE II)	10	EACH

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

STOP LINE THERMOPLASTIC PAVEMENT MARKING WHITE (12") - 20'

SKIP LANE DIVIDER THERMOPLASTIC PAVEMENT MARKING WHITE (4") - 60' MATCH EXISTING

SKIP LANE DIVIDER THERMOPLASTIC PAVEMENT MARKING WHITE (4") - 60' MATCH EXISTING

DBL. CENTERLINE THERMOPLASTIC PAVEMENT MARKING YELLOW (4") - 200' MATCH EXISTING
5 - YELLOW/YELLOW R.P.M. (TYPE II)
20' SPACING

DBL. CENTERLINE THERMOPLASTIC PAVEMENT MARKING YELLOW (4") - 200' MATCH EXISTING
5 - YELLOW/YELLOW R.P.M. (TYPE II)
20' SPACING

STOP LINE THERMOPLASTIC PAVEMENT MARKING WHITE (12") - 27'

WELCOME CTR. DRWY.

PI 108+10.99

PT 108+80.99

HWY. 49

HWY. 49B

N 72°58' 07" E

CURB

ALL CURB

PAVED PARKING

TRAFFIC

SCALE IN FEET
0 20 40 80

DATE: 08-29-12 FILE NAME: t110555-job.dgn

LOCATION:	HWY. 49/HWY. 49B & AR WELCOME CENTER DRWY.		
CITY:	HELENA - W. HELENA		
COUNTY:	PHILLIPS		
DISTRICT:	1	SCALE: 1"=40'	DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	11	40

(2) SUMMARY OF QUANTITIES AND REVISIONS

SUMMARY OF QUANTITIES

ITEM NO.	ITEM	HWY. 49 AT PLAZA AVE. & LADINO ST.	HWY. 49 AT HWY. 49B & MILLER LOOP	HWY. 49 AT HWY. 49B AR WELCOME CENTER DRWY.	TOTAL JOB QUANTITY	UNIT
202	REMOVAL AND DISPOSAL OF CURB AND GUTTER		13		13	LIN. FT.
202	REMOVAL AND DISPOSAL OF ISLANDS		535		535	SQ. YD.
202	REMOVAL AND DISPOSAL OF WALKS		23		23	SQ. YD.
210	UNCLASSIFIED EXCAVATION		210		210	CU. YD.
210	COMPACTED EMBANKMENT		210		210	CU. YD.
309	PORTLAND CEMENT CONCRETE BASE (12" UNIFORM THICKNESS)		186		186	SQ. YD.
SPSS&407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")		20		20	TON
SPSS&407	ASPHALT BINDER (PG 70-22) IN ACHM SURFACE COURSE (1/2")		1		1	TON
601	MOBILIZATION	0.34	0.33	0.33	1.00	LUMP SUM
SS&603	MAINTENANCE OF TRAFFIC	0.34	0.33	0.33	1.00	LUMP SUM
SS&604	SIGNS	160	192	96	448	SQ. FT.
SS&604	TRAFFIC DRUMS	11	66	17	94	EACH
604	REMOVAL OF PERMANENT PAVEMENT MARKINGS	360	1745	550	2655	LIN. FT.
632	CONCRETE ISLAND		319		319	SQ. YD.
633	CONCRETE WALKS		31		31	SQ. YD.
634	CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1' 6")		33		33	LIN. FT.
635	ROADWAY CONSTRUCTION CONTROL	0.34	0.33	0.33	1.00	LUMP SUM
641	WHEELCHAIR RAMPS (TYPE 3)		19		19	SQ. YD.
641	WHEELCHAIR RAMPS (TYPE 4)		45		45	SQ. YD.
+ SP&701	ACTUATED CONTROLLER TS 2-TYPE 2 (8 PHASES)	1	1	1	3	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	10	11	8	29	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	4	2	2	8	EACH
SP&707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED		6		6	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	552	1009	449	2010	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	331	232	230	793	LIN. FT.
708	TRAFFIC SIGNAL CABLE (12C/14 A.W.G.)	334		158	492	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	334	422	378	1134	LIN. FT.
709	GALVANIZED STEEL CONDUIT (1.25")	20	20		40	LIN. FT.
710	NON-METALLIC CONDUIT (1.25")	20	20		40	LIN. FT.
710	NON-METALLIC CONDUIT (2")	20	20		40	LIN. FT.
710	NON-METALLIC CONDUIT (3")	308	361	165	834	LIN. FT.
SS&711	CONCRETE PULL BOX (TYPE 1HD)		1		1	EACH
SS&711	CONCRETE PULL BOX (TYPE 2 HD)	5	2	4	11	EACH
SS&711	CONCRETE PULL BOX (TYPE 2)		4		4	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (14')		1		1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (30')	1			1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (36')			1	1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (40')		1		1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (46')		1		1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (48')		1		1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (50')			1	1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (48'-38')	1			1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (48'-64')	1			1	EACH
SS&715	TRAFFIC SIGNAL PEDESTAL POLE WITH FOUNDATION		1		1	EACH
SS&718	REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10")	95	160		255	LIN. FT.
SS&718	REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (10")	30	200		230	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")	390	447	120	957	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING WHITE (8")	161	200		361	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING WHITE (12")	135	443	47	625	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	100	734	400	1234	LIN. FT.
SS&719	THERMOPLASTIC PAVEMENT MARKING (WORDS)	3	2		5	EACH
SS&719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)	3	2		5	EACH
721	RAISED PAVEMENT MARKERS (TYPE II)	9	10	10	29	EACH
SP&733	VIDEO DETECTOR (CLR)	•7	6	6	19	EACH
SP&733	VIDEO EDGE CARD EXTENDER			1	1	EACH
SP&733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	•4	3	3	10	EACH
SP&733	VEHICLE DETECTOR RACK (16 CHANNEL)	1	1	1	3	EACH
733	VIDEO CABLE	947	1005	1106	3058	LIN. FT.
733	VIDEO MONITOR (CLR)	1	1	1	3	EACH
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES		205	208	413	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., EGC)	333	566	295	1194	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., EGC)		90	50	140	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.)	20	20		40	LIN. FT.
SP	LUMINAIRE ASSEMBLY		2	1	3	EACH
SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1	1		2	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.34	0.33	0.33	1.00	LUMP SUM
SP	18" STREET NAME SIGN	6	6	2	14	EACH

• QUANTITIES INCLUDE ONE SPARE VIDEO DETECTOR AND ONE SPARE VIDEO PROCESSOR.

+ ACTUATED CONTROLLER SHALL BE EQUIPPED WITH COMMUNICATIONS MODULE FOR POSSIBLE FUTURE USE.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

REVISION BOX

DATE	ITEM	SHEET NUMBER

DATE: 09-07-12 FILE NAME: t110555-job.dgn

LOCATION: HWY. 49 SIGNALS (HELENA - W. HELENA)(S)
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	12	40

(2) SURVEY CONTROL DETAILS

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

9-6-12

SURVEY CONTROL COORDINATES

Project Name: sl10536
Date: 8/16/2010
Coordinate System: ARKANSAS STATE PLANE -SOUTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
5	1983490.71	1732766.13	230.67	CTL	*5/8" REBAR W/2" CAP
10	1983190.06	1731784.89	213.20	CTL	*5/8" REBAR W/2" CAP
11	1983458.86	1732835.99	231.19	CTL	*5/8" REBAR W/2" CAP
12	1983739.81	1733536.70	226.42	CTL	*5/8" REBAR W/2" CAP
13	1982593.38	1733393.15	196.56	CTL	*5/8" REBAR W/2" CAP
100	1985745.92	1725515.97	217.42	GPS	*AHTD GPS 540003, RTK ELEV
101	1999257.75	1718657.44	253.59	GPS	*AHTD GPS 540004, RTK ELEV
901	1983467.20	1732558.79	231.73	BM	*
902	1983486.08	1733013.39	226.85	BM	*
903	1983112.85	1733007.33	222.32	BM	*

*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 XXXXX 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 sl10536gi.ctl
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS -0302-SOUTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 540003-530004
CONVERGENCE ANGLE: 00 46 51.24 RIGHT AT LT: 34-30-10.5 LG: 90-36-17.1
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

SURVEY CONTROL COORDINATES

Project Name: sl10555
Date: 8/7/2012
Coordinate System: ARKANSAS STATE PLANE - SOUTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.
Units: U.S. SURVEY FOOT

Point Name	Northing	Easting	Elev	Feature	Description
1	2002081.2573	1715422.1199	242.058	CTL	*5/8" REBAR W/2" CAP 49, 15' WEST DRIVEWAY BANK, 15.5' NORTH OF EDGE OF PAVEMENT HWY 49, 12' NORTHEAST OF CP
2	2002113.3291	1715655.3453	240.634	CTL	*5/8" REBAR W/2" CAP 49, 4' EAST OF EDGE OF PAVEMENT OF MILLER LOOP, 37' NORTH OF FIRE HYDRANT, 5' WEST OF SW
3	2002075.7170	1715850.6387	240.886	CTL	*5/8" REBAR W/2" CAP 49, 64' SOUTHEAST OF FF, 5' NORTH OF EDGE OF PAVEMENT HWY 49, 81' WEST OF POWER POLE
4	2001888.4550	1715642.2186	242.638	CTL	*5/8" REBAR W/2" CAP 49, 7' SOUTH EDGE OF PAVEMENT HWY 49, 9' NORTH OF SW, 37' SOUTHEAST OF FENCE CORNER
5	1998467.7334	1719020.8490	254.126	CTL	*5/8" REBAR W/2" CAP 49, 4' WEST OF EDGE OF PAVEMENT HWY 49, 5' EAST OF SW, 73' NORTHEAST OF CP
6	1998199.0040	1719100.7833	256.878	CTL	*5/8" REBAR W/2" CAP 49, 21' SOUTH OF EDGE OF PAVEMENT LADINO ST, 28' WEST OF GD, 30' NORTHWEST CP
7	1998284.6156	1719240.7068	256.136	CTL	*5/8" REBAR W/2" CAP 49, 37' EAST OF PT, 7' SOUTH OF LP, 16' NORTH OF EDGE OF PAVEMENT PLAZA ST
8	1998084.6749	1719289.4414	256.188	CTL	*5/8" REBAR W/2" CAP 49, 51' SOUTHWEST OF FENCE CORNER, 3' EAST OF EDGE OF PAVEMENT HWY 49, 18' EAST OF CENTERLINE HWY 49 NORTH BOUND
100	1999271.7643	1718669.4873	244.044	GPS	*AHTD GPS 540004
101	2000766.4641	1717246.9503	253.592	GPS	*AHTD GPS 540004A
900	2001907.4251	1715765.0942	242.180	BM	*NGS BM S 224
901	1998180.1420	1719241.4348	255.932	TBM	*CHISEL SQ CENTER CA 49 29' EAST OF FENCE CORNER

*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 0.9999466004 HAS BEEN USED TO COMPUTE THE GROUND COORDINATES LISTED ABOVE.
THIS CAF IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAF.
GRID COORDINATES ARE STORED UNDER FILE NAME sl10555gi.ctl
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88 POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE AT A SPECIFIC POINT.

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

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE
DETERMINED FROM GPS CONTROL POINTS: 540004 - 540004A
CONVERGENCE ANGLE: 00-45-09 RIGHT AT LT: 34-33-03.3 LG: 090-39-20.0
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.

DATE: 08-29-12 FILE NAME: tl10555-job.dgn

LOCATION: HWY. 49 SIGNALS (HELENA - W. HELENA)
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	13	40

(2) SURVEY CONTROL DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

PAVED PARKING
PARKING
RUINS
POE 7+26.56
8001
PAVED PARKING
CURB
CURB
CURB
HWY 49
49
PN:5
PD:5/8"REBAR W/2"CAP,49
PARKING
RUINS
PAVED PARKING
PAVED PARKING
TRAFFIC LIGHT
PAVED ISLAND
CURB
CURB
TRAFFIC LIGHT
PN:7
PD:5/8"REBAR W/2"CAP,49
CURB
PAVED ISLAND
CURB
N 25°11'10" W
CONCRETE PARKING
PAVED
PLAZA AVE.
CURB
60'
CURB
PLAZA AVE.
LADINO
PARKING
PAVED PARKING
BUILDING FOUNDATION
PARKING
CONCRETE
PAVED PARKING
CONCRETE
CONCRETE
PAVED PARKING
HERNANDO
TRAFFIC LIGHT
PN:6
PD:5/8"REBAR W/2"CAP,49
TBM
PN:101
PD:CHISEL SQ CENTER CA,49
49
PARKING
CONCRETE
CURB
PANAMA RD.
CONCRETE
CURB
70'
ISLAND
CURB
70'
CURB
CTL
PN:8
PD:5/8"REBAR W/2"CAP,49
POB 1+00.00
8000

HWY. 49PLAZA AVE.				
POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	1+00.00	1997951.7525	1719288.0440
8001	POE	7+26.56	1998518.7419	1719021.4069

SCALE IN FEET
0 30 60 120

DATE: 08-29-12 FILE NAME: t110555-01.dgn

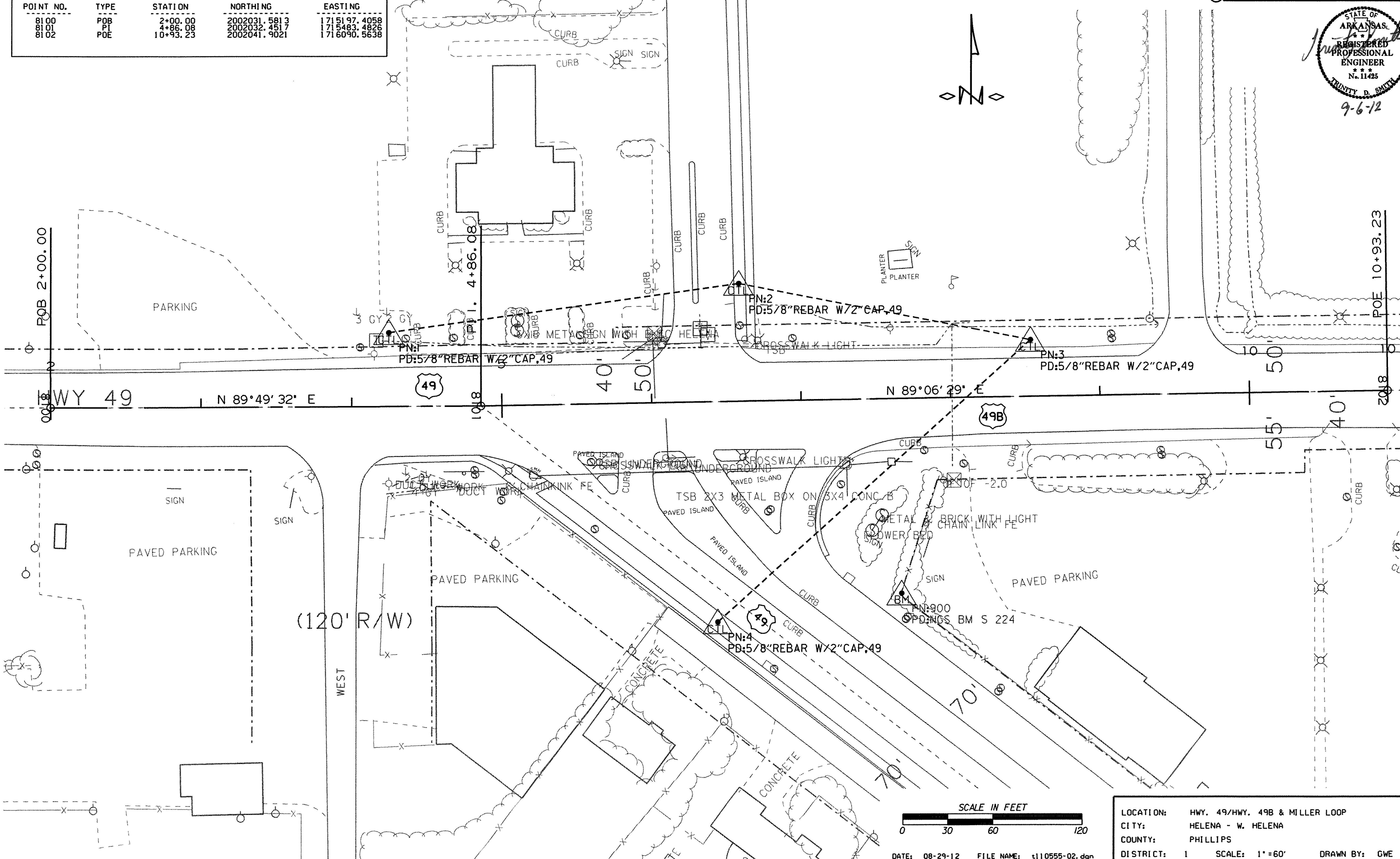
LOCATION: HWY. 49/PLAZA AVENUE & LADINO STREET
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: 1"=60' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	14	40

(2) SURVEY CONTROL DETAIL

HWY. 49/HWY. 49B

POINT NO.	TYPE	STATION	NORTHING	EASTING
8100	POB	2+00.00	2002031.5813	1715197.4058
8101	PI	4+86.08	2002032.4517	1715483.4826
8102	POE	10+93.23	2002041.9021	1716090.5638



SCALE IN FEET

0 30 60 120

DATE: 08-29-12 FILE NAME: t110555-02.dgn

LOCATION:	HWY. 49/HWY. 49B & MILLER LOOP
CITY:	HELENA - W. HELENA
COUNTY:	PHILLIPS
DISTRICT:	1 SCALE: 1" =60' DRAWN BY: GWE

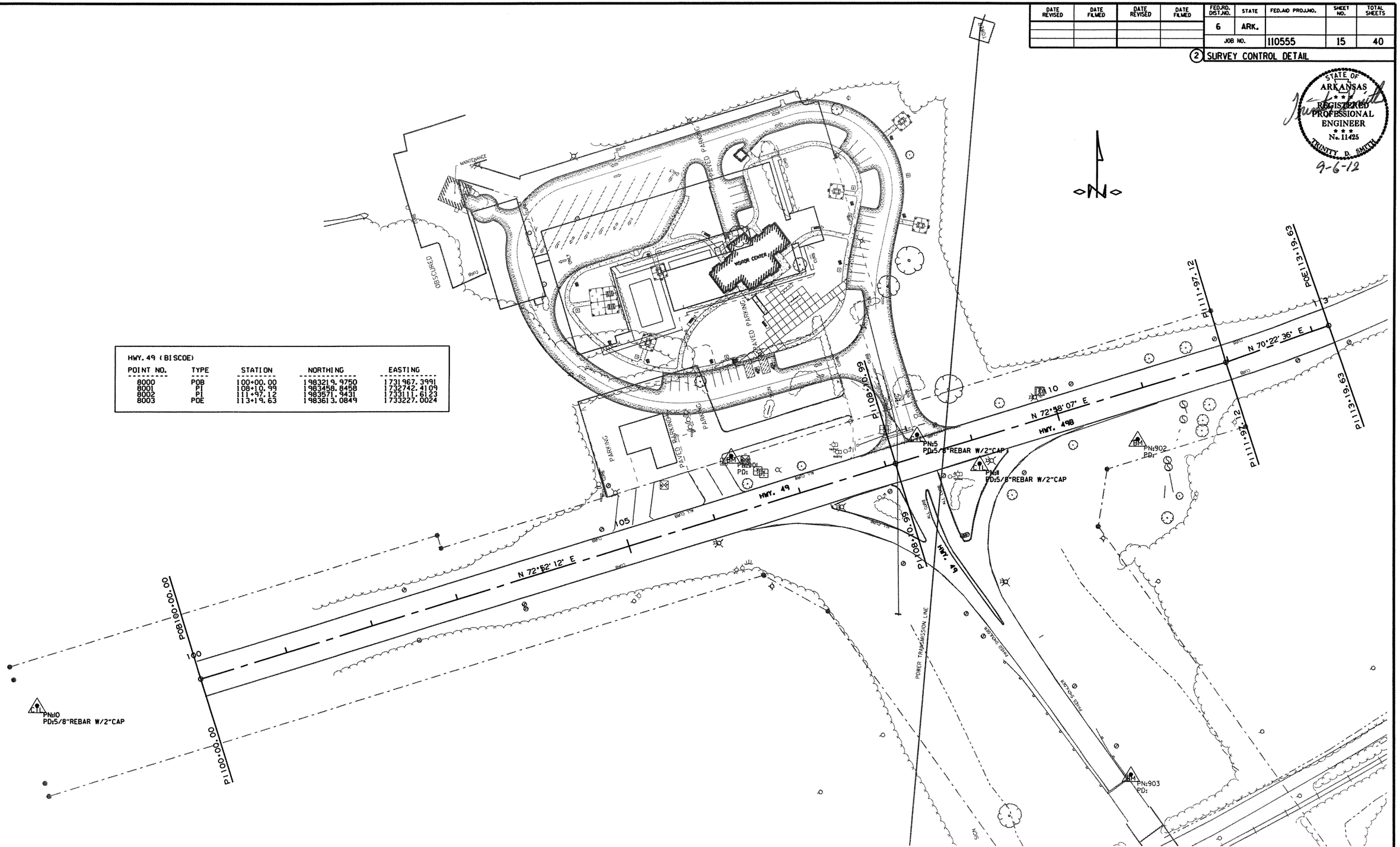
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	15	40

(2) SURVEY CONTROL DETAIL

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

HWY. 49 (BISCOE)

POINT NO.	TYPE	STATION	NORTHING	EASTING
8000	POB	100+00.00	1983219.9750	1731967.3991
8001	PI	108+10.99	1983458.8458	1732742.4109
8002	PI	111+97.12	1983571.9431	1733111.6123
8003	POE	113+19.63	1983613.0849	1733227.0024



DATE: 08-29-12 FILE NAME: t110555-03.dgn

LOCATION:	HWY. 49/HWY. 49B & AR WELCOME CENTER DRWY.
CITY:	HELENA - W. HELENA
COUNTY:	PHILLIPS
DISTRICT: 1	SCALE: 1"=40' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	16	40

(2) TRAFFIC SIGNAL NOTES

TRAFFIC SIGNAL NOTES:

1. PERFORM ELECTRICAL WORK IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE NFPA 70 (2002) NATIONAL ELECTRICAL CODE, NFPA 101(2000) LIFE SAFETY CODE, STATE ELECTRICAL CODE AND LOCAL ELECTRICAL CODE.
2. EXTEND GREEN EQUIPMENT GROUNDING CONDUCTOR (EGC) FROM GROUND BAR AT MAIN BREAKER TO CONTROL PANEL AND TO FIRST POLE. SOLIDLY BOND EGC TO GROUND LUG OF CONTROL CABINET AND TO POLE GROUND. ENSURE THAT ONLY ONE NEUTRAL-TO-GROUND BOND EXISTS IN THE SYSTEM AND THAT IT IS AT THE MAIN BREAKER.
3. ELECTRICAL SERVICE SHALL BE PROVIDED BY THE CITY TO A SERVICE POLE WITH EXTERNAL RAINTIGHT BREAKER (MAIN BREAKER), GALVANIZED STEEL SERVICE RISER, METER LOOP (IF REQUIRED), AND WEATHERHEAD AT A MUTUALLY ACCEPTABLE POINT WITHIN THE RIGHT-OF-WAY. IF THE SERVICE POINT IS OVER 10 FEET FROM THE CONTROLLER, THE CONTRACTOR SHALL PROVIDE AND INSTALL A SEPARATE TWO CIRCUIT EXTERNAL BREAKER (SECONDARY BREAKER) ON OR NEAR THE TRAFFIC SIGNAL CONTROLLER CABINET AND SHALL INSTALL CONDUIT, ELECTRICAL SERVICE WIRE (2c/#6 USE RATED, WITH GROUND TYPICAL), AND PERFORM WIRING TO TAP INTO THE CITY'S MAIN BREAKER AS PART OF THIS CONTRACT. CONDUIT IS PAID FOR AS A SEPARATE ITEM OF THIS CONTRACT. TWO CIRCUIT BREAKERS, CONSIDERED SUBSIDIARY TO THE CONTROL EQUIPMENT WHERE STREET LIGHTING IS INCLUDED. AS PART OF THE SIGNAL INSTALLATION, STREET LIGHTING CIRCUIT (2c/#12 AWG UF RATED, TYPICAL) SHALL BE KEPT FROM THE CIRCUIT SERVING THE TRAFFIC SIGNAL CONTROL EQUIPMENT FROM THE POINT OF TIE-IN AT THE SECONDARY BREAKER PROVIDED BY THE CONTRACTOR.
4. CONTRACTOR SHALL CONNECT A SEPARATE NEUTRAL FOR EACH LOAD SWITCH REPRESENTED ON EACH SIGNAL POLE.
5. TRAFFIC CONTROLLER CABINET SHALL HAVE 16 LOAD BAYS AND LAYOUT SHALL BE SUCH THAT IT IS NOT NECESSARY TO SHUT DOWN POWER OR REMOVE LOAD SWITCHES IN ORDER TO EASILY TEST OR MODIFY DETECTOR INPUTS TO THE CONTROLLER.
6. CONTROLLER CABINET SHALL BE WIRED SUCH THAT DURING FLASH OPERATIONS POWER TO THE LOAD SWITCHES CANNOT BACKFEED TO LOAD SWITCH POWER BUSS.
7. ALL PARTS OF THIS INSTALLATION SHALL BE IN ACCORDANCE WITH THE ARKANSAS HIGHWAY AND TRANSPORTATION DEPARTMENT STANDARDS AND DETAILS, AND WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITIONS.
8. CONDUIT INSTALLED UNDER ROADWAY SURFACES SHALL BE INSTALLED BY PUSHING OR BORING METHODS. IF THE ENGINEER DETERMINES THIS IS NOT FEASIBLE, THEN A TRENCHING METHOD MAY BE USED.
9. TRAFFIC SIGNAL POLES SHALL BE GALVANIZED. BACKPLATES SHALL BE SUPPLIED FOR ALL SIGNAL HEADS.
10. PAVEMENT MARKING SHOWN FOR REFERENCE ONLY. SEE PAVEMENT MARKING PLAN SHEETS.
11. FOUNDATION FOR ALL POLES SHALL BE EXTENDED IF NECESSARY TO ACCOMMODATE THE REQUIREMENTS FOR SIGNAL HEAD CLEARANCE ABOVE ROADWAY ONLY AT LOCATIONS WHERE THE GROUND ELEVATION AT THE POLE IS BELOW THE ELEVATION OF THE ROADWAY (SEE NOTES ON SPECIAL DETAILS). PAYMENT WILL BE INCLUDED IN SECTION 714, AHTD STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
12. ALL BOXES SHALL BE (TYPE 2 HD) UNLESS OTHERWISE INDICATED. ALL CONDUIT SHALL BE 3" DIAMETER UNLESS SPECIFIED ON PLANS.
13. CONTRACTOR SHALL NOTIFY ALL EXISTING UTILITY OWNERS BEFORE BEGINNING WORK ON THIS PROJECT.
14. LUMINAIRE ASSEMBLIES SHALL BE OF THE FULL CUTOFF TYPE.
15. HARDWARE INPUTS MAY BE DETERMINED BY SUPPLIER. EACH DETECTOR OUTPUT SHALL INPUT THE CONTROLLER THROUGH A SEPARATE INPUT UNLESS OTHERWISE NOTED AND BE PROGRAMMED TO ACTUATE THE ASSOCIATED PHASE. COMBINATION (COMB.) DETECTORS SHALL ALSO BE PROGRAMMED TO PROVIDE VEHICLE COUNT/OCCUPANCY DATA.
16. TO DETERMINE UTILITY CLEARANCES ABOVE THE TRAFFIC SIGNAL POLE, REFER TO THE POLE SCHEDULE FOR VERTICAL SHAFT HEIGHT. WHERE THE POLE SCHEDULE INDICATES THAT A LUMINAIRE ARM WILL BE USED, 38 FEET SHOULD BE USED TO DETERMINE UTILITY CLEARANCE ABOVE THE LUMINAIRE ARM. WHERE THE POLE SCHEDULE INDICATES A TRAFFIC SIGNAL POLE WITHOUT A LUMINAIRE ARM, A HEIGHT OF 21' SHOULD BE USED TO DETERMINE UTILITY CLEARANCE ABOVE THE TRAFFIC SIGNAL MAST ARM. AN ADDITIONAL 6 FEET SHOULD BE USED DIRECTLY ABOVE "VIDEO DETECTOR" AT LOCATIONS SHOWN ON THE SIGNAL PLANS.
17. THE DESIRABLE MINIMUM DISTANCE FROM THE FACE OF ROADWAY CURB OR SHOULDER EDGE TO THE FACE OF NON-BREAKAWAY POLE OR OBSTRUCTION IS 6 FEET. REFER TO TRAFFIC SIGNAL PLANS FOR SPECIFIC LOCATION OF POLES, CONTROLLER AND ANY OTHER NON-BREAKAWAY OBSTRUCTIONS. REFER TO "DESIGN PARAMETERS, MINIMUM CLEAR ZONE DISTANCE" FOR MINIMUM DISTANCE FROM THE EDGE OF TRAVELED WAY TO THE FACE OF A NON-BREAKAWAY POLE OR OBSTRUCTION. TRAFFIC SIGNAL POLES OR ANY OTHER NON-BREAKAWAY OBSTRUCTION SHALL NOT BE INSTALLED WITHIN THE CLEAR ZONE.
18. AS DETERMINED BY THE ENGINEER, FOUNDATION EMBEDMENT MAY BE DECREASED BY A MAXIMUM OF TWO FEET IF COMPETENT ROCK IS ENCOUNTERED PRIOR TO ACHIEVING PLAN EMBEDMENT AND AT LEAST HALF OF THE REMAINING PLAN EMBEDMENT LENGTH IS KEYED INTO COMPETENT ROCK.
19. CONNECTION OF TRAFFIC SIGNAL DISPLAY TO FIELD WIRING SHALL UTILIZE AN APPROVED TERMINAL STRIP BEHIND HAND-HOLE COVER AT BASE OF POLE. TERMINAL STRIP SHALL PROVIDE PROTECTION TO PREVENT EXPOSURE TO THE PUBLIC IN THE EVENT THAT POLE COVER IS MISSING. PAYMENT FOR TERMINAL STRIPS SHALL BE INCLUDED IN ITEM 714-TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION.
20. CONTROLLER CABINET LAYOUT AND ORIENTATION SHALL CONFORM TO ISMA STANDARDS.
21. ONE VIDEO PROGRAMMING MODULE SHALL BE PROVIDED FOR AIMING AND SETUP OF DETECTORS IF THE VIDEO SYSTEM CANNOT BE ADJUSTED THROUGH HARDWARE AND SOFTWARE PROVIDED BY ITEMS WITHIN THE JOB.
22. TRAFFIC SIGNAL CONTRACTOR MUST NOTIFY RESIDENT ENGINEER OR ASSIGNED DEPARTMENT PROJECT INSPECTOR EACH DAY PRIOR TO SIGNAL RELATED WORK. NO WORK ON TRAFFIC SIGNALS WILL BE ALLOWED OR APPROVED WITHOUT THIS PRIOR NOTIFICATION.
23. ALL STEEL POLES SHALL BE DESIGNED TO MEET THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

DATE: 08-29-12 FILE NAME: t110555-job.dgn

LOCATION: HWY. 49 SIGNALS (HELENA - W. HELENA)
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	17	40

(2) SIGNALIZATION PLAN SHEET

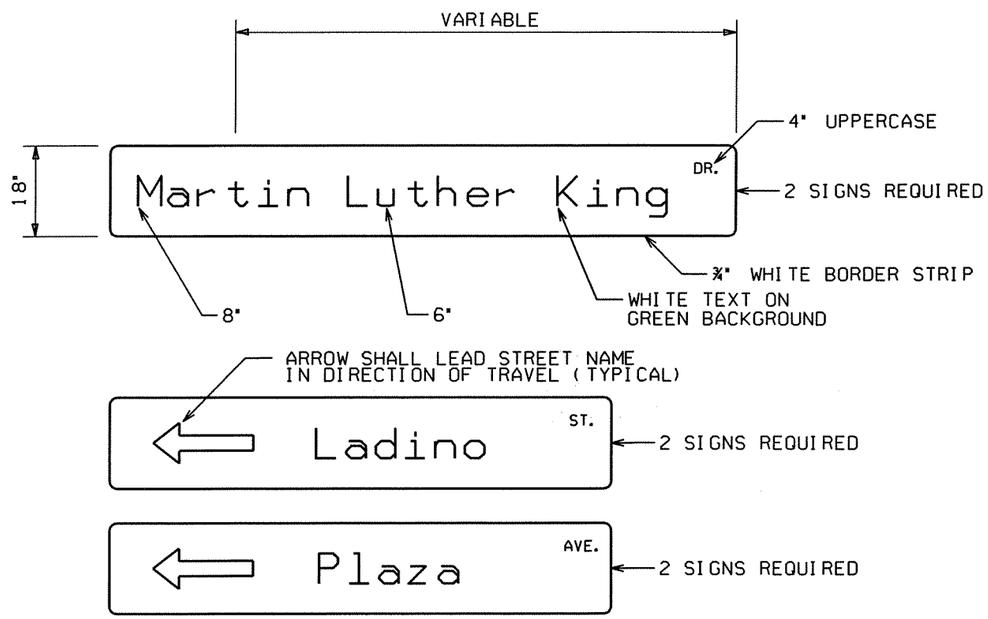
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

TRAFFIC SIGNAL QUANTITIES

	ITEM NO.	ITEM	QUANTITY	UNIT
+	SP&701	ACTUATED CONTROLLER TS 2-TYPE 2 (8 PHASES)	1	EACH
	SP&706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	10	EACH
	SP&706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	4	EACH
	708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	552	LIN. FT.
	708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	331	LIN. FT.
	708	TRAFFIC SIGNAL CABLE (12C/14 A.W.G.)	334	LIN. FT.
	708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	334	LIN. FT.
	709	GALVANIZED STEEL CONDUIT (1.25")	20	LIN. FT.
	710	NON-METALLIC CONDUIT (1.25")	20	LIN. FT.
	710	NON-METALLIC CONDUIT (2")	20	LIN. FT.
	710	NON-METALLIC CONDUIT (3")	308	LIN. FT.
	SS&711	CONCRETE PULL BOX (TYPE 2 HD)	5	EACH
	SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (30')	1	EACH
	SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (48'-38')	1	EACH
	SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (48'-64')	1	EACH
	733	VIDEO CABLE	947	LIN. FT.
•	SP&733	VIDEO DETECTOR (CLR)	7	EACH
	733	VIDEO MONITOR (CLR)	1	EACH
•	SP&733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	4	EACH
	SP&733	VEHICLE DETECTOR RACK (16 CHANNEL)	1	EACH
	SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., EGC)	333	LIN. FT.
	SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.)	20	LIN. FT.
	SP	18" STREET NAME SIGN	6	EACH
	SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.34	LUMP SUM
	SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1	EACH

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

+ ACTUATED CONTROLLER SHALL BE EQUIPPED WITH COMMUNICATIONS MODULE FOR POSSIBLE FUTURE USE.



NOTES:

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

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

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

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

DATE: 08-29-12 FILE NAME: t110555-01.dgn

LOCATION: HWY. 49/PLAZA AVENUE & LADINO STREET
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	18	40

(2) SIGNALIZATION PLAN SHEET

PHASING DIAGRAM

SIGNAL FACES
12" LENSES

2, 3&14
5
7, 8&13
10
11&12

1&6

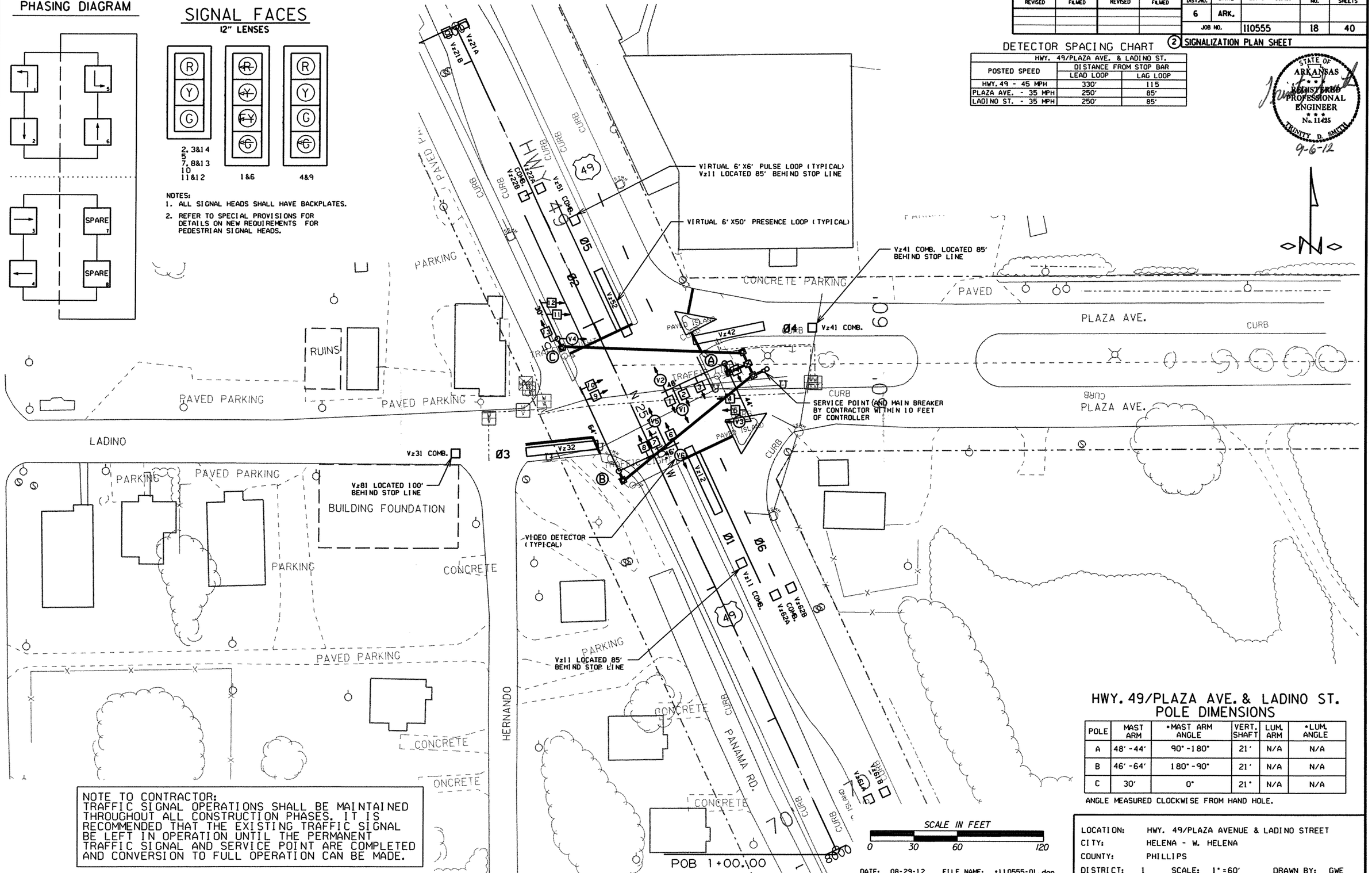
4&9

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

DETECTOR SPACING CHART

POSTED SPEED	HWY. 49/PLAZA AVE. & LADINO ST. DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
HWY. 49 - 45 MPH	330'	115
PLAZA AVE. - 35 MPH	250'	85'
LADINO ST. - 35 MPH	250'	85'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12



NOTE TO CONTRACTOR:
TRAFFIC SIGNAL OPERATIONS SHALL BE MAINTAINED THROUGHOUT ALL CONSTRUCTION PHASES. IT IS RECOMMENDED THAT THE EXISTING TRAFFIC SIGNAL BE LEFT IN OPERATION UNTIL THE PERMANENT TRAFFIC SIGNAL AND SERVICE POINT ARE COMPLETED AND CONVERSION TO FULL OPERATION CAN BE MADE.

HWY. 49/PLAZA AVE. & LADINO ST.
POLE DIMENSIONS

POLE	MAST ARM	*MAST ARM ANGLE	VERT. SHAFT	LUM. ARM	*LUM. ANGLE
A	48'-44'	90°-180°	21'	N/A	N/A
B	46'-64'	180°-90°	21'	N/A	N/A
C	30'	0°	21'	N/A	N/A

ANGLE MEASURED CLOCKWISE FROM HAND HOLE.

LOCATION: HWY. 49/PLAZA AVENUE & LADINO STREET
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: 1"=60' DRAWN BY: GWE

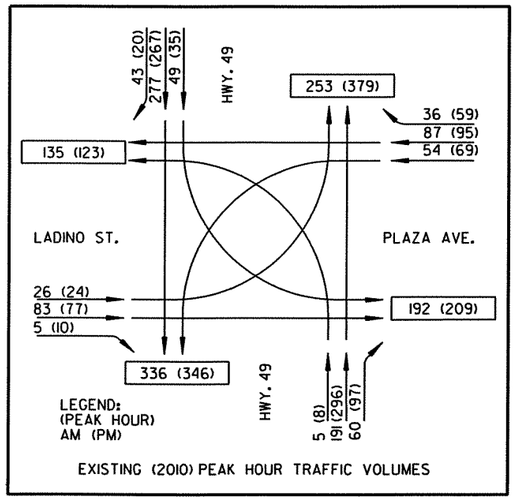
DATE: 08-29-12 FILE NAME: t110555-01.dgn

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	19	40

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

TRAFFIC FLOW DIAGRAM



EXISTING (2010) PEAK HOUR TRAFFIC VOLUMES

VIRTUAL 6'X6' PULSE LOOP (TYPICAL)
Vz11 LOCATED 85' BEHIND STOP LINE

VIRTUAL 6'X50' PRESENCE LOOP (TYPICAL)

Vz41 COMB. LOCATED 85' BEHIND STOP LINE

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

Vz31 COMB.

Vz81 LOCATED 100' BEHIND STOP LINE

VIDEO DETECTOR (TYPICAL)

Vz11 LOCATED 85' BEHIND STOP LINE

HWY. 49/PLAZA AVE. & LADINO ST. POLE LOCATIONS

POLE	LOCATION & STATION	OFFSET	X, Y COORDINATES
A	HWY. 49 - STA. 4+36.39	71' RT.	1719208.83, 1998286.24
B	HWY. 49 - STA. 4+00.36	27' LT.	1719136.02, 1998212.18
C	HWY. 49 - STA. 5+00.94	27' LT.	1719093.20, 1998303.18

DESIGN PARAMETERS

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

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

MINIMUM CLEAR ZONE DISTANCE 3 FEET FROM HWY. 49

SCALE IN FEET
0 20 40 80

LOCATION:	HWY. 49/PLAZA AVENUE & LADINO STREET
CITY:	HELENA - W. HELENA
COUNTY:	PHILLIPS
DISTRICT: 1	SCALE: 1"=40'
DATE: 08-29-12	FILE NAME: t110555-01.dgn
DRAWN BY:	GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	20	40

(2) SIGNALIZATION PLAN SHEET

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

9-6-12

INTERVAL CHART

SIGNAL FACES	HWY. 49/LADINO													FLASH SEQ.
	1+5	CLR.	1+6	CLR.	2+5	CLR.	2+6	CLR.	3	CLR.	4	CLR.		
1	~~G~~	•	~~G~~	•	~~FY~~	•••	~~FY~~	•••	~~R~~	~~R~~	~~R~~	~~R~~		~~R~~
2,3&14	R	R	G	••	R	R	G	••	R	R	R	R		R
4	R	R	R	R	R	R	R	R	G/~~G~~	•/••	R	R		R
5	R	R	R	R	R	R	R	R	G	••	R	R		R
6	~~G~~	•	~~FY~~	•••	~~G~~	•	~~FY~~	•••	~~R~~	~~R~~	~~R~~	~~R~~		~~R~~
7,8&13	R	R	R	R	G	••	G	••	R	R	R	R		R
9	R	R	R	R	R	R	R	R	R	R	G/~~G~~	•/••		R
10,11&12	R	R	R	R	R	R	R	R	R	R	G	••		R

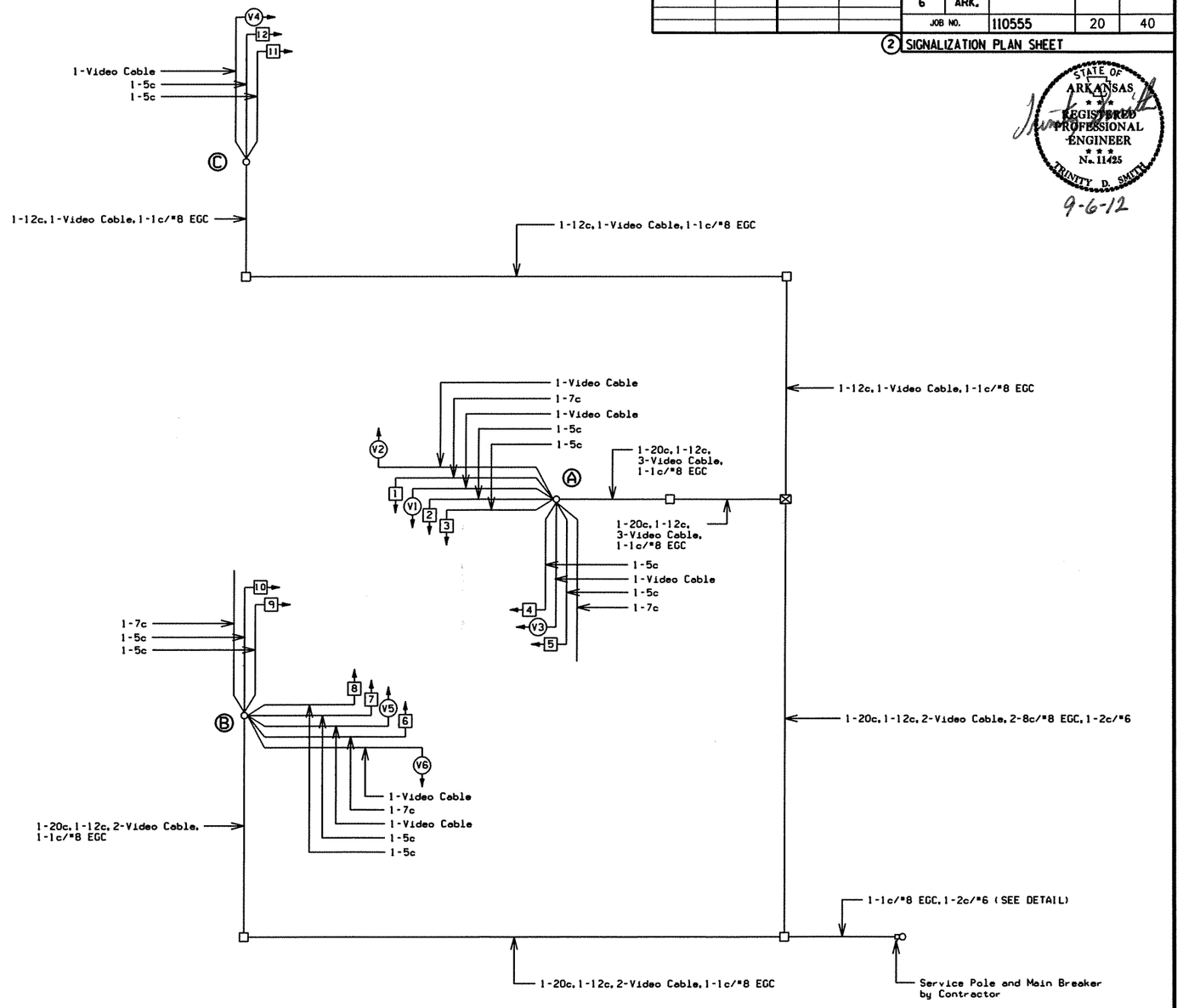
• DENOTES GREEN OR YELLOW ARROW DEPENDING ON NEXT PHASE
•• DENOTES GREEN OR YELLOW BALL DEPENDING ON NEXT PHASE
••• DENOTES FLASHING YELLOW ARROW OR YELLOW ARROW DEPENDING ON NEXT PHASE

DETECTOR SYSTEM DESCRIPTION: JOB 110555

HELENA - HWY. 49/PLAZA AVE. & LADINO ST. DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS			COMMENTS	TUBE LENGTHS
							LOCAL		MASTER SYSTEM		
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *	DETECTOR NUMBERS		
Vz11	NB LEFT TURN FAR	COMB.			1	V9	1	1		CAMERA V1	23'
Vz12	NB LEFT TURN	LOCAL			2	V1	1			CAMERA V1	23'
Vz21A&B	SB ADVANCE	LOCAL			5	V2	2			CAMERA V2	74'
Vz22A&B	SB NEAR	COMB.			6	V10	2	2		CAMERA V5	23'
Vz41	WB ADVANCE	COMB.			11	V12	4	4		CAMERA V4	23'
Vz42	WB NEAR	LOCAL			12	V4	4			CAMERA V4	23'
Vz51	SB LEFT TURN FAR	COMB.			7	V13	5	5		CAMERA V5	23'
Vz52	SB LEFT TURN	LOCAL			8	V5	5			CAMERA V5	23'
Vz61A&B	NB ADVANCE	LOCAL			3	V6	6			CAMERA V6	74'
Vz62A&B	NB NEAR	COMB.			4	V14	6	6		CAMERA V1	23'
Vz31	EB ADVANCE	COMB.			9	V11	3	3		CAMERA V3	23'
Vz32	EB NEAR	LOCAL			10	V3	3			CAMERA V3	23'
					SPARE						

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

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



WIRING DIAGRAM

NOTES TO CONTRACTOR:

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

DATE: 08-29-12 FILE NAME: t110555-01.dgn

LOCATION:	HWY. 49/PLAZA AVENUE & LADINO STREET
CITY:	HELENA - W. HELENA
COUNTY:	PHILLIPS
DISTRICT: 1	SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	21	40

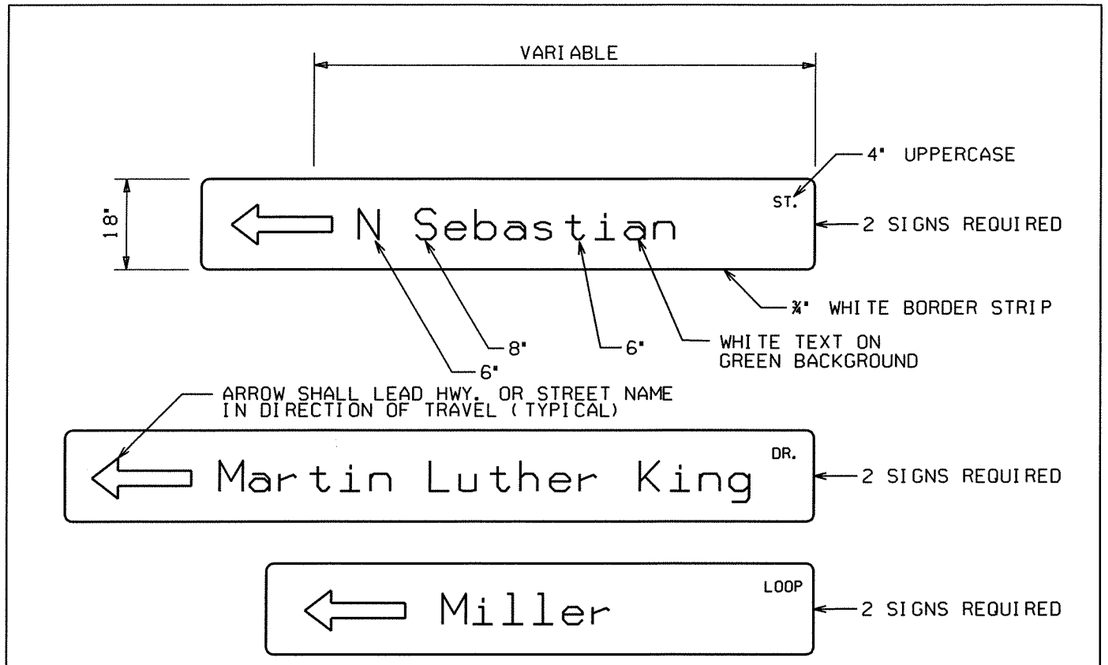
(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

TRAFFIC SIGNAL QUANTITIES

	ITEM NO.	ITEM	QUANTITY	UNIT
+	SP&701	ACTUATED CONTROLLER TS 2-TYPE 2 (8 PHASES)	1	EACH
	SP&706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	11	EACH
	SP&706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	2	EACH
	SP&707	COUNTDOWN PEDESTRIAN SIGNAL HEAD, LED	6	EACH
	708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	1009	LIN. FT.
	708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	232	LIN. FT.
	708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	422	LIN. FT.
	709	GALVANIZED STEEL CONDUIT (1.25")	20	LIN. FT.
	710	NON-METALLIC CONDUIT (1.25")	20	LIN. FT.
	710	NON-METALLIC CONDUIT (2")	20	LIN. FT.
	710	NON-METALLIC CONDUIT (3")	361	LIN. FT.
	SS&711	CONCRETE PULL BOX (TYPE 1HD)	1	EACH
	SS&711	CONCRETE PULL BOX (TYPE 2 HD)	2	EACH
	SS&711	CONCRETE PULL BOX (TYPE 2)	4	EACH
	SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (14')	1	EACH
	SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (40')	1	EACH
	SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (46')	1	EACH
	SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (48')	1	EACH
	SS&715	TRAFFIC SIGNAL PEDESTAL POLE WITH FOUNDATION	1	EACH
	733	VIDEO CABLE	1005	LIN. FT.
	SP&733	VIDEO DETECTOR (CLR)	6	EACH
	733	VIDEO MONITOR (CLR)	1	EACH
	SP&733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	3	EACH
	SP&733	VEHICLE DETECTOR RACK (16 CHANNEL)	1	EACH
	SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., EGC)	566	LIN. FT.
	SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., EGC)	90	LIN. FT.
	SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.)	20	LIN. FT.
	SP	LUMINAIRE ASSEMBLY	2	EACH
	SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES	205	LIN. FT.
	SP	18" STREET NAME SIGN	6	EACH
	SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.33	LUMP SUM
	SP	SERVICE POINT ASSEMBLY (2 CIRCUITS)	1	EACH

+ ACTUATED CONTROLLER SHALL BE EQUIPPED WITH COMMUNICATIONS MODULE FOR POSSIBLE FUTURE USE.



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

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

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

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

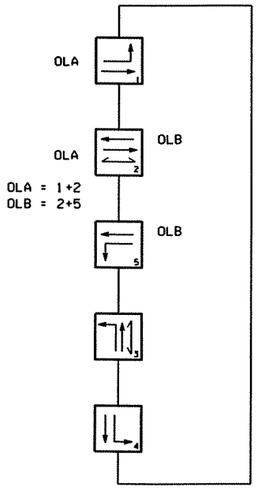
DATE: 08-29-12 FILE NAME: t110555-02.dgn

LOCATION: HWY. 49/HWY. 49B & MILLER LOOP
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: N/A DRAWN BY: GWE

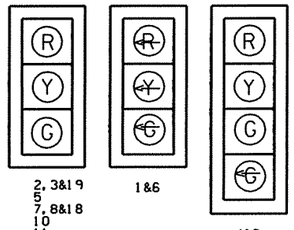
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	22	40

(2) SIGNALIZATION PLAN SHEET

PHASING DIAGRAM



SIGNAL FACES
12" LENSES



One Section (Solid Symbol)

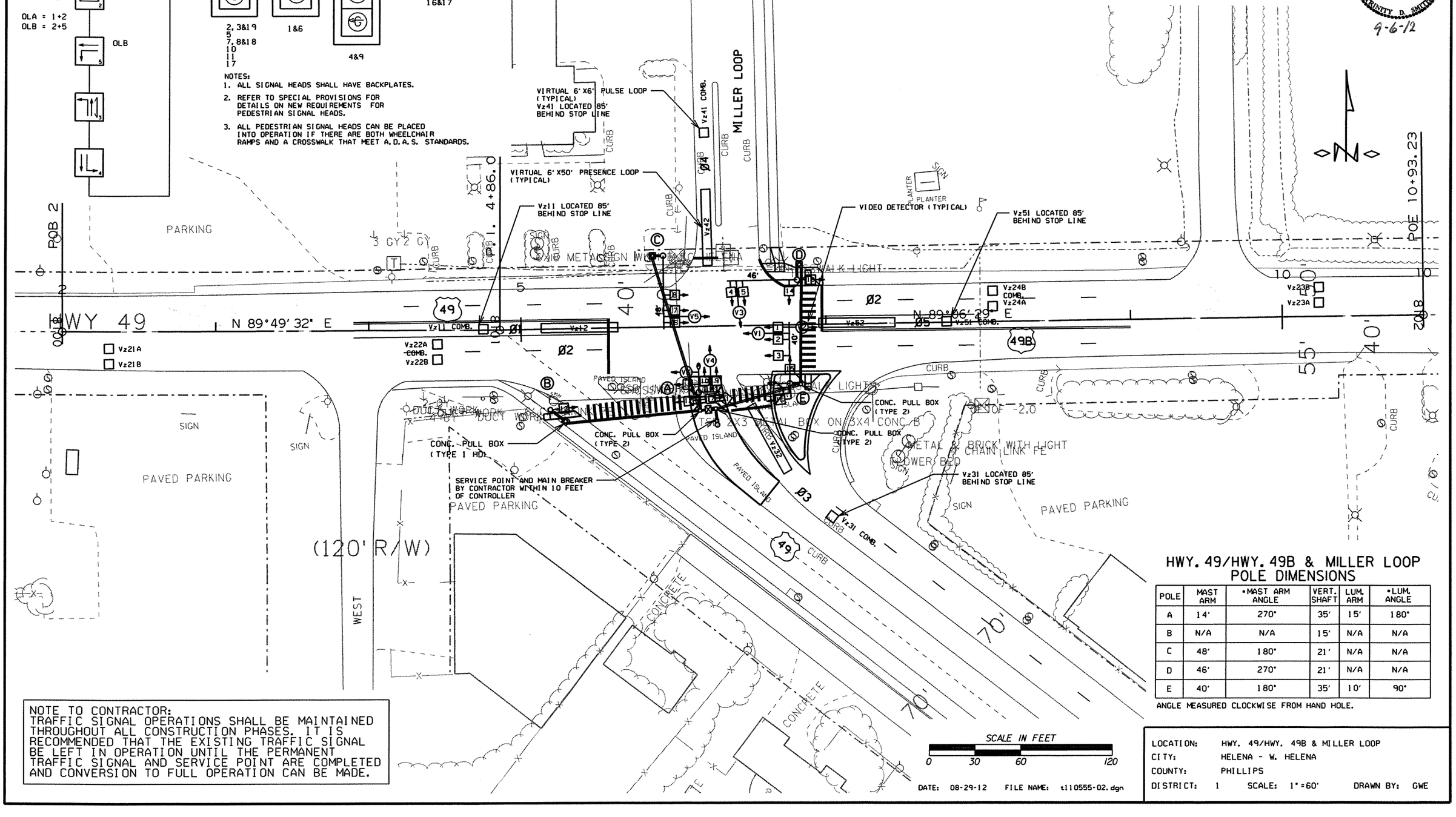
12&13
14&15
16&17

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

DETECTOR SPACING CHART

POSTED SPEED	HWY. 49/HWY. 49B & MILLER LOOP DISTANCE FROM STOP BAR	
	LEAD LOOP	LAG LOOP
HWY. 49 - 45 MPH	330'	115'
HWY. 49B - 45 MPH	330'	115'
MILLER LOOP-35 MPH	250'	85'

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12



HWY. 49/HWY. 49B & MILLER LOOP POLE DIMENSIONS

POLE	MAST ARM	*MAST ARM ANGLE	VERT. SHAFT	LUM. ARM	*LUM. ANGLE
A	14'	270°	35'	15'	180°
B	N/A	N/A	15'	N/A	N/A
C	48'	180°	21'	N/A	N/A
D	46'	270°	21'	N/A	N/A
E	40'	180°	35'	10'	90°

ANGLE MEASURED CLOCKWISE FROM HAND HOLE.

NOTE TO CONTRACTOR:
TRAFFIC SIGNAL OPERATIONS SHALL BE MAINTAINED THROUGHOUT ALL CONSTRUCTION PHASES. IT IS RECOMMENDED THAT THE EXISTING TRAFFIC SIGNAL BE LEFT IN OPERATION UNTIL THE PERMANENT TRAFFIC SIGNAL AND SERVICE POINT ARE COMPLETED AND CONVERSION TO FULL OPERATION CAN BE MADE.

SCALE IN FEET
0 30 60 120

DATE: 08-29-12 FILE NAME: t110555-02.dgn

LOCATION: HWY. 49/HWY. 49B & MILLER LOOP
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: 1"=60' DRAWN BY: GWE

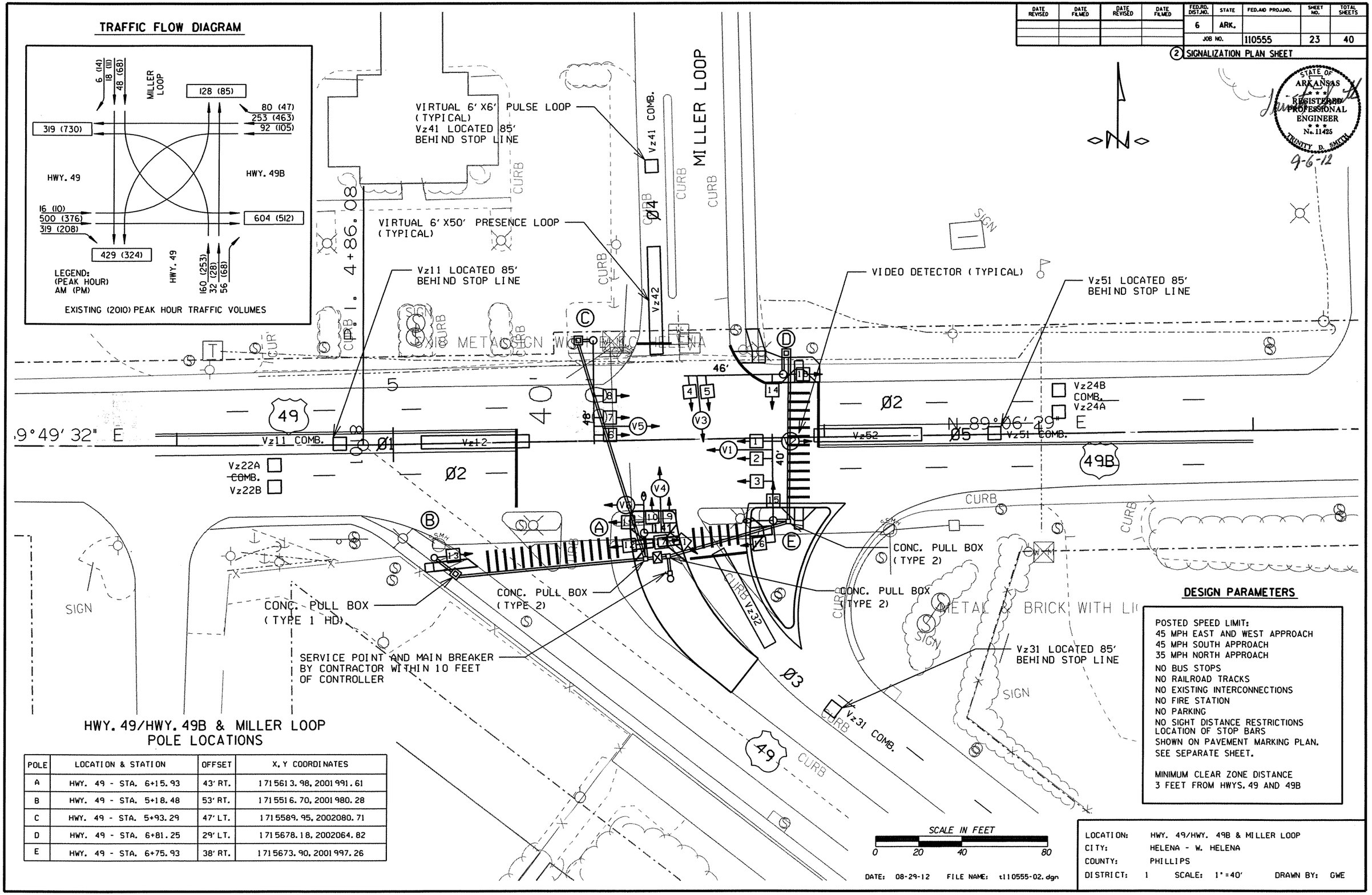
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	23	40

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

TRAFFIC FLOW DIAGRAM

EXISTING (2010) PEAK HOUR TRAFFIC VOLUMES



HWY. 49/HWY. 49B & MILLER LOOP POLE LOCATIONS

POLE	LOCATION & STATION	OFFSET	X, Y COORDINATES
A	HWY. 49 - STA. 6+15.93	43' RT.	1715613.98, 2001991.61
B	HWY. 49 - STA. 5+18.48	53' RT.	1715516.70, 2001980.28
C	HWY. 49 - STA. 5+93.29	47' LT.	1715589.95, 2002080.71
D	HWY. 49 - STA. 6+81.25	29' LT.	1715678.18, 2002064.82
E	HWY. 49 - STA. 6+75.93	38' RT.	1715673.90, 2001997.26

DESIGN PARAMETERS

POSTED SPEED LIMIT:
45 MPH EAST AND WEST APPROACH
45 MPH SOUTH APPROACH
35 MPH NORTH APPROACH
NO BUS STOPS
NO RAILROAD TRACKS
NO EXISTING INTERCONNECTIONS
NO FIRE STATION
NO PARKING
NO SIGHT DISTANCE RESTRICTIONS
LOCATION OF STOP BARS
SHOWN ON PAVEMENT MARKING PLAN.
SEE SEPARATE SHEET.

MINIMUM CLEAR ZONE DISTANCE
3 FEET FROM HWYS. 49 AND 49B

SCALE IN FEET
0 20 40 80

DATE: 08-29-12 FILE NAME: t110555-02.dgn

LOCATION: HWY. 49/HWY. 49B & MILLER LOOP
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: 1"=40' DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	24	40

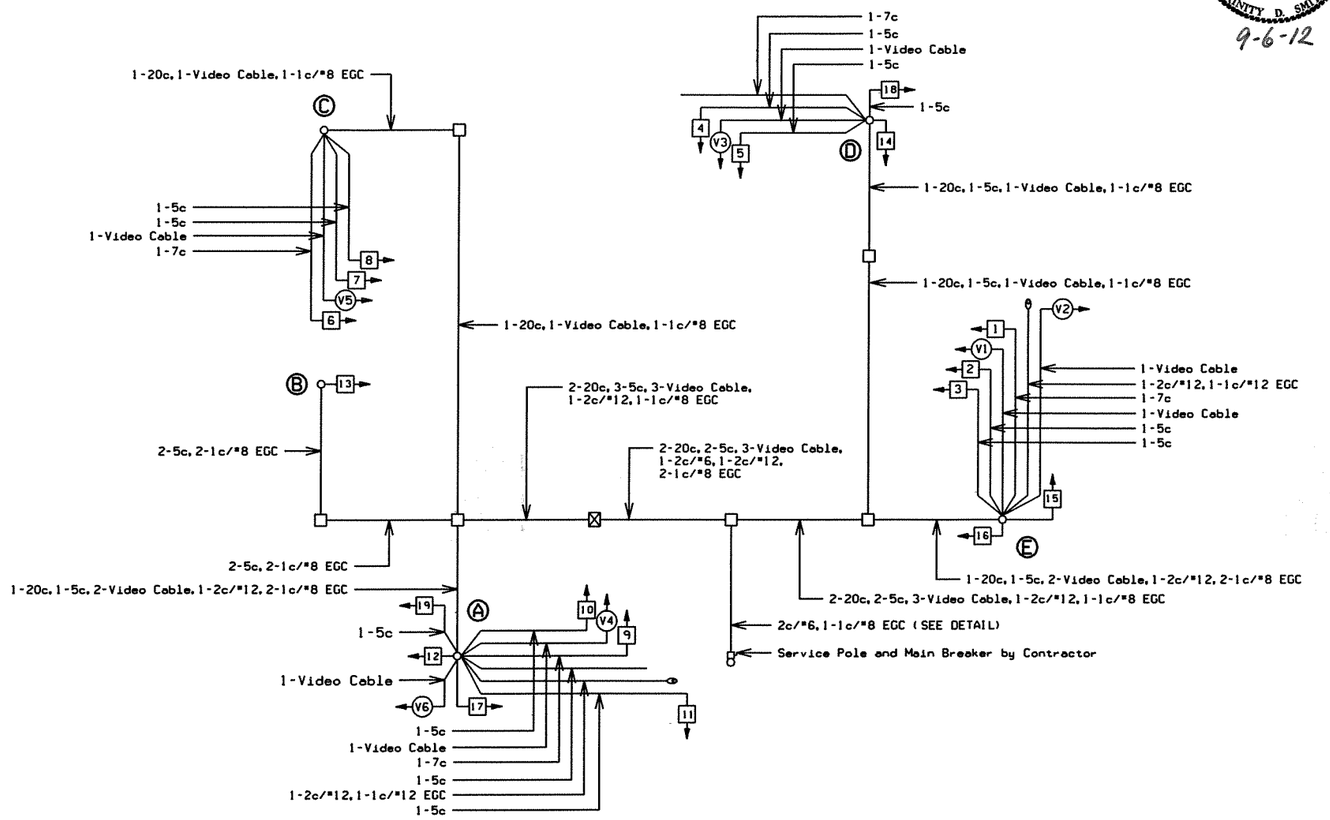
(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

INTERVAL CHART

SIGNAL FACES	HWY. 49/HWY. 49B & MILLER LOOP											FLASH SEQ.
	1	CLR.	2	CLR.	5	CLR.	3	CLR.	4	CLR.		
1	~~G~~	Y	R	R	R	R	R	R	R	R		~~R~~
2,3&19	G	**	G	**	R	R	R	R	R	R		R
4	R	R	R	R	R	R	G/~~G~~	Y	R	R		R
5&11	R	R	R	R	R	R	G	Y	R	R		R
6	R	R	R	R	~~G~~	Y	R	R	R	R		~~R~~
7,8&18	R	R	G	**	G	Y	R	R	R	R		R
9	R	R	R	R	R	R	R	R	G/~~G~~	Y		R
10	R	R	R	R	R	R	R	R	G	Y		R
12&13	W	FDW	W	FDW	DW	DW	DW	DW	DW	DW		BLK
14&15	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW		BLK
16&17	W	FDW	W	FDW	DW	DW	DW	DW	DW	DW		BLK

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



WIRING DIAGRAM

NOTES TO CONTRACTOR:

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

DETECTOR SYSTEM DESCRIPTION: JOB 110555											
HELENA - HWY. 49/HWY. 49B & MILLER LOOP DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS LOCAL		MASTER SYSTEM DETECTOR NUMBERS	COMMENTS	TUBE LENGTHS
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *			
Vz11	EB LEFT TURN FAR	COMB.			1	V9	1	1		CAMERA V1	23'
Vz12	EB LEFT TURN	LOCAL			2	V1	1			CAMERA V1	23'
Vz21A&B	EB FAR ADVANCE	LOCAL			3	V6	2			CAMERA V6	74'
Vz22A&B	EB NEAR	COMB.			4	V14	2	6		CAMERA V1	23'
Vz31	NB LEFT TURN FAR	COMB.			9	V11	3	3		CAMERA V3	23'
Vz32	NB LEFT TURN	LOCAL			10	V3	3			CAMERA V3	23'
Vz41	SB LEFT TURN FAR	COMB.			11	V12	4	4		CAMERA V4	23'
Vz42	SB LEFT TURN	LOCAL			12	V4	4			CAMERA V4	23'
Vz51	WB LEFT TURN FAR	COMB.			7	V13	5	5		CAMERA V5	23'
Vz52	WB LEFT TURN	LOCAL			8	V5	5			CAMERA V5	23'
Vz23A&B	WB FAR ADVANCE	LOCAL			5	V2	2			CAMERA V2	74'
Vz24A&B	WB NEAR	COMB.			6	V10	2	2		CAMERA V5	23'
PB2A&B	HWY. 49 S.LEG	PED.				P2	2				
PB3A&B	HWY. 49B E.LEG	PED.				P3	3				
					SPARE						

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

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

DATE: 08-29-12 FILE NAME: t110555-02.dgn

LOCATION:	HWY. 49/HWY. 49B & MILLER LOOP		
CITY:	HELENA - W. HELENA		
COUNTY:	PHILLIPS		
DISTRICT:	1	SCALE: N/A	DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	25	40

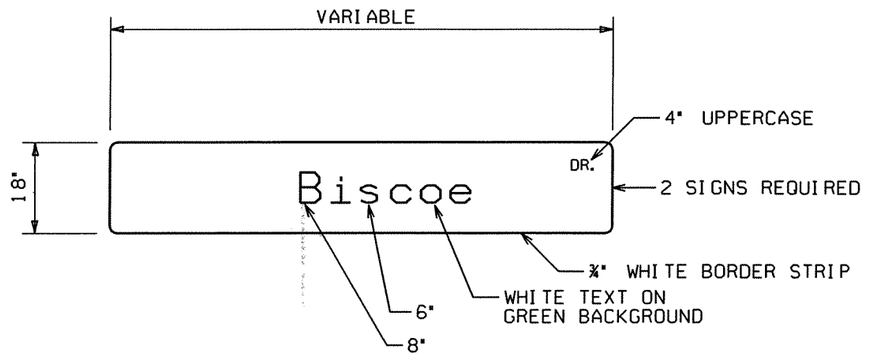
(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

TRAFFIC SIGNAL QUANTITIES

ITEM NO.	ITEM	QUANTITY	UNIT
+ SP&701	ACTUATED CONTROLLER TS 2-TYPE 2 (8 PHASES)	1	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	8	EACH
SP&706	TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	2	EACH
708	TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	449	LIN. FT.
708	TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	230	LIN. FT.
708	TRAFFIC SIGNAL CABLE (12C/14 A.W.G.)	158	LIN. FT.
708	TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	378	LIN. FT.
710	NON-METALLIC CONDUIT (3")	165	LIN. FT.
SS&711	CONCRETE PULL BOX (TYPE 2 HD)	4	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (36')	1	EACH
SS&714	TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (50')	1	EACH
733	VIDEO CABLE	1106	LIN. FT.
SP&733	VIDEO DETECTOR (CLR)	6	EACH
SP&733	VIDEO EDGE CARD EXTENDER	1	EACH
733	VIDEO MONITOR (CLR)	1	EACH
SP&733	VIDEO PROCESSOR, EDGE CARD (2 CAMERA)	3	EACH
SP&733	VEHICLE DETECTOR RACK (16 CHANNEL)	1	EACH
SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES	208	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., EGC)	295	LIN. FT.
SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., EGC)	50	LIN. FT.
SP	LUMINAIRE ASSEMBLY	1	EACH
SP	18" STREET NAME SIGN	2	EACH
SP	REMOVAL OF TRAFFIC SIGNAL EQUIPMENT	0.33	LUMP SUM

+ ACTUATED CONTROLLER SHALL BE EQUIPPED WITH COMMUNICATIONS MODULE FOR POSSIBLE FUTURE USE.



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

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

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

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

DATE: 08-29-12 FILE NAME: t110555-03.dgn

LOCATION: HWY. 49/HWY. 49B & AR WELCOME CENTER DRWY.
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: N/A DRAWN BY: GWE

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	26	40

(2) SIGNALIZATION PLAN SHEET

PHASING DIAGRAM

SIGNAL FACES

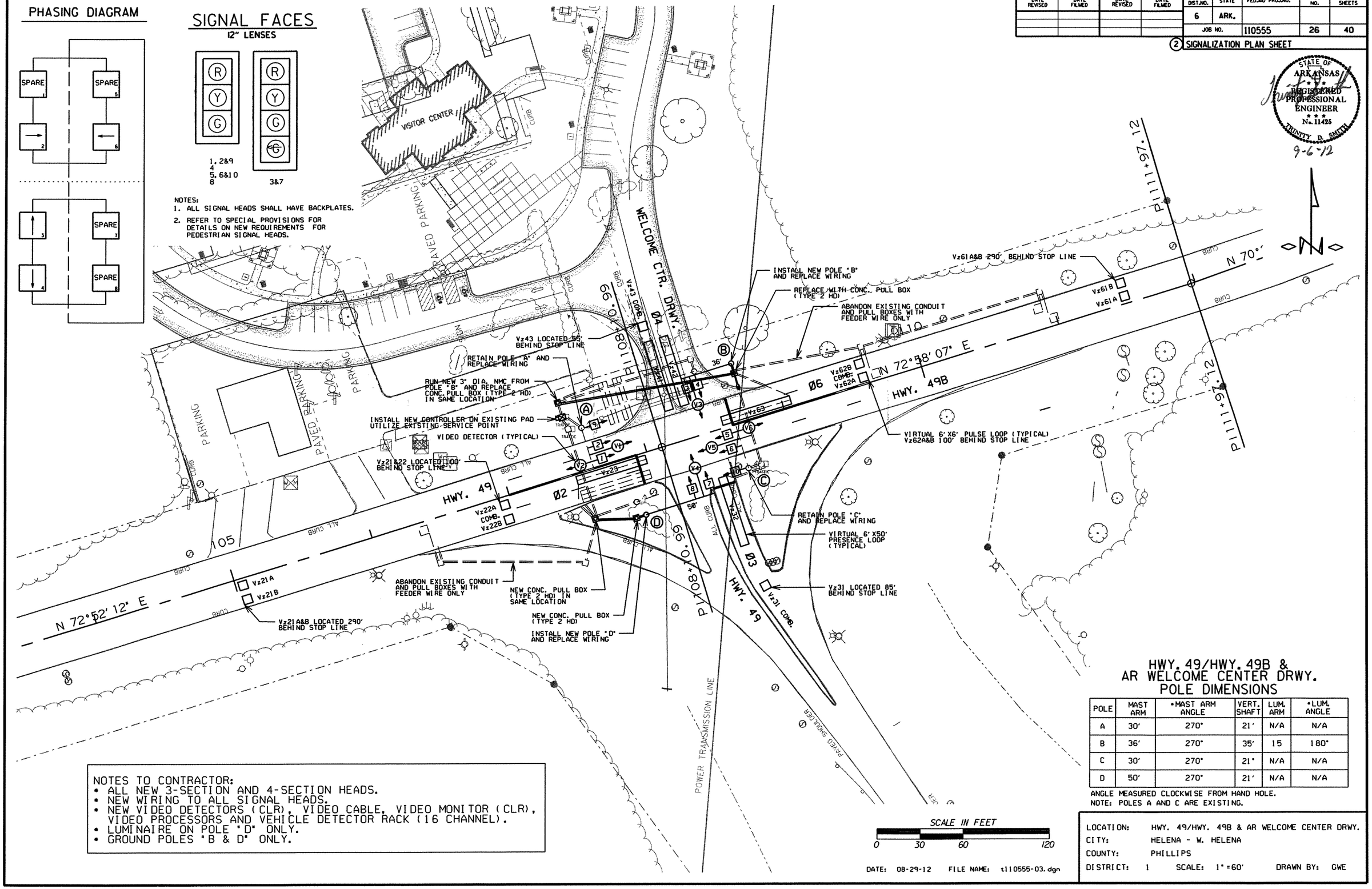
12" LENSES

1, 2&9
4
5, 6&10
8

3&7

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

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12



NOTES TO CONTRACTOR:
- ALL NEW 3-SECTION AND 4-SECTION HEADS.
- NEW WIRING TO ALL SIGNAL HEADS.
- NEW VIDEO DETECTORS (CLR), VIDEO CABLE, VIDEO MONITOR (CLR), VIDEO PROCESSORS AND VEHICLE DETECTOR RACK (16 CHANNEL).
- LUMINAIRE ON POLE "D" ONLY.
- GROUND POLES "B & D" ONLY.

SCALE IN FEET
0 30 60 120

DATE: 08-29-12 FILE NAME: t110555-03.dgn

HWY. 49/HWY. 49B & AR WELCOME CENTER DRWY. POLE DIMENSIONS

POLE	MAST ARM	•MAST ARM ANGLE	VERT. SHAFT	LUM. ARM	•LUM. ANGLE
A	30'	270°	21'	N/A	N/A
B	36'	270°	35'	15	180°
C	30'	270°	21'	N/A	N/A
D	50'	270°	21'	N/A	N/A

ANGLE MEASURED CLOCKWISE FROM HAND HOLE.
NOTE: POLES A AND C ARE EXISTING.

LOCATION: HWY. 49/HWY. 49B & AR WELCOME CENTER DRWY.
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: 1"=60' DRAWN BY: GWE

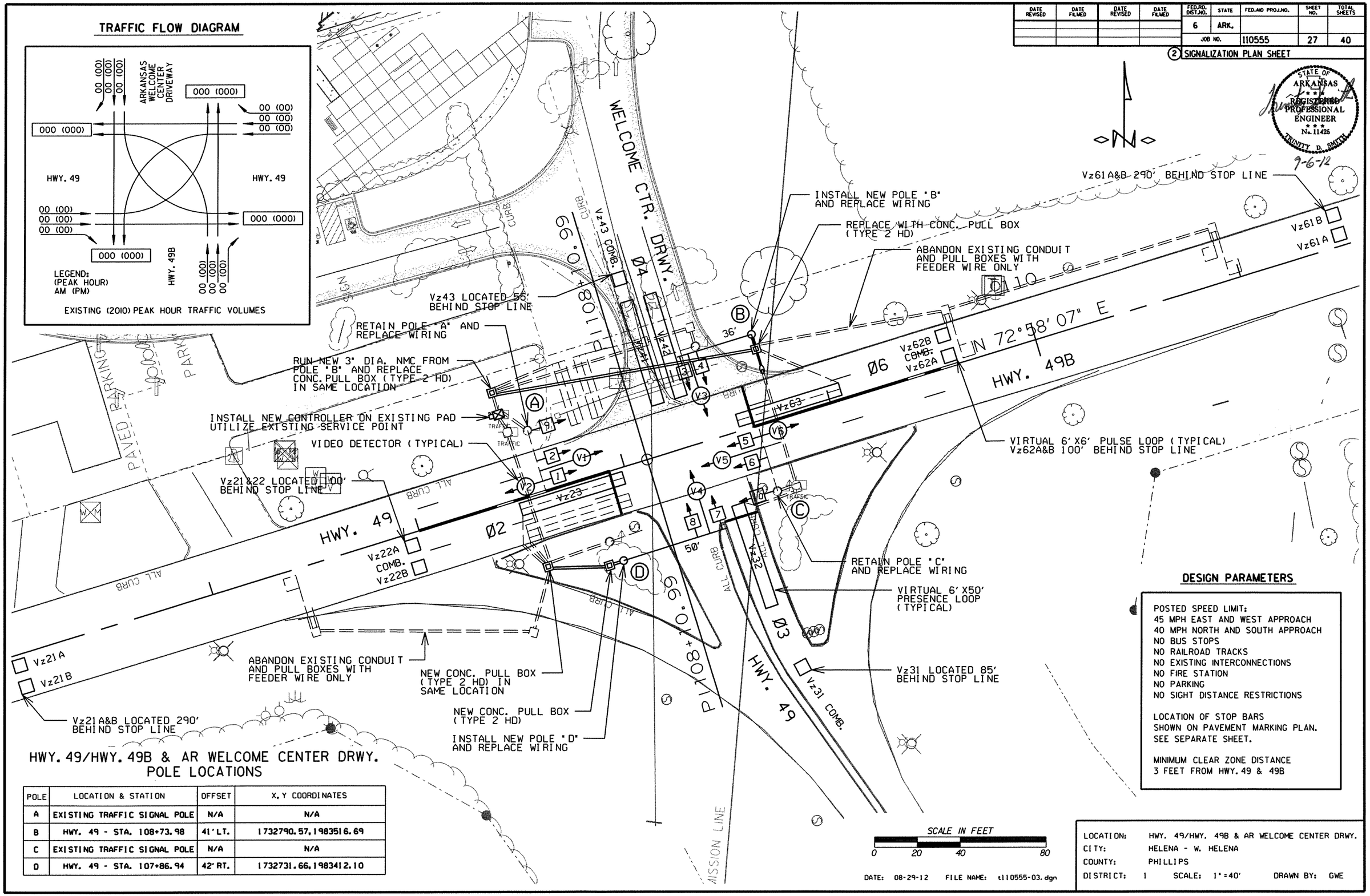
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	27	40

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

TRAFFIC FLOW DIAGRAM

EXISTING (2010) PEAK HOUR TRAFFIC VOLUMES



HWY. 49/HWY. 49B & AR WELCOME CENTER DRWY. POLE LOCATIONS

POLE	LOCATION & STATION	OFFSET	X, Y COORDINATES
A	EXISTING TRAFFIC SIGNAL POLE	N/A	N/A
B	HWY. 49 - STA. 108+73.98	41' LT.	1732790.57, 1983516.69
C	EXISTING TRAFFIC SIGNAL POLE	N/A	N/A
D	HWY. 49 - STA. 107+86.94	42' RT.	1732731.66, 1983412.10

DESIGN PARAMETERS

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

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

MINIMUM CLEAR ZONE DISTANCE 3 FEET FROM HWY. 49 & 49B

SCALE IN FEET
0 20 40 80

DATE: 08-29-12 FILE NAME: t110555-03.dgn

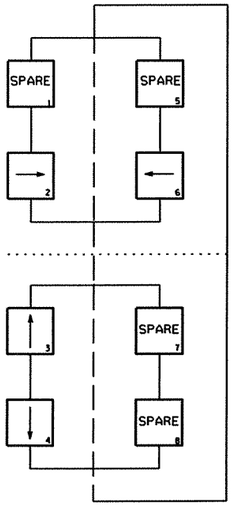
LOCATION:	HWY. 49/HWY. 49B & AR WELCOME CENTER DRWY.
CITY:	HELENA - W. HELENA
COUNTY:	PHILLIPS
DISTRICT: 1	SCALE: 1"=40' DRAWN BY: GWE

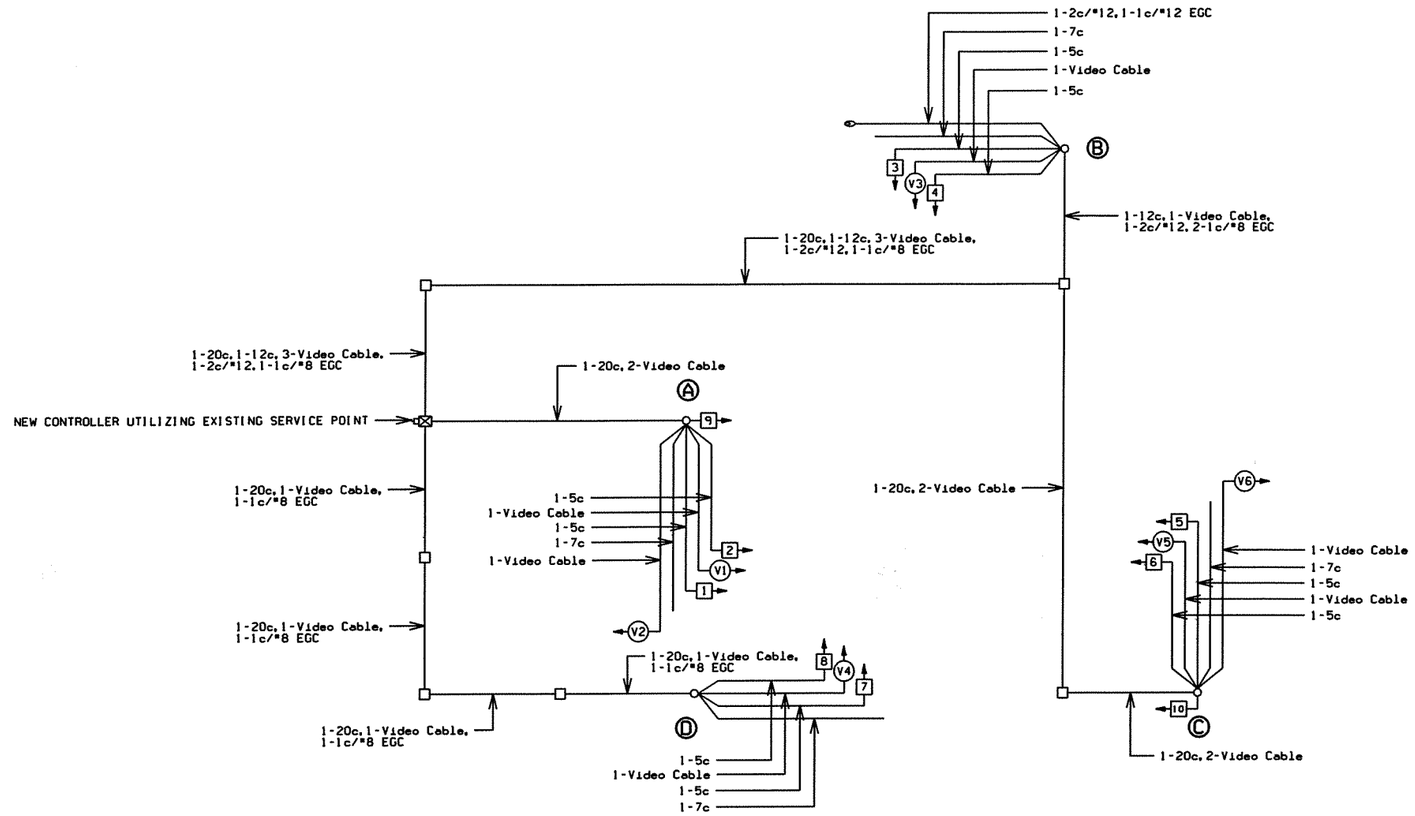
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	28	40

(2) SIGNALIZATION PLAN SHEET

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH 9-6-12

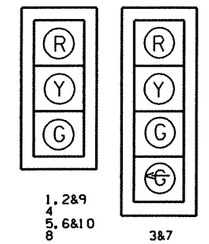
PHASING DIAGRAM





SIGNAL FACES

12" LENSES



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

DETECTOR SYSTEM DESCRIPTION: JOB 110555										
HELENA-HWY.49/HWY.49B&AR WECOME CENT. DRWY. DETECTOR ASSIGNMENTS				HARDWARE INPUTS BY SUPPLIER			PROGRAM ASSIGNMENTS			
							LOCAL		MASTER SYSTEM DETECTOR NUMBERS	COMMENTS	TUBE LENGTHS
DET. ID*	LOCATION DIRECTION	TYPE	DET. *	CAB. TRM *	AMP CHN. *	CON. INP.*	PHS	SYSTEM DET. *			
Vz21A&B	EB ADVANCE	LOCAL			1	V2	2			CAMERA V2	74'
Vz22A&B	EB NEAR	COMB.			2	V10	2	2		CAMERA V5	23'
Vz23	EB LT. TURN	LOCAL			3	V5	2			CAMERA V5	23'
Vz31	NB ADVANCE	COMB.			5	V11	3	3		CAMERA V3	23'
Vz32	NB NEAR	LOCAL			6	V3	3			CAMERA V3	23'
Vz41	SB RT. TURN	LOCAL			7	P1	4			CAMERA V4	23'
Vz42	SB LT. & THROUGH	LOCAL			8	V4	4			CAMERA V4	23'
Vz43	SB RT. ADVANCE	COMB.			9	V12	4	4		CAMERA V4	23'
Vz61A&B	WB ADVANCE	LOCAL			13	V6	6			CAMERA V6	74'
Vz62A&B	WB NEAR	COMB.			14	V14	6	6		CAMERA V1	23'
Vz63	WB LT. TURN	LOCAL			15	V1	6			CAMERA V1	23'
					SPARE 7, 8, 9, 13, 14 & 16						

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

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

WIRING DIAGRAM

NOTES TO CONTRACTOR:

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

INTERVAL CHART

SIGNAL FACES	HWY. 49/HWY. 49B							FLASH SEQ.
	2+6	CLR.	3	CLR.	4	CLR.		
1,2&9	G	Y	R	R	R	R		R
3	R	R	G/G	•/••	R	R		R
4	R	R	G	Y	R	R		R
5,6&10	G	Y	R	R	R	R		R
7	R	R	R	R	G/G	•/••		R
8	R	R	R	R	G	Y		R

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

DATE: 08-29-12 FILE NAME: t110555-03.dgn

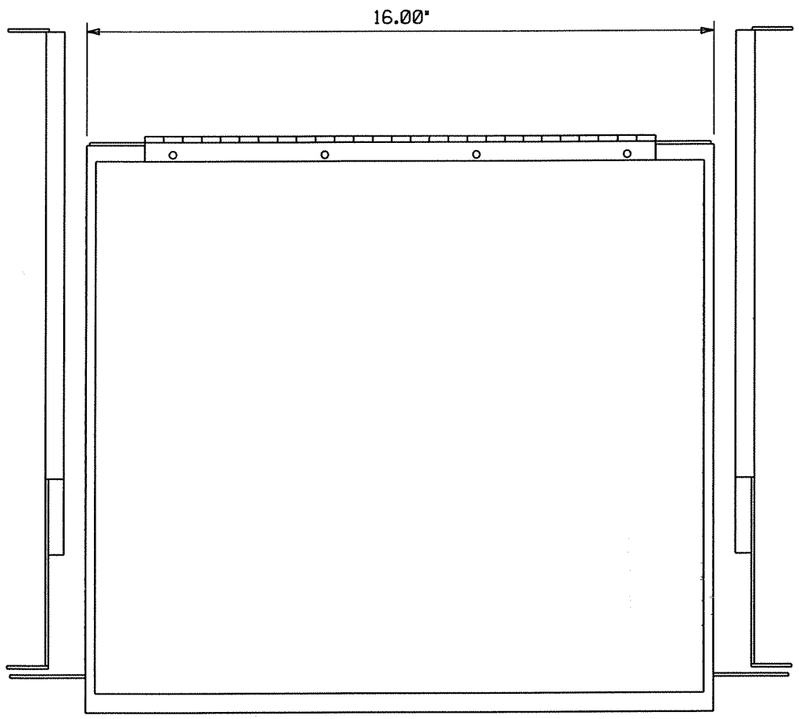
LOCATION: HWY. 49/HWY. 49B & AR WELCOME CENTER DRWY.
CITY: HELENA - W. HELENA
COUNTY: PHILLIPS
DISTRICT: 1 SCALE: N/A DRAWN BY: GWE

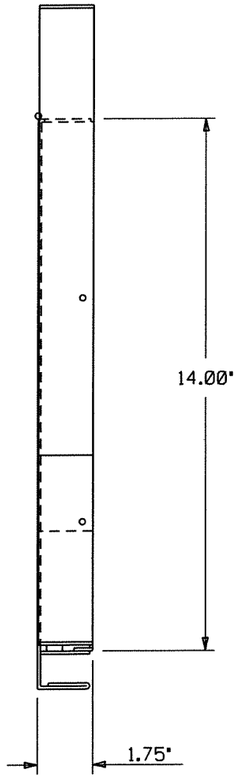
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	29	40

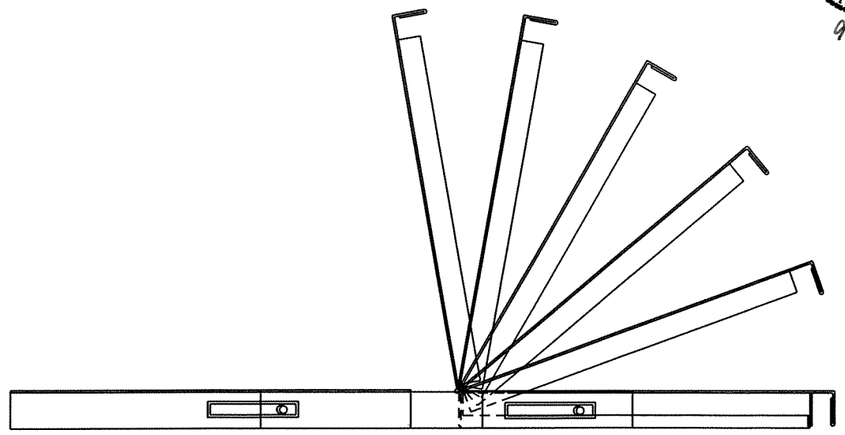
(2) SIGNALIZATION DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

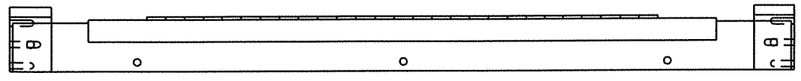
DRAWER PLAN VIEW



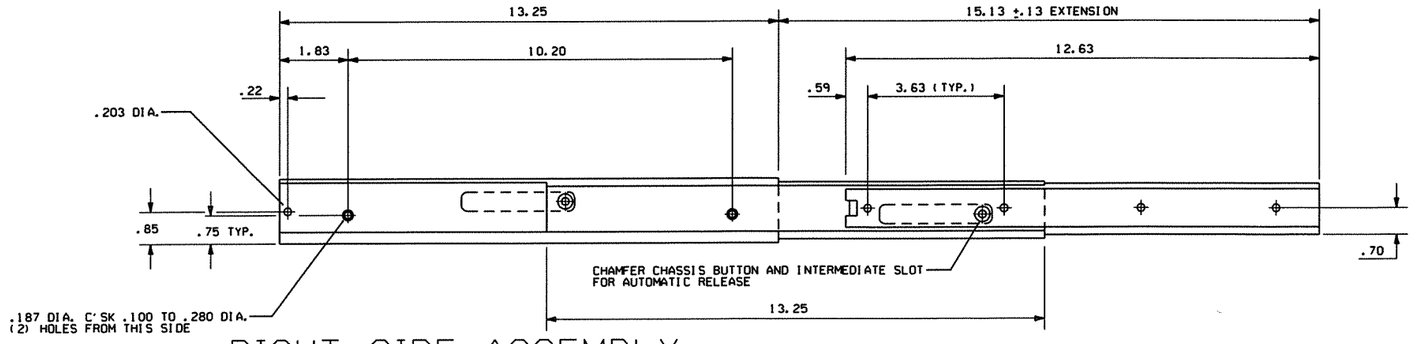




NOTES:
1. RIGHT HAND SLIDE SHOWN, LEFT SLIDE OPPOSITE.
2. GENERAL DEVICES (CC3002-99-0102) OR EQUAL AND CONTAINS (1) RIGHT HAND SLIDE ASSEMBLY, (1) LEFT HAND SLIDE ASSEMBLY.
3. ALL HARDWARE NECESSARY TO FASTEN SLIDE ASSEMBLY TO UNDERSIDE OF CONTROLLER SHELF SHALL BE INCLUDED.



FRONT VIEW



RIGHT SIDE ASSEMBLY

6-15-05	ISSUED	
DATE	REVISION	DATE FILM

ARKANSAS STATE HIGHWAY COMMISSION

SIGNALIZATION DETAIL
(Controller Cabinet Utility Drawer)

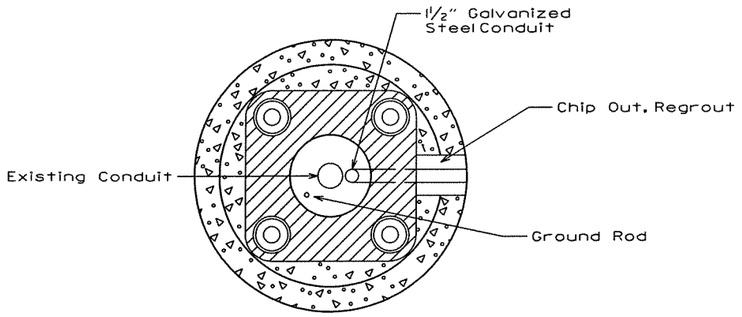
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	30	40

(2) SIGNALIZATION DETAILS

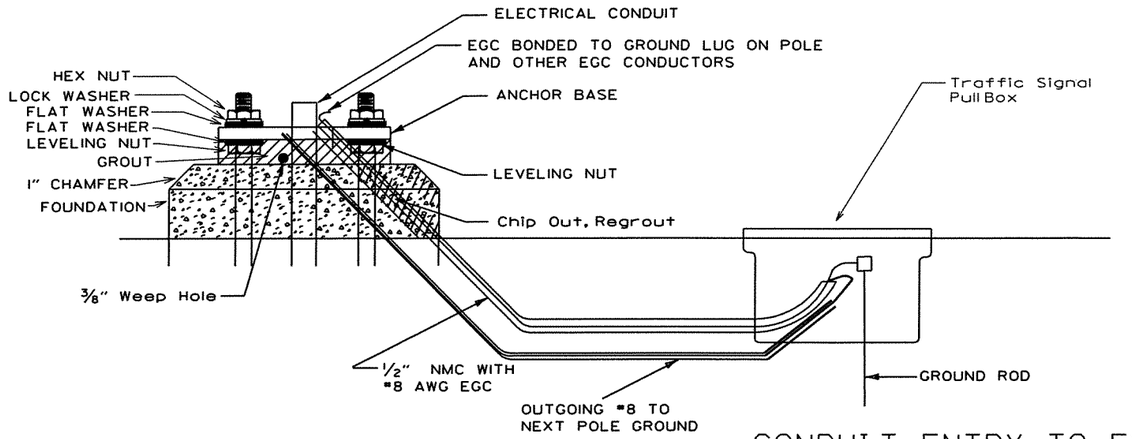
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 11425 TRINITY D. SMITH

9-6-12

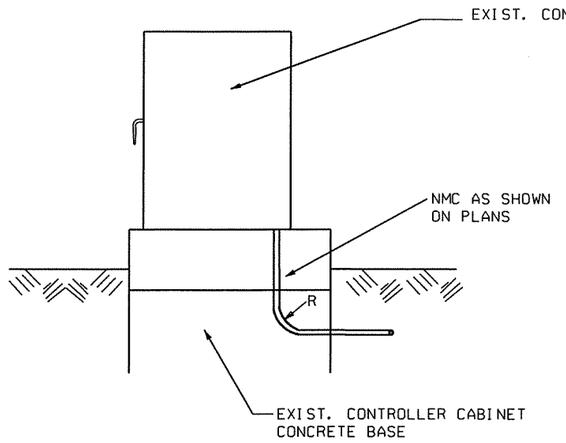
CONDUIT ENTRY TO EXISTING POLE BASE



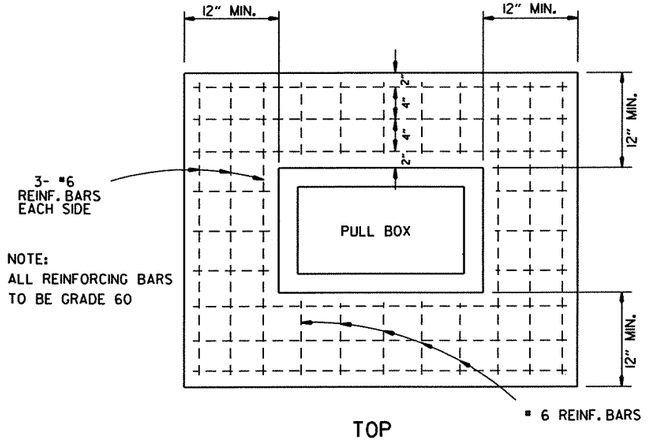
ANCHOR BASE



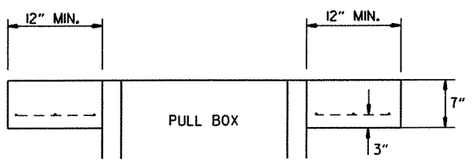
CONDUIT ENTRY TO EXISTING CONTROLLER CABINET



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

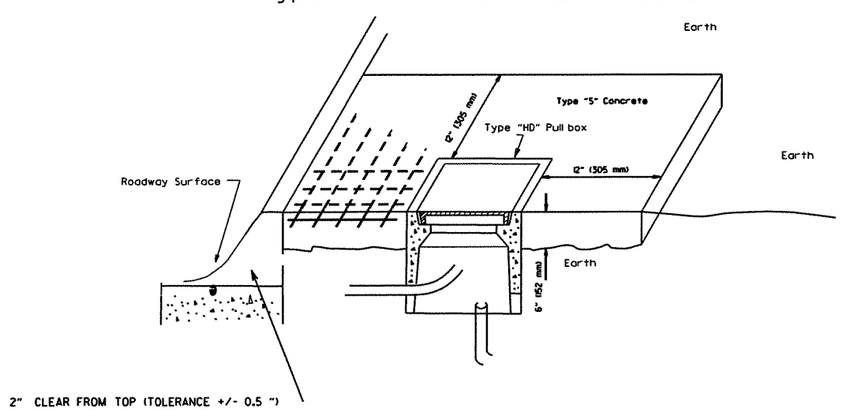


TOP



ELEVATION

Type "HD" Concrete Pull Box Detail



Note: All Type 1 and Type 2 HD pull boxes are installed with an apron of concrete 12" (305 mm) wide and 6" (152 mm) in depth. All payment shall be included in the price of the Type HD pull box. Pull box shall be installed flush to surrounding grade unless otherwise instructed by the engineer. The concrete shall be Class "S." Three #6 reinforcing bars in the apron on all sides of the pull box is required in concrete.

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

ARKANSAS STATE HIGHWAY COMMISSION

SIGNALIZATION DETAIL
(Heavy Duty Pull Box)

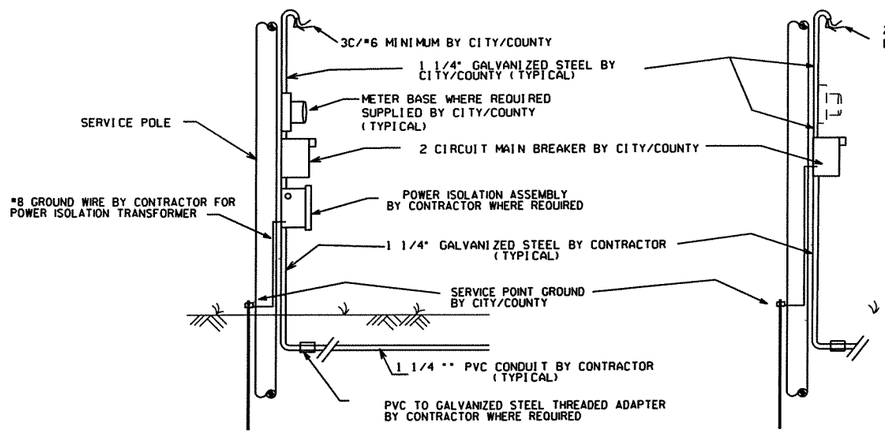
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	31	40

(2) SIGNALIZATION DETAILS

MAIN BREAKER NOT NEAR CONTROLLER CABINET SECONDARY REQUIRED

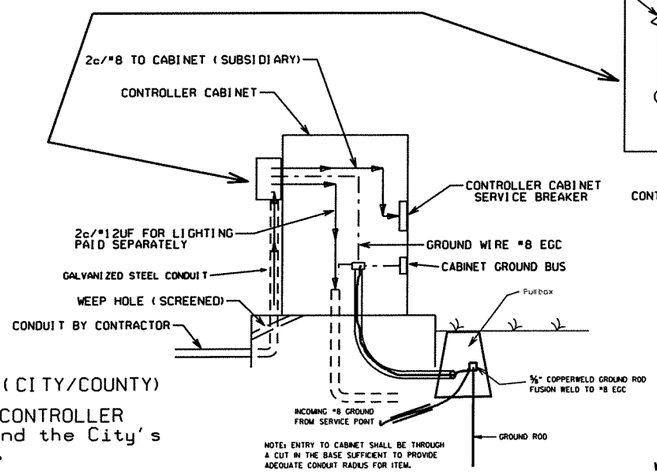
Ground Rod-A 10' x ⅝" ground rod shall be installed in the pull box for each pole and the controller. Payment for the ground rod and ½" NMC shall be included in Item 701. The pull box and conductor box shall be paid for separately.

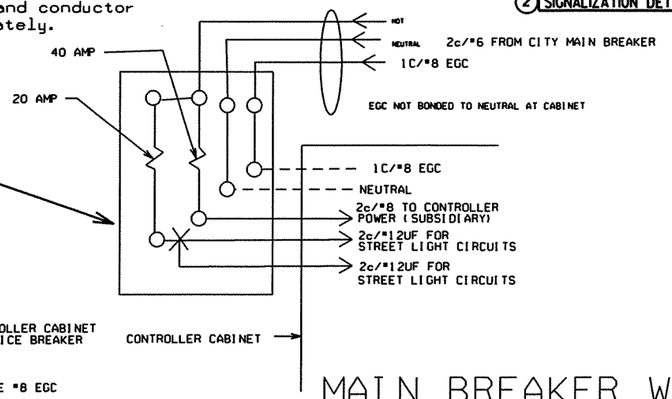
WITH POWER ISOLATION ASSEMBLY



WITHOUT POWER ISOLATION ASSEMBLY

SECONDARY BREAKER BY CONTRACTOR (SUBSIDIARY)





MAIN BREAKER WIRING (TYPICAL)

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

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.

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

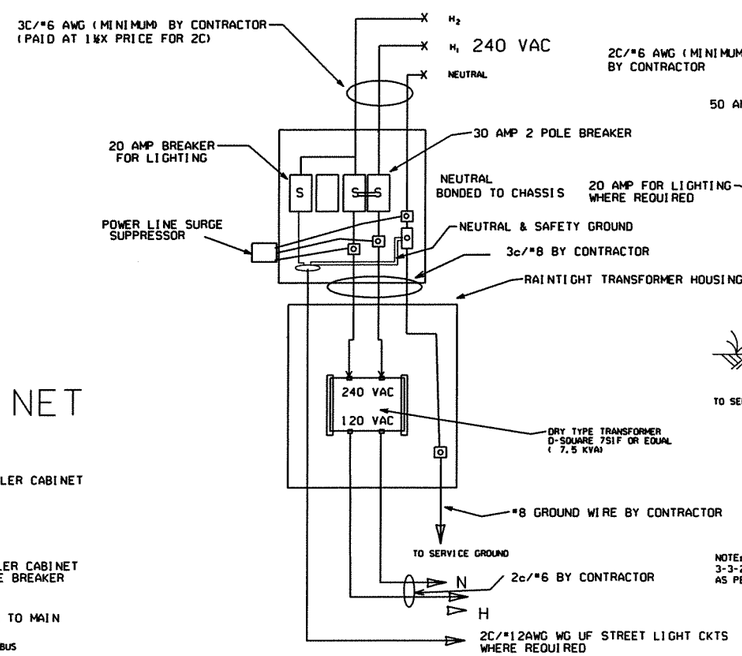
Electrical service typically falls into two categories: MAIN BREAKER NEAR CONTROLLER CABINET; and MAIN BREAKER NOT NEAR CONTROLLER CABINET. The Contractor's and the City's or County's responsibility varies accordingly as indicated on these details.

1. ALL SITUATIONS: Electrical service shall be provided by the City/County to a service pole with external raintight breaker (MAIN BREAKER) at a mutually acceptable point within the right-of-way. Service point includes galvanized steel conduit to a point 18" below ground line, two circuit main breaker, power isolation assembly where required, meter loop if required by local utility, electrical conductors and weatherhead. Where street lighting is included as part of signal installation, street lighting circuit (2c/#12 awg UF rated, typical) shall be kept separate from the circuit serving traffic signal. Service wire and wiring from the controller to main breaker is provided by the Contractor as a part of this contract. Wire and wiring from main breaker, and connection to the utility is the responsibility of the City/County.

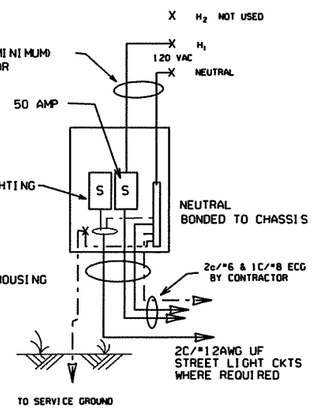
2. MAIN BREAKER NOT NEAR CONTROLLER CABINET: The Main Breaker assembly, galvanized steel conduit, weatherhead and wire above Main Breaker and connection to the utility shall be provided by City/County. Contractor shall provide as part of contract Secondary Breaker, conduit, wire and wiring to the Main Breaker.

3. MAIN BREAKER NEAR CONTROLLER CABINET: All components of the service point with the exception of the wire and wiring above the Main Breaker is furnished and installed by the Contractor. Wiring from Main Breaker including connection to the utility, is the responsibility of the City/County. If meter loop is required, meter base and hardware is provided by the City/County and installed by the contractor.

WITH POWER ISOLATION ASSEMBLY
4 CIRCUIT MAIN BREAKER

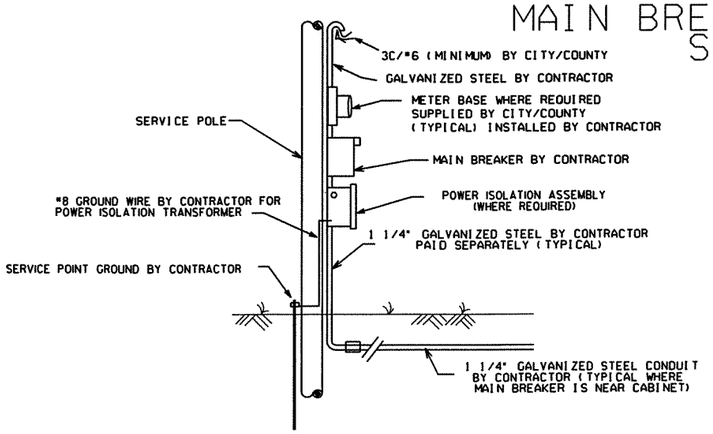


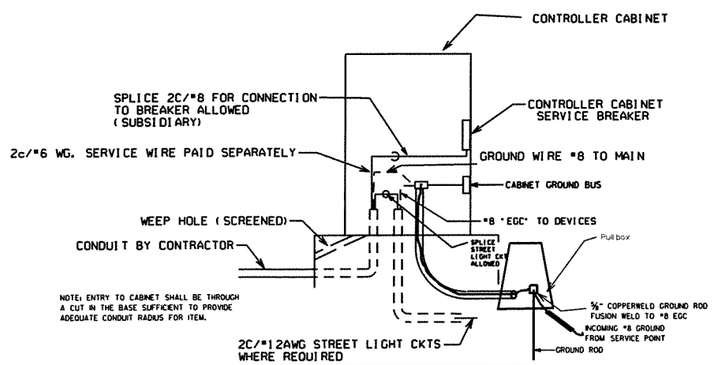
WITHOUT POWER ISOLATION ASSEMBLY
2 CIRCUIT MAIN BREAKER



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

MAIN BREAKER NEAR CONTROLLER CABINET SECONDARY NOT REQUIRED





DATE	REVISION	DATE FILM
5-21-09	REVISED GROUNDING	
7-31-08	REVISED GROUNDING	
3-3-03	ADDED EGC NOTE	
9-26-01	REVISED	
12-27-99	REVISED	
7-28-99	REVISED	
2-5-99	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

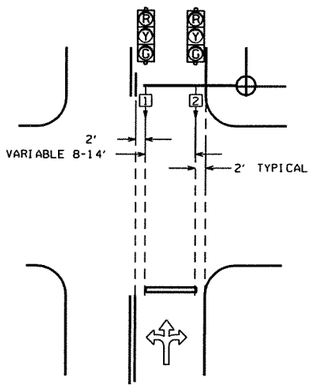
SIGNALIZATION DETAIL
(Service Point)

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	32	40

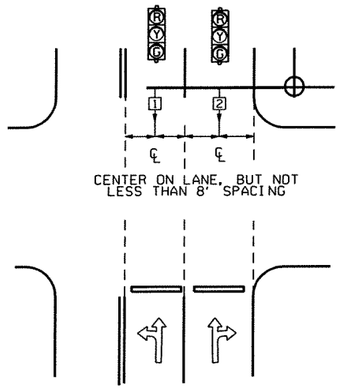
(2) SIGNALIZATION DETAILS

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

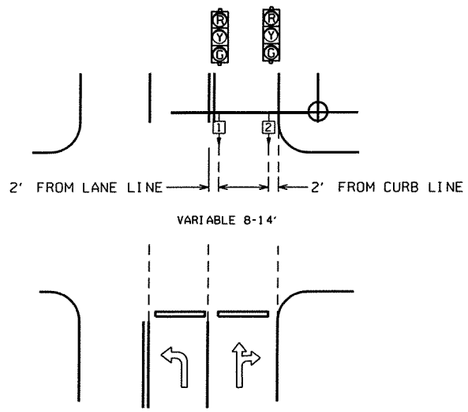
(A)



(B)



(C)



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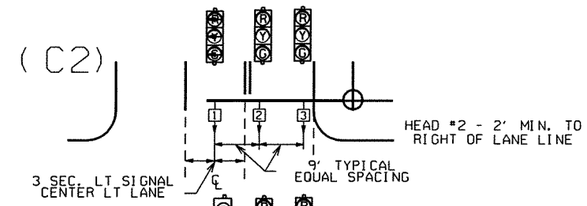

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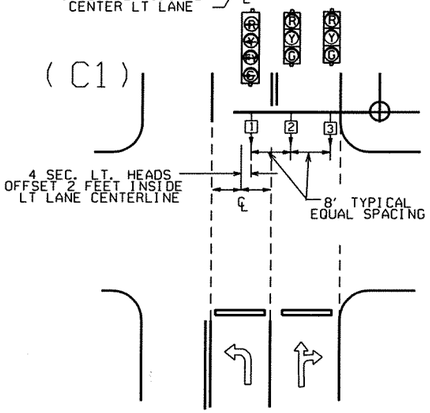

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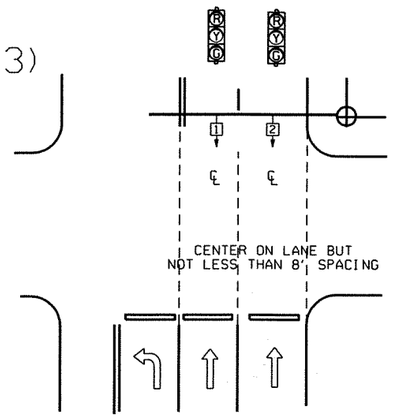
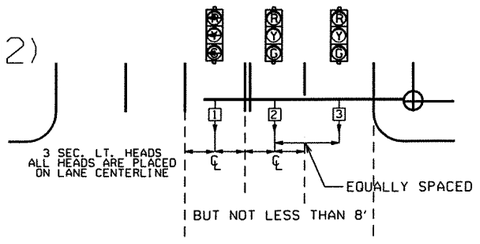
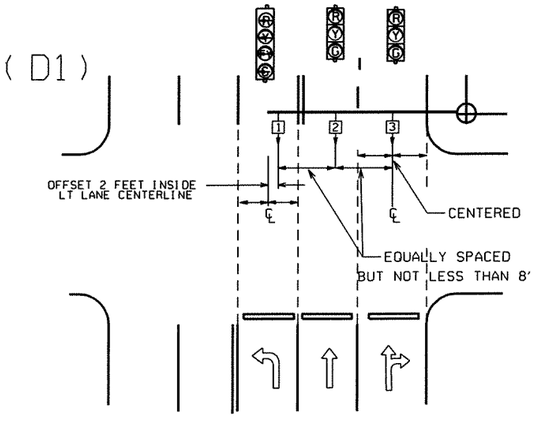


(D2)

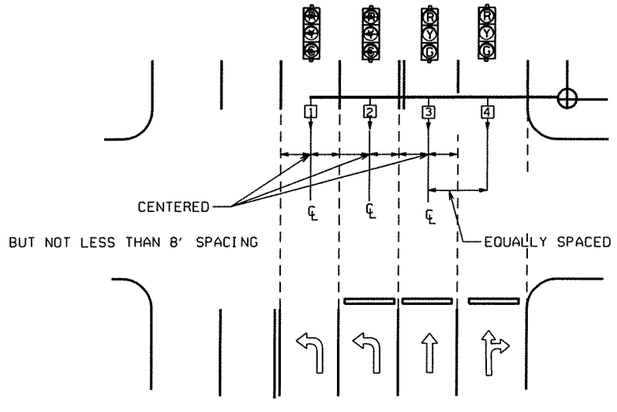


(D1)



NOTE: WHERE LEFT TURN HEAD (HEAD 1 ON D1 AND D2) IS NOT CALLED FOR ON PLANS, MAST ARM LENGTH MAY STILL BE ALLOWED FOR FUTURE INSTALLATION. HEADS FOR THROUGH MOVEMENTS SHALL STILL BE ALIGNED WITH THROUGH LANES AS SHOWN ON DETAILS

(E)



℄ = CENTER OF LANE FROM APPROACH SIDE

GENERAL NOTES:

1. FOUR SECTION "PROTECTED/PERMISSIVE" LEFT TURN HEADS SHOULD BE PLACED A MINIMUM OF TWO (2') FEET TO THE RIGHT OF THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

2. THREE SECTION "PROTECTED" LEFT TURN HEADS SHOULD BE PLACED ON THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

3. WHEN IT IS NECESSARY TO PLACE POLES OTHER THAN AS SHOWN ON PLAN SHEET(S) RESULTING IN MAST ARM EXTENDING MORE THAN TWO FEET PAST (TO THE LEFT OF) THE CENTERLINE OF THE APPROACHING LEFT TURN LANE, MAST ARM SHALL BE CUT TO APPROPRIATE LENGTH AS DETERMINED BY THE ENGINEER, AND A NEW END CAP PROVIDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THIS PRIOR TO INSTALLING THE MAST ARM IF ADDITIONAL COMPENSATION IS REQUIRED.

4. SIGNAL HEAD SPACING SHALL, IN NO CASE, BE LESS THAN EIGHT (8') FEET BETWEEN HEADS ON CENTER, MEASURED HORIZONTALLY PERPENDICULAR TO THE APPROACH.

5. ALL SIGNAL HEADS SHOWN ON THIS DETAIL SHEET SHALL BE LOCATED ACCORDING TO THE DIMENSIONS SHOWN IN RELATION TO THE APPROACH SIDE OF THE INTERSECTION.

6. MAXIMUM MOUNTING HEIGHT OF SIGNAL FACES LOCATED BETWEEN 40 FEET AND 53 FEET FROM STOP BAR SHALL BE IN ACCORDANCE WITH FIGURE 4D-1 OF 2009 MUTCD.

DATE	REVISION	DATE FILM
3-11-10	2009 MUTCD	
12-9-99	ISSUED	

ARKANSAS STATE HIGHWAY COMMISSION

SIGNALIZATION DETAIL
(Signal Head Placement)

DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED.RD. DIST.NO.	STATE	FED.AID PROJ.NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.		110555	33	40

(2) SIGNALIZATION DETAILS

NOTES, PED AND TRAFFIC SIGNAL HEAD SIGNS:
EACH ITEM "TRAFFIC SIGNAL HEAD (4 SEC., 1-WAY)" SHALL INCLUDE A SPECIAL SIGN AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD UNLESS REMOVED WITHIN THE SIGNAL PLAN NOTES.

EACH ITEM "TRAFFIC SIGNAL HEAD (3 SEC., 1-WAY)" TO BE USED AS A LEFT TURN INDICATION ONLY SHALL INCLUDE A SIGN (R10-10) AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD.

EACH PEDESTRIAN PUSHBUTTON SHALL HAVE ONE R10-3E SIGN ATTACHED TO THE POLE ABOVE THE BUTTON. ALL SIGN FACES SHALL BE CONSTRUCTED OF HIGH INTENSITY SHEETING (TYPE III) WITH SILKSCREEN LEGEND AND BORDER.

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

GENERAL NOTES:
1. MAST ARM POLES SHALL BE MOUNTED A MINIMUM OF 4 FT. BEHIND CURB OR SHOULDER.

2. OCTAGONAL POLES AND ARMS MEETING THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS CAN BE INSTALLED IN LIEU OF ROUND. ALL POLES AND ARMS IN A JOB MUST BE THE SAME SHAPE.

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

USE FATIGUE CATEGORY I FOR ALL STRUCTURES ON ROUTES WHERE THE SPEED LIMIT IS 65 MPH AND GREATER AT THE STRUCTURE LOCATION AND ON ROUTES WHERE SPEED LIMIT IS GREATER THAN 45 MPH WITH AN ARM 60' OR LONGER.

USE FATIGUE CATEGORY II FOR STRUCTURES ON ROUTES WITH A SPEED LIMIT LESS THAN 65 MPH AND GREATER THAN 45 MPH WITH ARMS LESS THAN 60' AND ROUTES WITH SPEED LIMITS OF 45 MPH AND LESS WITH AN ARM 60' OR LONGER.

USE FATIGUE CATEGORY III FOR ALL STRUCTURES WHERE SPEED LIMIT IS 45 MPH AND LESS AND ARMS LESS THAN 60'.

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

BASE WIND SPEED: 90 MPH.

STEEL MEMBERS CONSIDERED MAIN LOAD CARRYING MEMBERS WITH A THICKNESS GREATER THAN 1/2" SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST SPECIFIED IN SUBSECTION 807.05 OF THE STANDARD SPECIFICATIONS.

DEAD LOAD: AS A MINIMUM, DESIGN SHALL BE BASED ON THE FIXED ATTACHMENTS SHOWN BELOW OR AS MODIFIED IN THE PLANS.

ALL SIGNAL HEADS TO BE ONE WAY, 12 INCH, AND HAVE 5 IN. BACK PLATES:

HEADS AT END OF ARM - ONE 4 SEC., 85 LB., 16.0 SQ. FT. ONE SIGN MOUNTED 3 FT. FROM SIGNAL • 2' X 0" X 2' • 6"; 20 LB. REMAINING HEADS SPACED A 8 FT. • 3 SEC., 56 LB., TWO 5 SEC):
14.4 SQ. FT. DESIGN TO ACCOMMODATE (INCLUDING
2 HEADS FOR ARMS 10 TO 16 FT.
2 HEADS FOR ARMS 10 TO 16 FT.; INCLUDING LB.
3 HEADS FOR 18 TO 24 FT. ARMS;
4 HEADS FOR OVER 26 FT. ARMS.

STREET NAME SIGN -- 72" X 18", 36 LB., MOUNTED SUCH THAT OUTSIDE EDGE IS NOT GREATER THAN 12 FT. FROM POLE. DEPENDING UPON POSITION OF SIGNAL HEAD ADJACENT TO POLE, SIGN MAY OVERLAP POLE SHAFT ROADWAY LUMINAIRES (WHERE REQUIRED ON PLAN SHEET) • VARIABLE ARM LENGTH (MAX.), 3.3 SQ. FT., 75 LB. PED SIGNALS -- TWO 2 SEC. 12 INCH MOUNTED 8 FT. FROM BASE OF POLE.
POST MOUNTED 3 SEC. SIGNAL HEAD AT 10 FT. ON SIDE OF POLE.

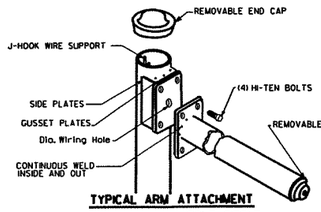
4. POLE/MAST ARM CAP -- POLE AND MAST ARMS CAPS SHALL BE PROVIDED, FABRICATED OF EITHER STEEL OR CAST ALUMINUM.

5. HAND HOLE -- HAND HOLES SHALL BE 4 X 6 INCHES FOR STANDARD, AND 3 X 5 INCHES FOR PED POLES, MINIMUM PLACED APPROXIMATELY 12 INCHES FROM BASE, AND SHALL BE FIXED WITH A BOLT DOWN COVER. A VACUUM FORMED ABS COVER IS AN ACCEPTABLE ALTERNATE TO STEEL. POLES GREATER THAN 21 FT. IN HEIGHT (FOR ROADWAY LUMINAIRE ATTACHMENT) SHALL INCLUDE A HAND HOLD WITHIN 12 INCHES OF MAST ARM(S) ATTACHMENT(S).

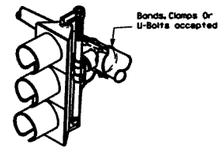
6. POLE/MAST ARM TAPER AND SLOPE - AVERAGE TAPER OF SIGNAL ARMS AND POLE SHALL BE 0.125 TO 0.15 INCHES PER FT.

MAST ARM CENTERLINE ANGLE AT ATTACHMENT POINT WITH POLE SHALL MAINTAIN NOT LESS THAN 0.5 DEGREES OR MORE THAN 4 DEGREES POSITIVE SLOPE WITH A LINE PERPENDICULAR TO THE POLE CENTERLINE. THE ARM SHALL MAINTAIN A POSITIVE AFTER IT IS PLACED UNDER LOAD.

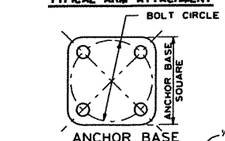
7. NUT COVERS - EACH POLE SHALL INCLUDE A BOLT DOWN NUT COVER FOR EACH ANCHOR BOLT.



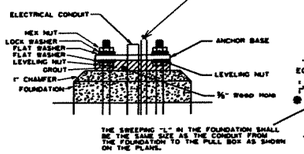
TYPICAL ARM ATTACHMENT

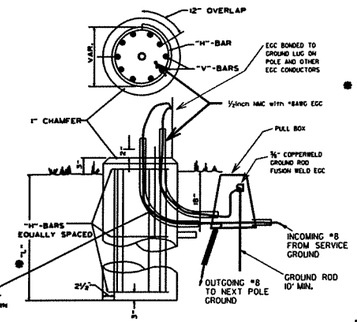


NOTE: THE SIGNAL SHALL BE CONNECTED TO THE MAST ARM BY BRACKETING AS DIRECTED BY THE ENGINEER.



ANCHOR BASE



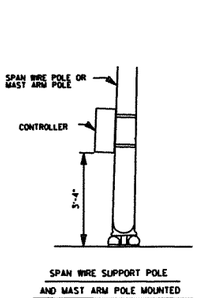


THE GROUND ROD SHALL BE FUSION WELDED TO A 10'/#8 A.W.G. SOLID COPPER GROUND WIRE. ATTACHMENT TO THE PRIMARY GROUND MAY BE BY AN APPROVED CLAMP. THE ROD IS TO BE LOCATED IN THE CONCRETE PULL BOX.

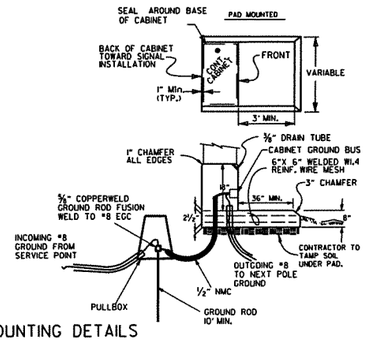
TYPICAL FOUNDATION DETAILS

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

ARM LENGTH	FDN. DIAMETER	DEPTH "L" ●	STEEL VERT.	STEEL HORZ.	STEEL O/C.
PED	30"	7'-0"	12-#7 (6'-6")	10-#4	8.44"
2' to 12'	30"	10'-6"	12-#7 (10'-0")	15-#4	8.42"
over 12' to 20'	30"	11'-6"	12-#7 (11'-0")	16-#4	8.66"
over 20' to 35'	36"	12'-6"	13-#8 (12'-0")	17-#4	8.88"
over 35' to 50'	36"	13'-6"	13-#8 (13'-0")	19-#4	8.56"
over 50' to 72'	42"	14'-6"	18-#8 (14'-0")	20-#4	8.74"
Twins to 20'	30"	16'-0"	12-#6 (15'-6")	22-#4	8.76"
Twins over 20' to 44'	36"	16'-0"	13-#8 (15'-6")	22-#4	8.76"
Twins over 44' to 50'	42"	16'-0"	18-#8 (15'-6")	22-#4	8.76"
Twins over 50' to 72'	42"	16'-6"	18-#8 (16'-0")	23-#4	8.64"



SPAN WIRE SUPPORT POLE AND MAST ARM POLE MOUNTED



CONTROLLER CABINET MOUNTING DETAILS

UNLESS OTHERWISE DIRECTED BY THE ENGINEER, CABINET ORIENTATION SHALL BE SUCH THAT THE BACK OF THE CABINET IS PARALLEL TO THE STREET AND POSITIONED TO ALLOW VISIBILITY OF THE SIGNAL DISPLAY WHILE OBSERVING THE CONTROLLER FRONT PANEL.

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

9. POLE BASE/FOUNDATION - ANCHOR BOLTS SHALL INCLUDE AS A MINIMUM, ONE LEVELING NUT, TWO FLAT WASHERS, ONE LOCK WASHER, AND ONE HEX. NUT. PERIMETER OF ANCHOR BASE SHALL BE GROUTED WITH A 1/4" WEEP HOLE. ALL CONCRETE SHALL BE CLASS "S" OR GREATER.

10. CONCRETE - ALL CONCRETE FOR CONTROLLER CABINET AND POLE FOUNDATIONS SHALL BE CLASS "S" OR GREATER.

11. PEDESTRIAN PHASES - PEDESTRIAN MOVEMENTS SHALL BE PUSH BUTTON ACTUATED AND CONCURRENTLY TIMED, UNLESS OTHERWISE INDICATED ON THE PLAN SHEET(S). FURNISHING AND INSTALLING PED PUSH SWITCH SHALL BE CONSIDERED SUBSIDIARY TO THE ITEM PEDESTRIAN SIGNAL HEAD.

SIGNAL OPERATION NOTES:

FLASHING OPERATION - PRIOR TO NORMAL OPERATION, SIGNAL SHALL BE FLASHED FOR A PERIOD OF 3 TO 5 WORK DAYS OR AS DIRECTED BY THE ENGINEER. SIGNAL SHALL BE PLACED IN OPERATION ONLY ON A REGULAR WORK DAY, EXCEPT FRIDAY.

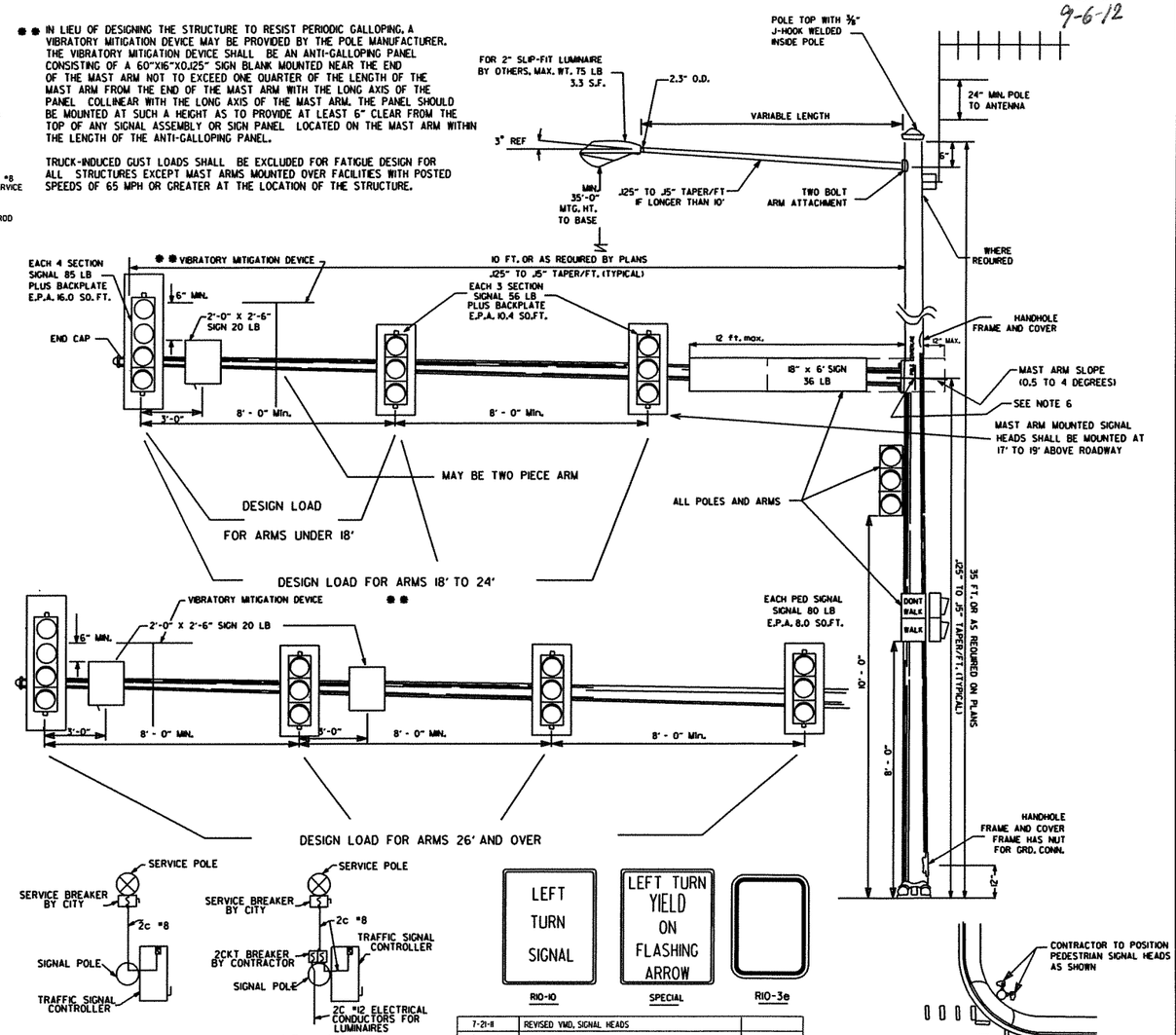
THE CONTRACTOR MAY BE REQUIRED TO ALTER THE FLASHING DISPLAY DURING THE TEMPORARY FLASH PERIOD. AT THE TIME INTERSECTION IS PLACED IN PERMANENT OPERATION, THE FLASH SEQUENCE SHALL THEN BE RETURNED TO THAT INDICATED ON THE PLAN SHEETS. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THESE ALTERATIONS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

SPECIAL NOTE: 90 MPH WIND ZONE DESIGN, SEE NOTE 3. MINIMUM STRUCTURAL REQUIREMENTS.

● WHEN THE GROUND ELEVATION AT THE POLE IS LOWER THAN THE ROADWAY ELEVATION, THE LENGTH OF FOUNDATION ABOVE THE GROUND MAY BE INCREASED TO PROVIDE THE REQUIRED SIGNAL HEAD CLEARANCE ABOVE THE ROADWAY. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 18" OR LESS, NO INCREASE IN DEPTH "L" WILL BE REQUIRED. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 5'-6" OR LESS, INCREASE DEPTH "L" BY 1'-0". FOR LENGTHS GREATER THAN 5'-6", DEPTH "L" SHALL BE ADJUSTED AS DIRECTED BY THE ENGINEER. LONGITUDINAL REINFORCING, AS SHOWN IN THE TABLE, SHALL BE PROVIDED FOR THE LENGTH OF THE EXTENDED SHAFT AND #4 TIES SHALL BE PROVIDED AT A SPACING NOT TO EXCEED 9" ON CENTERS. PAYMENT WILL BE IN ACCORDANCE WITH SECTION 714 OF THE STANDARD SPECIFICATIONS.

●● IN LIEU OF DESIGNING THE STRUCTURE TO RESIST PERIODIC GALLOPING, A VIBRATORY MITIGATION DEVICE MAY BE PROVIDED BY THE POLE MANUFACTURER. THE VIBRATORY MITIGATION DEVICE SHALL BE AN ANTI-GALLOPING PANEL CONSISTING OF A 60"X16"X0.125" SIGN BLANK MOUNTED NEAR THE END OF THE MAST ARM NOT TO EXCEED ONE QUARTER OF THE LENGTH OF THE MAST ARM FROM THE END OF THE MAST ARM WITH THE LONG AXIS OF THE PANEL COLLINEAR WITH THE LONG AXIS OF THE MAST ARM. THE PANEL SHOULD BE MOUNTED AT SUCH A HEIGHT AS TO PROVIDE AT LEAST 6" CLEAR FROM THE TOP OF ANY SIGNAL ASSEMBLY OR SIGN PANEL LOCATED ON THE MAST ARM WITHIN THE LENGTH OF THE ANTI-GALLOPING PANEL.

TRUCK-INDUCED GUST LOADS SHALL BE EXCLUDED FOR FATIGUE DESIGN FOR ALL STRUCTURES EXCEPT MAST ARMS MOUNTED OVER FACILITIES WITH POSTED SPEEDS OF 65 MPH OR GREATER AT THE LOCATION OF THE STRUCTURE.



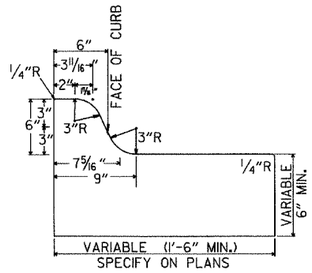
SERVICE DISCONNECT

7-21-11	REVISED VMD, SIGNAL HEADS	
5-21-09	REVISED GROUNDING	
7-31-08	REVISED GROUNDING	
4-25-08	ADDED VIBRATORY MITIGATION DEVICE & NOTES	
4-18-08	REVISED AASHTO NOTES	
4-17-08	REVISED TO 2001 AASHTO STANDARDS	
10-12-04	REVISED CABINET ORIENTATION	
6-23-04	REVISED	
5-8-04	REV. NOTE 3/AASHTO REQUIREMENTS	
6-18-01	REV. NOTES & POLE MAST ARM SLOPE	
4-18-01	REVISED POLE TAPERS	
4-25-00	REV. NOTES & SIGNAL HEAD PLACEMENT	
11-22-99	REVISED FOUNDATION DETAILS	
11-17-98	REVISED DETAILS AND NOTES	
11-21-95	ISSUED	
DATE	REVISION	DATE FILM

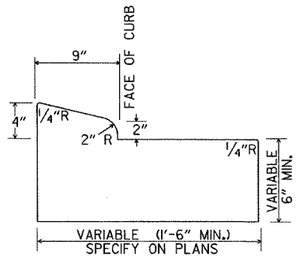
STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 11425
TRINITY D. SMITH
9-6-12

ARKANSAS STATE HIGHWAY COMMISSION

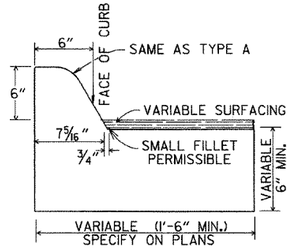
SIGNALIZATION DETAILS
(Steel Pole With Mast Arm)



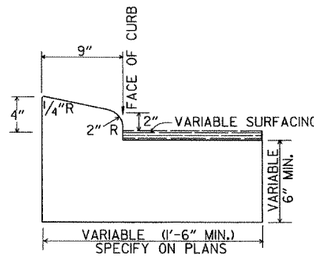
TYPE A



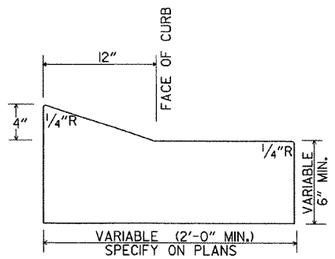
TYPE B-1



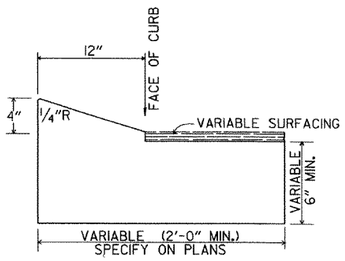
TYPE C



TYPE B-2

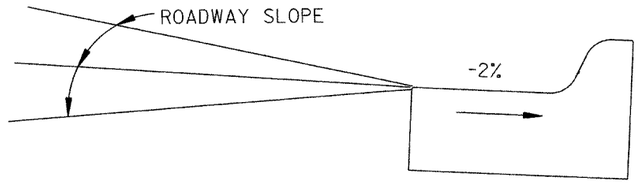


TYPE E-1



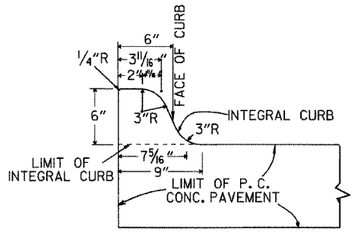
TYPE E-2

CONCRETE COMBINATION CURB AND GUTTER

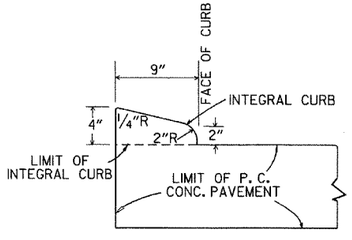


DETAIL OF GUTTER SLOPE

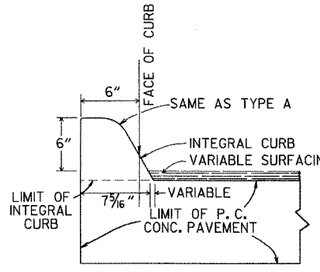
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.



TYPE A

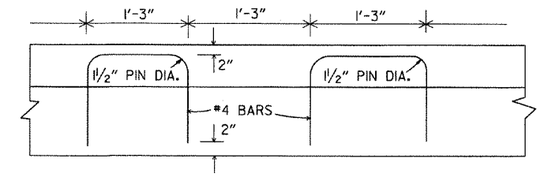


TYPE B



TYPE C

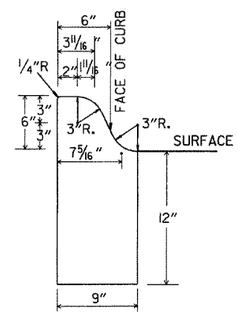
INTEGRAL CURB



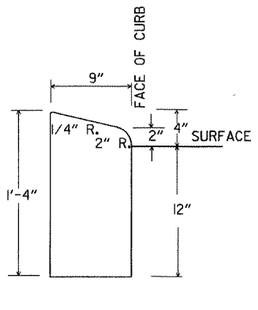
LONGITUDINAL SECTION

ELEVATION

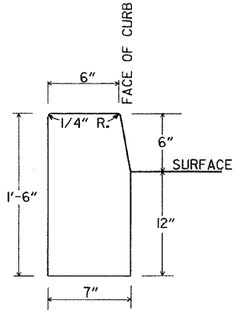
ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB



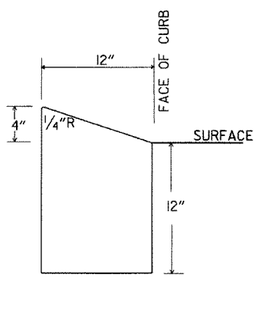
TYPE A



TYPE B

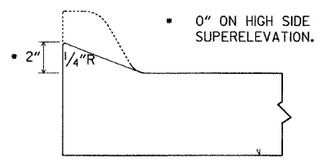


TYPE D



TYPE E

CONCRETE CURB



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

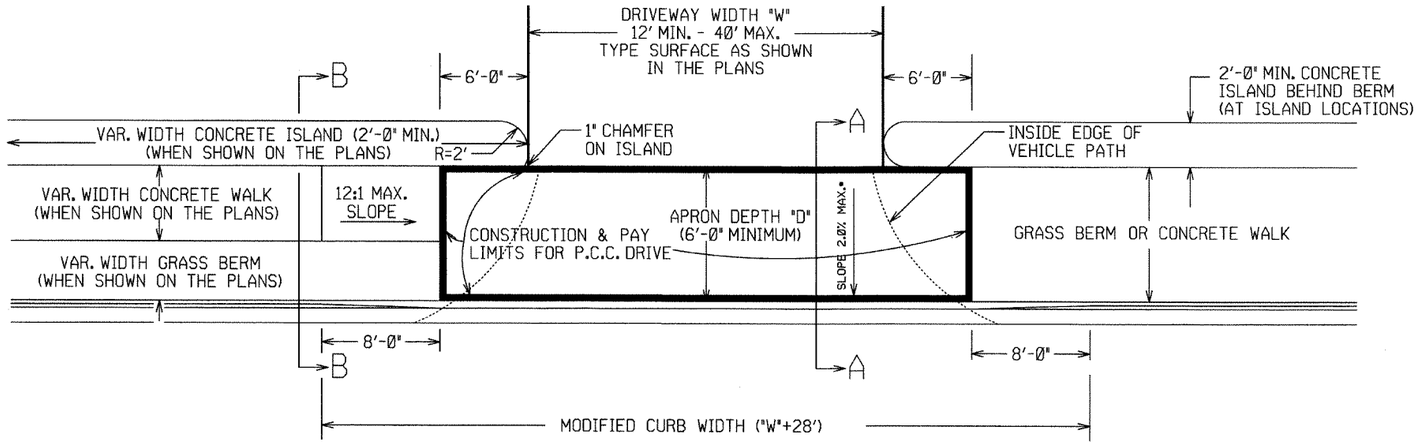
DETAILS OF MODIFIED CURB

DATE	REVISION	DATE FILMED
11-29-07	REVISED GUTTER SLOPE & MODIFIED CURB DETAILS	
11-10-05	ADDED DETAILS OF TYPE E CURBS	
11-16-01	REVISED CONCRETE CURB TYPE B	
11-18-98	REVISED MODIFIED CURB	
6-2-94	ADDED NOTE TO SPECIAL MODIFIED CURB	
8-5-93	CORRECTED GUTTER SLOPE	8-5-93
10-1-92	ADDED DETAILS OF GUTTER SLOPE	10-1-92
5-24-90	ADDED DETAILS OF MODIFIED CURB	5-24-90
11-30-89	VARIBLE DEPTH TYPE A & B I	11-30-89
7-15-88	REVISED MODIFIED CURB	630-7-15-88
11-1-73	REVISED MODIFIED CURB	600-11-1-73
10-2-72	REVISED AND REDRAWN	512-10-2-72

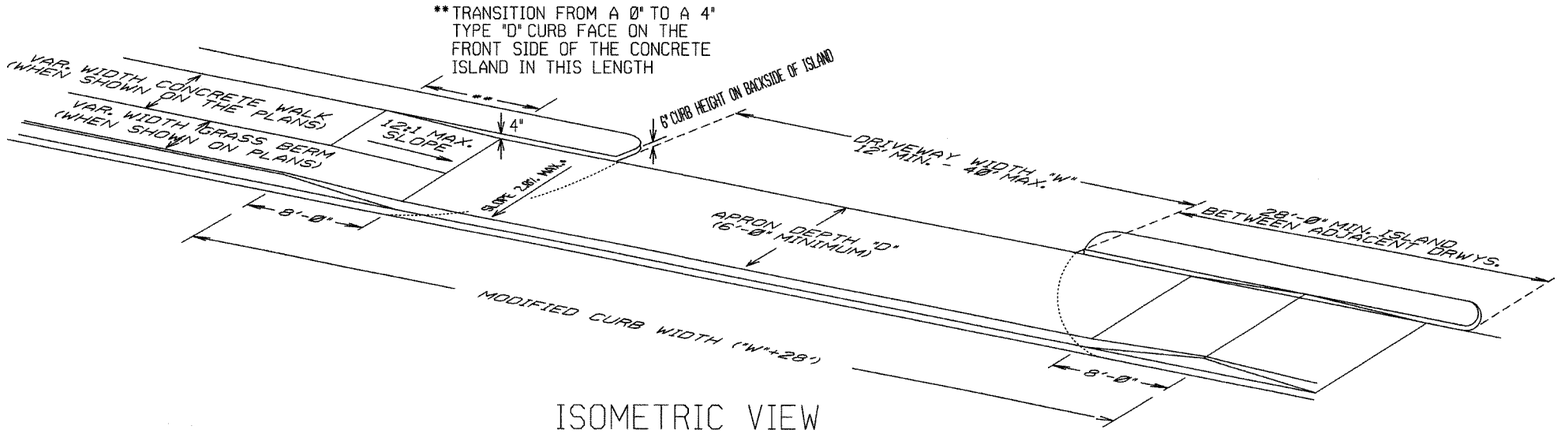
ARKANSAS STATE HIGHWAY COMMISSION

CURBING DETAILS

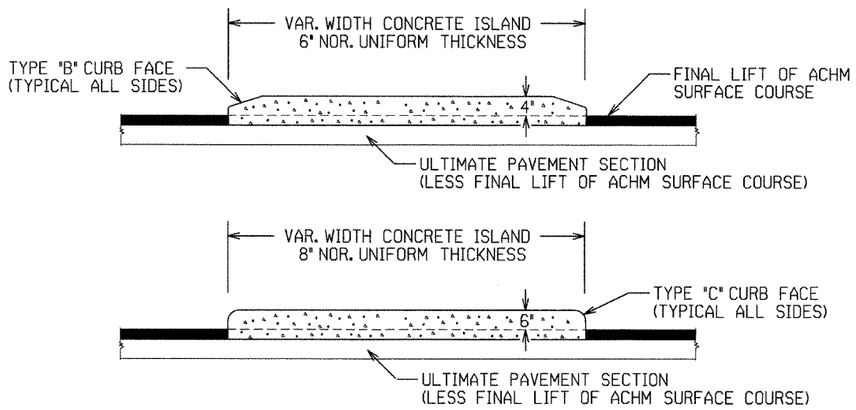
STANDARD DRAWING CG-1



PLAN VIEW

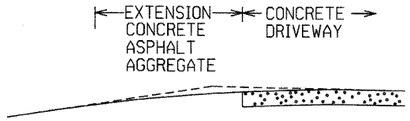


ISOMETRIC VIEW



CURBED ISLANDS FOR CHANNELIZATION

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



EXTENSION TYPICAL SECTIONS

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

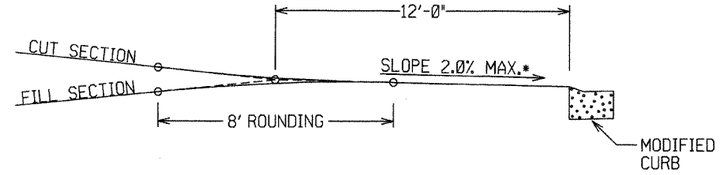
2: ASPHALT - 2" ACHM SURFACE COURSE (1/2")
4" ACHM BINDER COURSE.(1") OR
4" ACHM BASE COURSE (1-1/2")

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

4: AGGREGATE - 6" AGGREGATE BASE COURSE

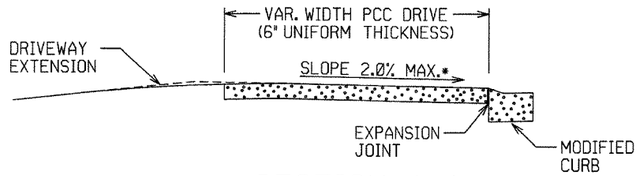
THE TYPE OF EXTENSION SHALL BE AS SHOWN IN THE PLANS. THE CONTRACTOR MAY, WITH THE APPROVAL OF THE ENGINEER, SUBSTITUTE A LOWER NUMBERED TYPE OF EXTENSION IN LIEU OF THE TYPE SPECIFIED IN THE PLANS, BUT AT NO ADDITIONAL COST TO THE DEPARTMENT.

DRIVEWAY EXTENSION DETAILS

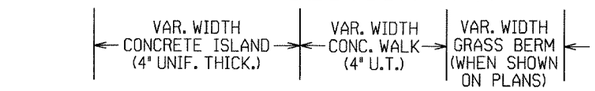


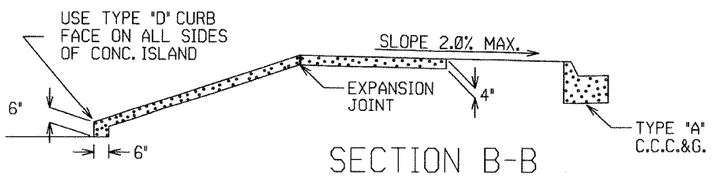
DRIVEWAY VERTICAL ALIGNMENT DETAILS

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



SECTION A-A





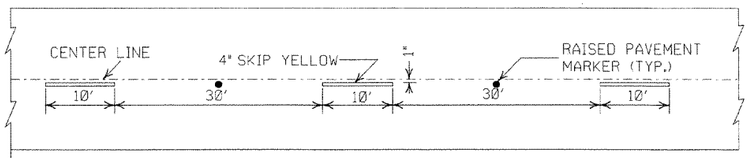
SECTION B-B
CURBED ISLAND BEHIND WALK

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

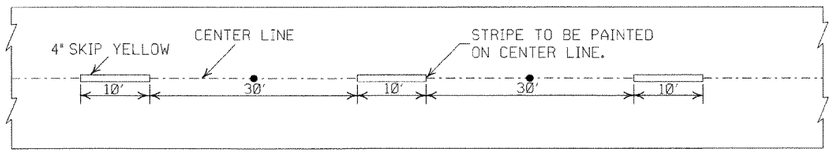
ARKANSAS STATE HIGHWAY COMMISSION
DETAILS OF DRIVEWAYS & ISLANDS
STANDARD DRAWING DR-1

NOTES:

1. ALL LINES SHALL HAVE A WIDTH OF 4 INCHES.
2. THE THICKNESS AND RATE OF PAINT APPLICATION SHALL BE AS SPECIFIED IN SECTION 718 OF THE STANDARD SPECIFICATIONS.
3. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
4. RAISED PAVEMENT MARKERS SHALL BE CENTERED BETWEEN SKIP LINES ON 40 FEET SPACING UNLESS OTHERWISE SHOWN ON THE PLANS.

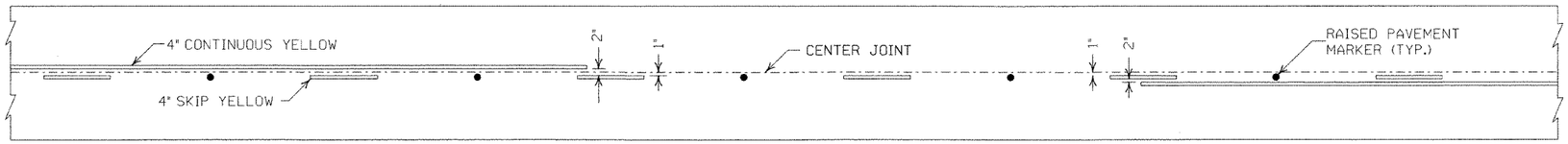


CONCRETE PAVEMENT

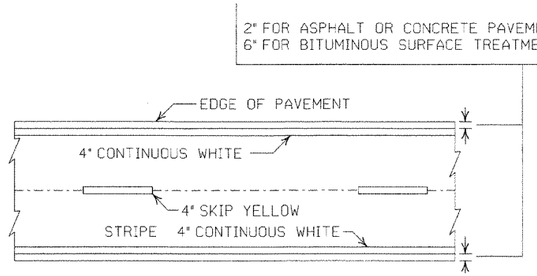


ASPHALT PAVEMENT

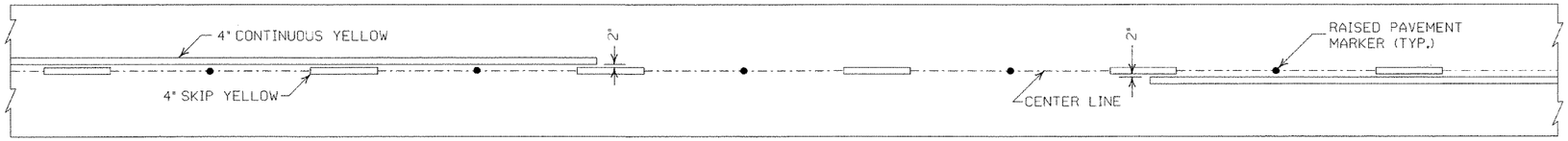
BROKEN LINE STRIPING



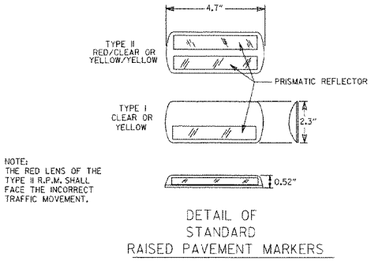
SOLID LINE STRIPING ON CONCRETE PAVEMENT



PAVEMENT EDGE LINE MARKING

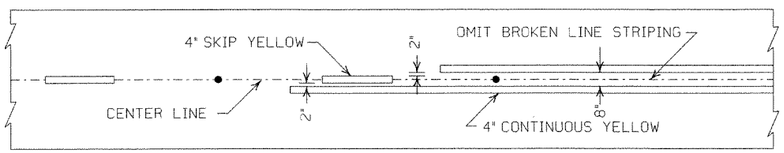


SOLID LINE STRIPING ON ASPHALT PAVEMENT

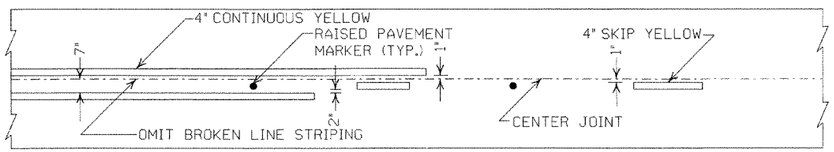


NOTE:
THE RED LENS OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

DETAIL OF STANDARD RAISED PAVEMENT MARKERS



ASPHALT PAVEMENT



CONCRETE PAVEMENT

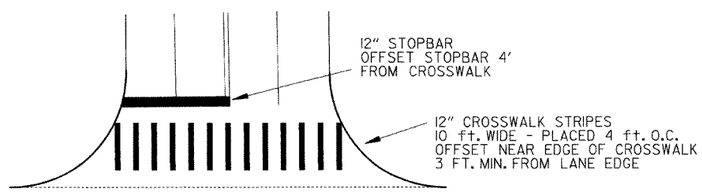
GENERAL NOTES:

THIS DRAWING SHOULD BE CONSIDERED AS TYPICAL ONLY AND THE FINAL LOCATION OF THE STRIPING AND RAISED PAVEMENT MARKERS SHALL BE DETERMINED BY THE ENGINEER.

THIS DRAWING SHOULD BE USED IN CONJUNCTION WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST REVISION.

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

STRIPING AT ADJACENT NO PASSING LANES



CROSSWALK AND STOPBAR DETAILS

DATE	REVISION	FILMED
11-17-10	REVISED GENERAL NOTES & REMOVED PLOWABLE PVMT MRKRS	
11-18-04	REVISED NOTE 2 & GENERAL NOTES	
8-22-02	ADDED CROSSWALK & STOPBAR DTLS.	
7-02-98	ADDED DETAILS OF STD. RAISED PAV'T. MARKERS	
4-26-96	REV. NOTES 3&4; ADDED R.P.M.	
9-30-80	DRAWN	1-9-30-80

ARKANSAS STATE HIGHWAY COMMISSION

PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1

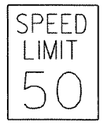
R1-1

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

R1-2

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

R2-1



STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R2-5A

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R2-5C

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-1

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

R4-2

STD. 24"X30"
EXPWY. 36"X48"
FWY. 48"X60"

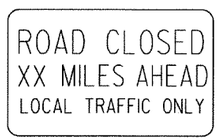
R5-1

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

R11-2

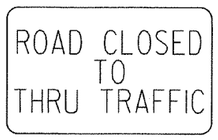
48"X30"

R11-3A



60"X30"

R11-4

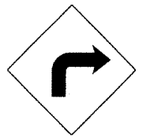


60"X30"

RSP-1

48"X30"

W1-1



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

W1-2

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

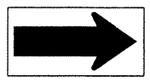
W1-3

STD. 48"X48"

W1-4

STD. 48"X48"

W1-6



STD. 48"X24"
SPECIAL 60"X30"

W1-8

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

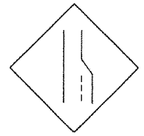
W3-1

STD. 36"X36"
SPECIAL 48"X48"

W3-2

STD. 36"X36"
SPECIAL 48"X48"

W4-2



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

W5-1

STD. 36"X36"
SPECIAL 48"X48"

W6-3

EXPWY. 36"X36"
SPECIAL 48"X48"

W8-7

EXPWY. 36"X36"
FWY. 48"X48"

W9-2

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

W13-1

STD. 24"X24"

W20-1

STD. 48"X48"

W20-2

STD. 48"X48"

W20-3

STD. 48"X48"

W20-4

STD. 48"X48"

W20-5

STD. 48"X48"

W20-7a

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

W21-2

STD. 30"X30"
SPECIAL 36"X36"

W21-5

STD. 30"X30"
SPECIAL 36"X36"

W24-1

STD. 36"X36"

W1-4b

STD. 48"X48"

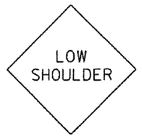
R56-1

STD. 18"X18"

W8-11

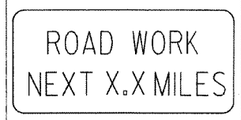
STD. 36"X36"
FWY. 48"X48"

W8-9



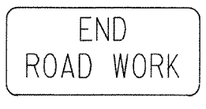
STD. 36"X36"
FWY. 48"X48"

G20-1



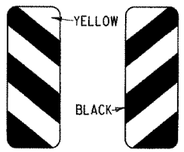
60"X24"

G20-2



48"X24"

OM-3L OM-3R



12"X36"

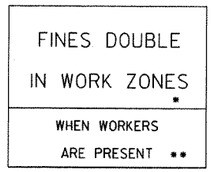
M4-9

STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

R55-1



36"X60"

* USE 6" C LETTERS
** USE 4" D LETTERS

ADVANCE DISTANCES
(XXXX)

500 FT	½ MILE
1000 FT	¾ MILE
1500 FT	1 MILE AHEAD

GENERAL NOTES:

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

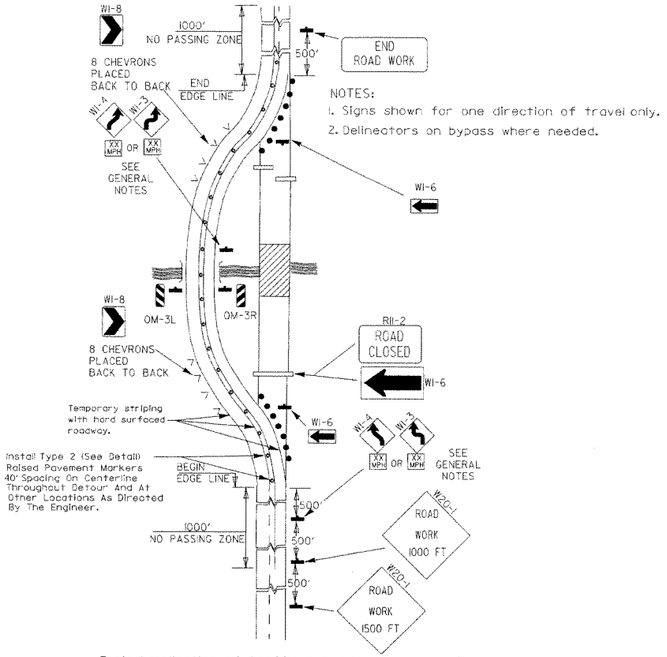
- NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE REQUIREMENTS SHOWN IN NOTES 4 & 5, BUT MEET THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF NCHRP-350 OR MANUAL FOR ASSESSING SAFETY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

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

ARKANSAS STATE HIGHWAY COMMISSION

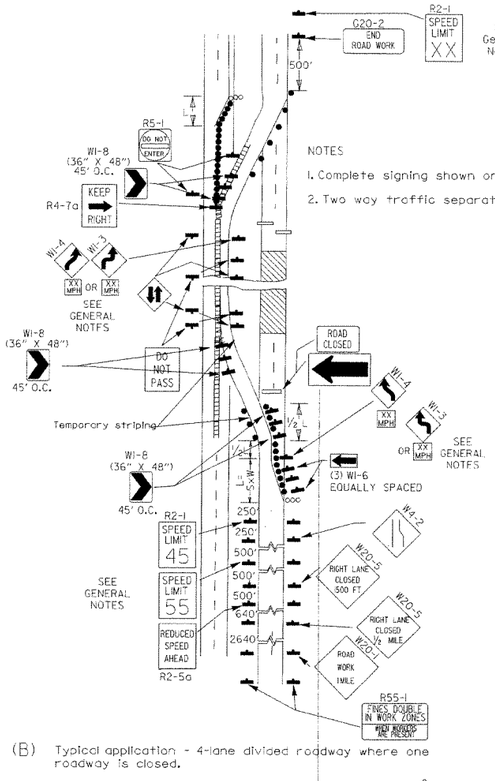
STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1



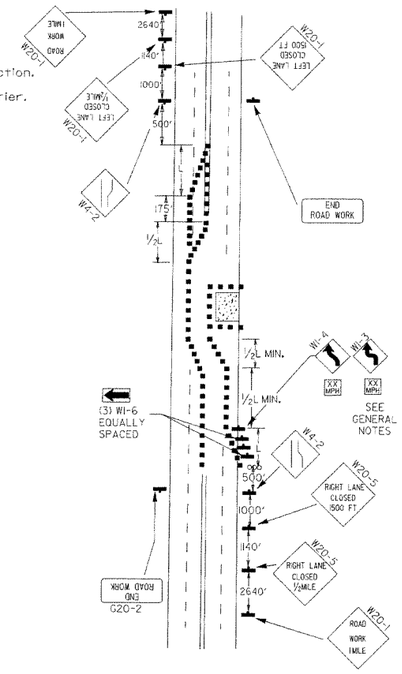
NOTES:
1. Signs shown for one direction of travel only.
2. Delineators on bypass where needed.

(A) Typical application of traffic control devices on a 2-lane highway where the entire roadway is closed and a bypass detour is provided.

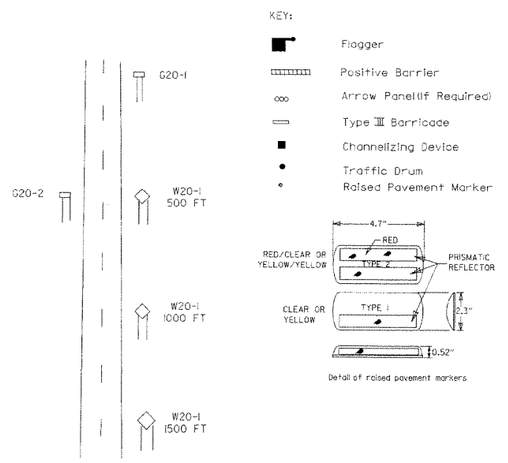


NOTES
1. Complete signing shown only in crossover direction.
2. Two way traffic separated with positive barrier.

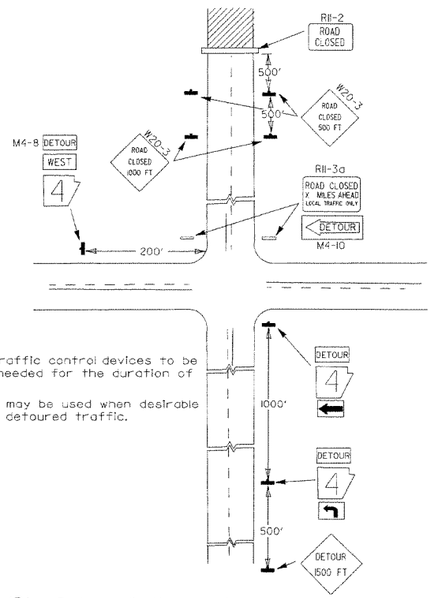
(B) Typical application - 4-lane divided roadway where one roadway is closed.



(C) Typical application - 4-lane undivided roadway where half of the roadway is closed.

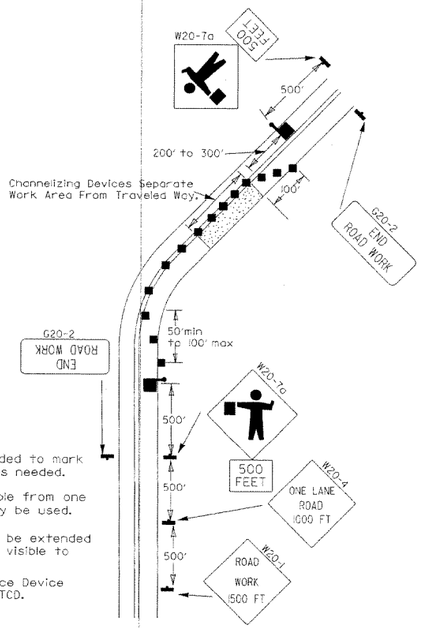


Typical advance warning sign placement



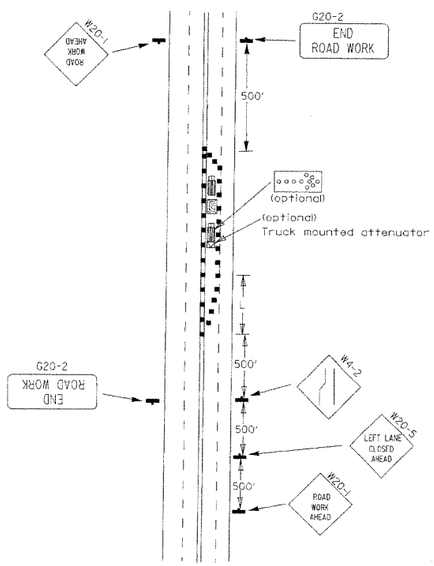
NOTES:
1. Regulatory traffic control devices to be modified as needed for the duration of the detour.
2. Street names may be used when desirable for directing detoured traffic.

(D) Typical application - roadway closed beyond detour point.



NOTES:
1. Flood lights should be provided to mark flagger stations at night as needed.
2. If entire work area is visible from one station, a single flagger may be used.
3. Channelizing devices are to be extended to a point where they are visible to approaching traffic.
4. Automated Flagger Assistance Device (AFAD) optional. Refer to MUTCD.

(E) Typical application of traffic control devices on 2-lane highway where one lane is closed and flagging is provided.



(F) Typical application - 4-lane undivided roadway with inside lane closed.

Taper formulae:

L=SxW for speeds of 45mph or more.

$L = \frac{WS^2}{60}$ for speeds of 40mph or less.

Where:
L= Minimum length of taper.
S= Numerical value of posted speed limit prior to work or 85th percentile speed.
W= Width of offset.

GENERAL NOTES:

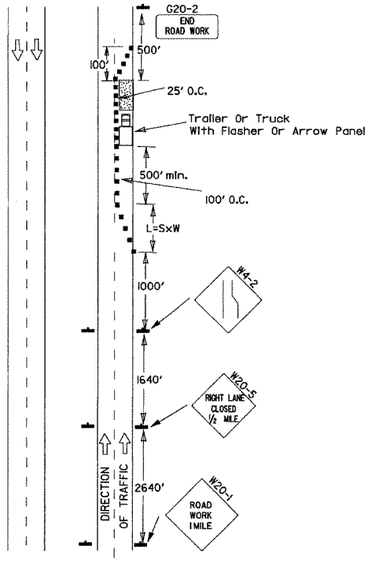
1. Advisory speed posted on WI-3 or WI-4 curve warning signs to be determined at site. Use WI-4 when speed is greater than 30mph and WI-3 when 30mph or less.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(xx) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-1 55mph speed limit signs shall be installed at a maximum of 1mile intervals. At the end of the work area a R2-1(xx) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit, or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.

DATE	REVISION	FILMED
3-11-10	ADDED (AFAD)	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED GENERAL NOTE	
10-18-96	ADDED R55-1	
4-26-96	CORRECTED (a) BEHIND G20-2	
6-8-95	CORRECTED SIGN IDENT. ON WI-4A	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

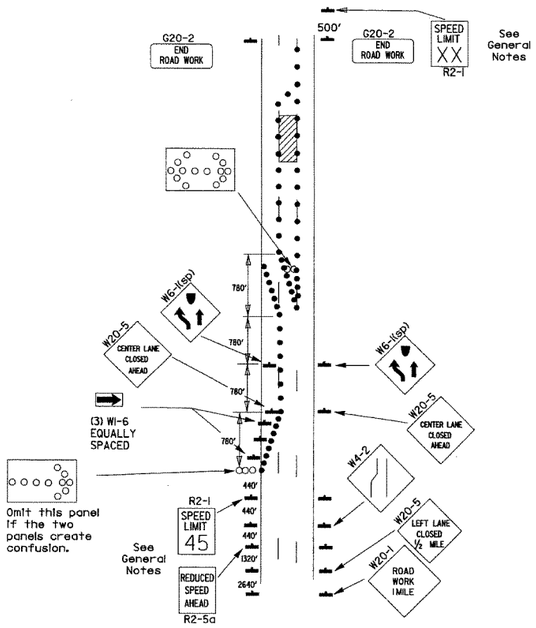
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

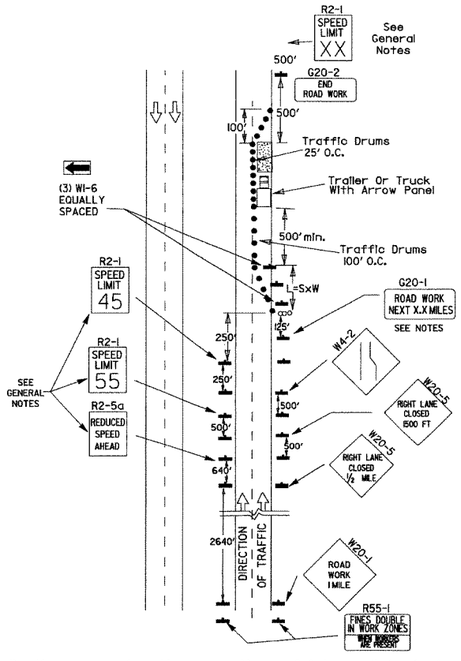
STANDARD DRAWING TC-2



(A) Typical application - daytime maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.



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



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

KEY:

○○○ Arrow Panel (If Required)

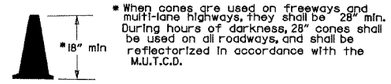
■ Channelizing Device

● Traffic drum

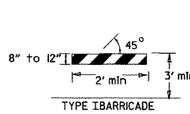
GENERAL NOTES:

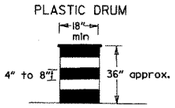
1. A speed limit reduction may be implemented ONLY when designated in the plan or when recommended by the Roadway Design Division.
2. When the existing speed limit is 55mph and the plans require a speed limit of 45mph, the R2-1(55) shall be omitted and the R2-5A shall be installed at that location. Additional R2-1 45mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
3. When the existing speed limit is 65mph and the plans require a speed limit of 55mph, the R2-1(45) shall be omitted. Additional R2-1 55mph speed limit signs shall be installed at a maximum of 1 mile intervals. At the end of the work area a R2-1(XX) shall be installed to match original speed limit.
4. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit. Beyond the taper, maximum spacing shall be two times the speed limit or as directed by the Engineer.
5. Warning lights and/or flags may be mounted to signs or channelizing devices at night as needed.
6. Pavement markings no longer applicable which might create confusion in the minds of vehicle operators shall be removed or obliterated as soon as practicable.
7. The G20-1 sign will be required on jobs of over two miles in length. When the lane closure is not at the beginning of the project, the G20-1 sign shall be erected 125' in advance of the job limit. Additional W20-1 (1 MILE) signs are not required in advance of lane closures that begin inside the project limits.
8. Flaggers shall use STOP/SLOW paddles for controlling traffic through work zones. Flags may be used only for emergency situations.
9. All plastic drums and cones shall meet the requirements of NCHRP-350 or Manual For Assessing Safety Hardware (MASH).
10. Trailer mounted devices such as arrow panels and portable changeable message signs shall be delineated by affixing conspicuity material in a continuous line on the face of the trailer. When placed on or adjacent to the shoulder and not behind a positive barrier, these devices shall be delineated by placing five (5) traffic drums, equally spaced along the traffic side of the device.

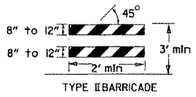
Channelizing devices

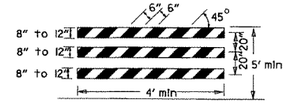


* When cones are used on freeways and multi-lane highways, they shall be 28" min. During hours of darkness, 28" cones shall be used on all roadways, and shall be reflectorized in accordance with the M.U.T.C.D.

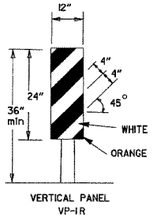








NOTE:
For all road closures, the Type III barricades shall be of sufficient length to extend across entire roadway.



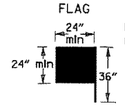
TRAFFIC CONTROL DEVICES
FOR
VERTICAL PAVEMENT DIFFERENTIALS

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

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

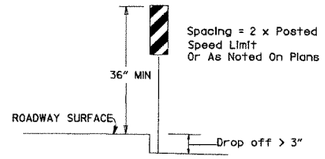
When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the remaining shoulder width, then vertical panels shall be used.

FLAG

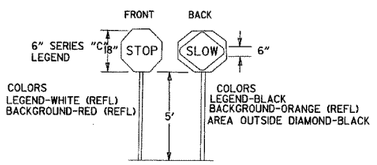


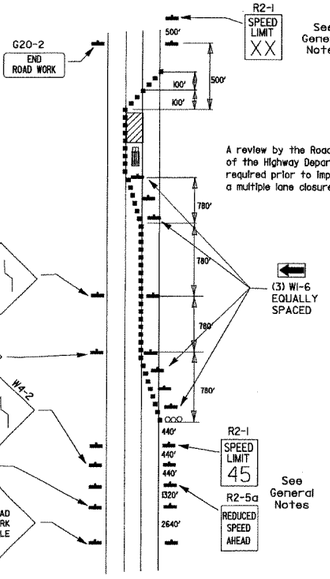
Flag shall be of good grade red material

VERTICAL PANEL PLACEMENT



STOP SLOW PADDLE





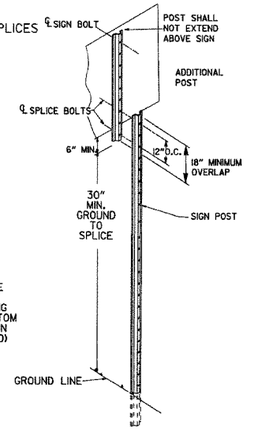
(D) Typical application - closing multiple lanes of a multilane highway.

DETAIL OF SPLICES

NOTES: USE SPLICES ONLY WHEN NECESSARY FOR INSTALLATION. TYPICAL INSTALLATION SHOULD HAVE NO SPLICES (SEE STD. DRAWING NO. SHS-21)

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

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

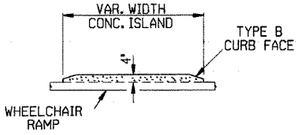


DATE	REVISION	FILMED
10-15-09	ADDED REFERENCE TO MASH	
11-20-08	REVISED SIGN DESIGNATIONS	
11-18-04	ADDED NOTE	
10-1-98	ADDED NOTE	
4-03-97	ADDED (SP) TO W6-1 & REVISED TRAFFIC CONTROL DEVICES NOTE	
10-18-96	ADDED R55-1	
10-12-95	MOVED UPPER SPLICE	
6-8-95	REVISED SPLICE DETAIL, TEXT	6-8-95
2-2-95	REVISED PER PART VI, MUTCD, SEPT. 3, 1993	
8-15-91	DRAWN AND PLACED IN USE	

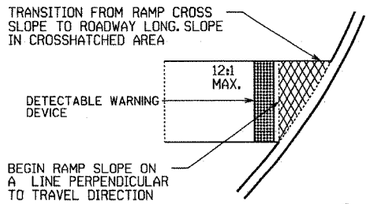
ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

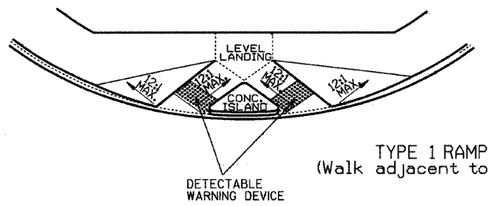
STANDARD DRAWING TC-3



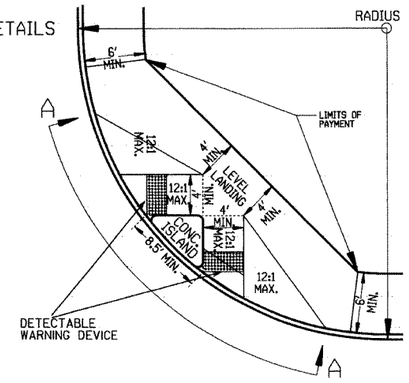
CONCRETE ISLAND DETAIL



SLOPE TRANSITION DETAILS



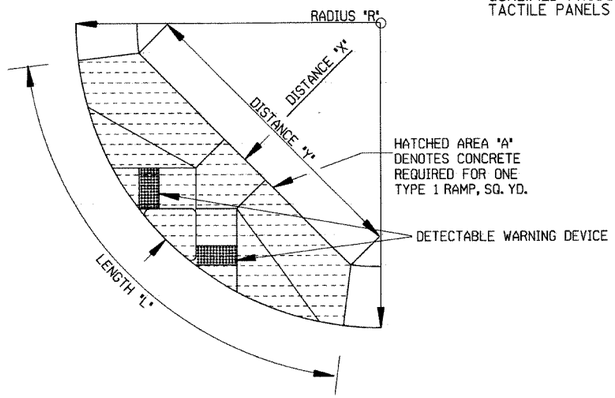
TYPE 1 RAMP
(Walk adjacent to curb)



SECTION A-A

TYPE 1 RAMP DIMENSIONS AND QUANTITIES

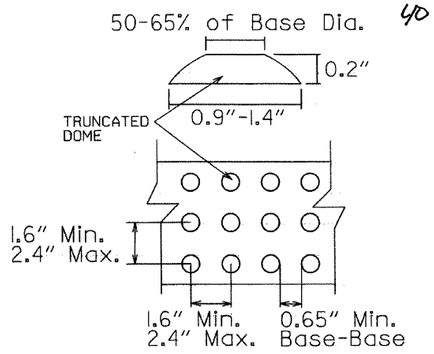
RADIUS "R" FEET	DISTANCE "X" FEET	DISTANCE "Y" FEET	LENGTH "L" FEET	RAMP AREA "A" SQ. YD.
15	11.67	18.82	32.18	26.21
20	11.52	22.28	35.46	30.07
25	11.43	26.60	38.77	33.80
30	11.37	30.26	40.93	36.90
35	11.33	33.51	43.11	39.77
40	11.30	36.45	45.26	42.45
45	11.27	39.16	47.34	44.97
50	11.25	41.69	49.36	47.35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



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

GENERAL NOTES FOR DETECTABLE WARNING DEVICES

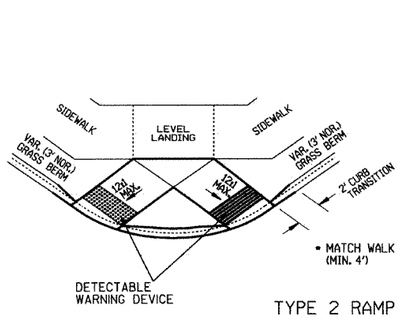
THE DETECTABLE WARNING DEVICE SHALL BE LOCATED SO THAT THE NEAREST EDGE OF THE DEVICE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB.
TRUNCATED DOMES IN THE DETECTABLE WARNING SURFACE SHALL MEET THE REQUIREMENTS OF THE GEOMETRIC CONFIGURATION SHOWN.
DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT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



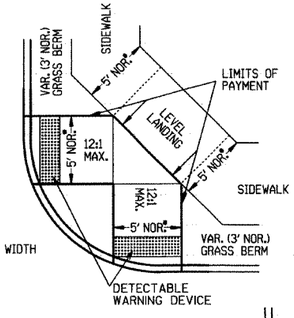
DETECTABLE WARNING DEVICE DETAIL

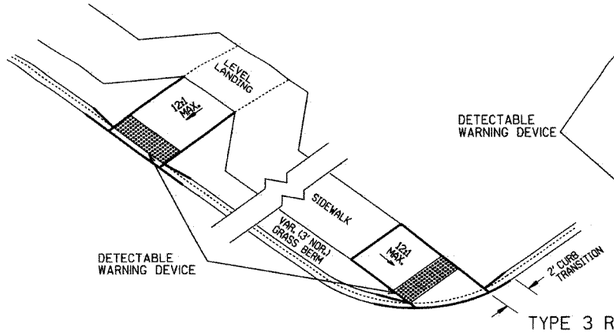
GENERAL NOTES:

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

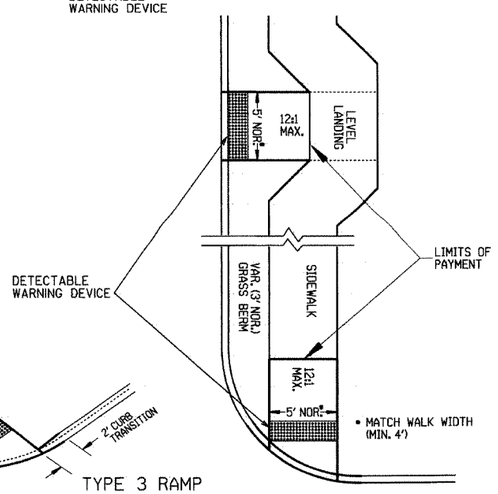


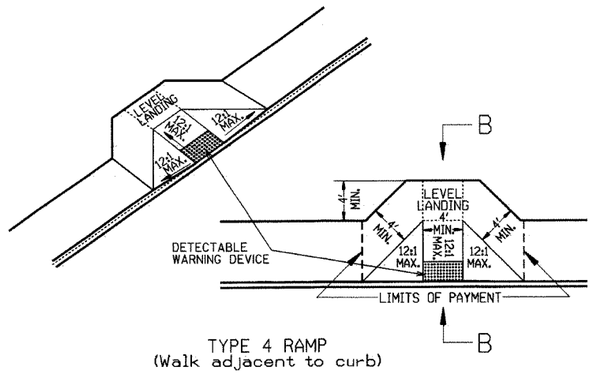
TYPE 2 RAMP



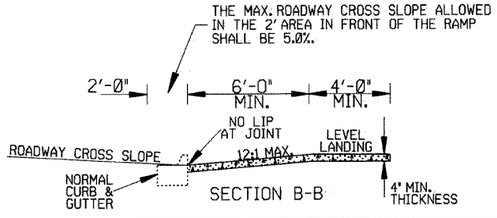


TYPE 3 RAMP





TYPE 4 RAMP
(Walk adjacent to curb)



SECTION B-B

RAMP SELECTION CRITERIA

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

NOTE: IN ALTERATIONS, THE SELECTION OF THE TYPE OF WHEELCHAIR RAMP TO BE CONSTRUCTED SHALL BE BASED ON THE AMOUNT OF RIGHT-OF-WAY AVAILABLE, AND ON THE PRESENCE OF OTHER SITE CONSTRAINTS (UTILITIES, BUILDINGS, ETC.). THE TABLE ABOVE LISTS THE ORDER IN WHICH THE RAMPS ARE TO BE CONSIDERED.

AN ALTERATION IS DEFINED AS A PROJECT THAT CHANGES OR AFFECTS THE USE OF A PEDESTRIAN PATHWAY (OVERLAYS, SIGNALIZATION PROJECTS, ETC.) BUT DOES NOT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY. ALL PROJECTS THAT REQUIRE THE PURCHASE OF ADDITIONAL RIGHT-OF-WAY WILL USUALLY BE CONSIDERED NEW CONSTRUCTION FOR THE PURPOSES OF THE CHART ABOVE.

DATE	REVISION	DATE FILM
11-10-05	REVISED TO NEW SIDEWALK POLICY	
10-9-03	REVISED GEN. NOTES & ADDED NOTE	
4-10-03	REV. DETECTABLE WARNING DEVICES	
8-22-02	ADD DETECTABLE WARNING DEVICES	
3-30-00	ADD.SLOPE TRANS. & REV. ISL. DIMS.	
11-18-98	REVISED NOTES	
8-12-98	REVISED TEXTURE	
7-02-98	REDRAWN & REISSUED	
10-18-96	CORRECTED DIMENSIONS	10-18-96
5-24-90	FROM8:1TO12:1MAX.SLOPES	5-24-90
7-15-88	ADJUSTED MAX. SLOPE	652-7-15-88
7-14-88	INCLUD."CONC. ISLD."IN PAY ITEM	-------
6-02-76	ISSUED-P.H.D.	299-7-28-76

ARKANSAS STATE HIGHWAY COMMISSION

WHEELCHAIR RAMPS
NEW CONSTRUCTION
AND ALTERATIONS

STANDARD DRAWING WR-1