

**INDIANA  
DEPARTMENT OF TRANSPORTATION**

**CONTRACT INFORMATION**  
CONSTRUCTION PLANS  
SPECIAL PROVISIONS  
ADDITIONAL CONTRACT REQUIREMENTS

FOR

**CONTRACT NO.** \_\_\_\_\_

**LETTING DATE:** \_\_\_\_\_

Certified By \_\_\_\_\_

Date \_\_\_\_\_

CONTRACT INFORMATION  
TABLE OF CONTENTS

CONTRACT NO.

This book shall be examined to determine that each page set out in the Contract Information Table of Contents, and the Special Provisions Table of Contents is attached, legible, and current.

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**CONTACT FOR CONTRACTORS**

DISTRICT CONSTRUCTION ENGINEER:

PHONE:

**CONTACTS FOR DISTRICT PERSONEL ONLY**

INDOT DESIGNER:

PHONE:

PROJECT MANAGER:

PHONE:

PROPOSAL

TO THE  
INDIANA DEPARTMENT OF TRANSPORTATION

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DATE OF LETTING: January 09, 2008

TIME OF LETTING: 10:00 AM EASTERN STANDARD

LOCATION OF LETTING: AUDITORIUM, GOVERNMENT CENTER SOUTH  
402 W. WASHINGTON STREET  
INDIANAPOLIS, INDIANA 46204

LOCATION OF DEPOSIT: N855 GOVERNMENT CENTER NORTH  
100 N. SENATE AVENUE  
INDIANAPOLIS, INDIANA 46204

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\*\*\*\*\* STATE CERTIFIED \*\*\*\*\*

CONTRACT NUMBER: RS-29837-A

PROJECT NUMBER: 0600345

STRUCTURE NUMBER:

ROUTE: 31

LOCATION: ON US 31 FROM SR18 TO JUST SOUTH OF BUSINESS US 31

DESCRIPTION: ASPHALT RESURFACE

FT. WAYNE DISTRICT

COUNTY: MIAMI

CONTRACT COMPLETION INFORMATION

CONTRACT COMPLETION DATE: August 29, 2008

DBE GOAL: A contract provision goal of 4 percent of the contract bid price has been established as the minimum amount for contracting to disadvantaged business enterprises.

2008 STANDARD SPECIFICATIONS EFFECTIVE

LIST OF APPROVED OR PREQUALIFIED MATERIALS

STANDARD DRAWINGS LISTED ON STANDARD DRAWING INDEX EFFECTIVE DATE 9-1-07

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SCHEDULE OF PAY ITEMS REVISED:

LETTING DATE: January 09, 2008

CONTRACT ID: RS-29837-A

CONTRACTOR: \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
SECTION 0001 DISTRICT PAVEMENT PROJECT						
0001	105-06845 CONSTRUCTION ENGINEERING	LUMP	LUMP			.
0002	105-07039 FIELD OFFICE, B	6.000 MOS		.		.
0003	105-08520 CELLULAR TELEPHONE/RADIO	1.000 EACH		.		.
0004	105-08521 CELLULAR TELEPHONE/RADIO SERVICE	6.000 MOS		.		.
0005	105-08524 CELLULAR TELEPHONE/RADIO, ADDITIONAL MINUTES	1.000 DOL		.		.
0006	105-09198 LAPTOP COMPUTER SYSTEM	6.000 MOS		.		.
0007	105-09199 FIELD OFFICE INTERNET SERVICE	6.000 MOS		.		.
0008	109-08359 LIQUIDATED DAMAGES	1.000 DOL		1.00000		1.00
0009	109-08360 CONTRACT LIENS	1.000 DOL		1.00000		1.00
0010	109-08440 QUALITY ADJUSTMENTS, HMA	1.000 DOL		1.00000		1.00

SCHEDULE OF PAY ITEMS REVISED:

LETTING DATE: January 09, 2008

CONTRACT ID: RS-29837-A

CONTRACTOR: \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0011	109-08443 QUALITY ADJUSTMENTS, TEMPORARY TRAFFIC CONTROL DEVICES	1.000 DOL	1.00000		1.00	
0012	109-08444 QUALITY ADJUSTMENTS, FAILED MATERIALS	1.000 DOL	1.00000		1.00	
0013	110-01001 MOBILIZATION AND DEMOBILIZATION	LUMP	LUMP		.	
0014	202-90277 DETECTOR HOUSING, REMOVE	12.000 EACH	.		.	
0015	301-07448 COMPACTED AGGREGATE, NO. 53, BASE	44.000 TON	.		.	
0016	304-07491 HMA PATCHING, TYPE C FULL DEPTH	232.000 TON	.		.	
0017	306-08034 MILLING, ASPHALT, 1 1/2 IN.	308257.000 SYS	.		.	
0018	306-08043 MILLING, TRANSITION	4160.000 SYS	.		.	
0019	306-08432 MILLING, APPROACH	11321.000 SYS	.		.	
0020	401-06264 PROFILOGRAPH, HMA	LUMP	LUMP		.	
0021	401-07329 QC/QA-HMA, 4, 70, SURFACE, 9.5 mm	26748.000 TON	.		.	

SCHEDULE OF PAY ITEMS REVISED:

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CONTRACTOR: \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0022	406-05520 ASPHALT FOR TACK COAT	113.000 TON	.		.	
0023	507-07479 HMA PARTIAL DEPTH PATCH TYPE C	146.000 TON	.		.	
0024	610-07488 HMA FOR APPROACHES, TYPE C	981.000 TON	.		.	
0025	612-04315 ASPHALT MATERIAL FOR UNDERSEAL	1.000 TON	.		.	
0026	612-05081 MOBILIZATION AND DEMOBILIZATION FOR UNDERSEAL	1.000 EACH	.		.	
0027	612-60410 DRILLED HOLE FOR UNDERSEAL	16.000 EACH	.		.	
0028	615-06527 MONUMENT, SECTION CORNER	5.000 EACH	.		.	
0029	621-06559 MULCHED SEEDING, R	200.000 SYS	.		.	
0030	725-06858 PIPE LINER, THERMOPLASTIC, 36 IN.	210.000 LFT	.		.	
0031	725-08292 PIPE LINER, CURED-IN-PLACE, 30 IN.	60.000 LFT	.		.	
0032	725-08293 PIPE LINER, CURED-IN-PLACE, 36 IN.	90.000 LFT	.		.	

## SCHEDULE OF PAY ITEMS REVISED:

LETTING DATE: January 09, 2008

CONTRACT ID: RS-29837-A

CONTRACTOR: \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0033	801-01093 TEMPORARY WORKSITE SPEED LIMIT SIGN ASSEMBLY	18.000 EACH	.		.	
0034	801-03290 CONSTRUCTION SIGN, C	4.000 EACH	.		.	
0035	801-06203 TEMPORARY PAVEMENT MARKING, 4 IN.	9800.000 LFT	.		.	
0036	801-06207 TEMPORARY PAVEMENT MARKING, REMOVABLE, 4 IN.	9800.000 LFT	.		.	
0037	801-06640 CONSTRUCTION SIGN, A	68.000 EACH	.		.	
0038	801-06710 FLASHING ARROW SIGN	60.000 DAY	.		.	
0039	801-06775 MAINTAINING TRAFFIC	LUMP		LUMP	.	
0040	801-09133 TEMPORARY CHANGEABLE MESSAGE SIGN	4.000 EACH	.		.	
0041	801-92448 CONSTRUCTION SIGNS, MOBILE	360.000 DAY	.		.	
0042	805-78470 SIGNAL CABLE, ROADWAY LOOP, 1C 14GA.	4040.000 LFT	.		.	
0043	805-78785 SIGNAL DETECTOR HOUSING	12.000 EACH	.		.	

SCHEDULE OF PAY ITEMS REVISED:

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CONTRACTOR: \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0044	805-78795 SAW CUT FOR ROADWAY LOOP AND SEALER	1255.000 LFT	.		.	
0045	808-03631 LINE, EPOXY, SOLID, WHITE, 4 IN.	109475.000 LFT	.		.	
0046	808-03632 LINE, EPOXY, SOLID, YELLOW, 4 IN.	97900.000 LFT	.		.	
0047	808-75053 LINE, PREFORMED PLASTIC, SOLID, WHITE, 8 IN. Gore	660.000 LFT	.		.	
0048	808-75055 LINE, PREFORMED PLASTIC, BROKEN, WHITE, 6 IN.	24705.000 LFT	.		.	
0049	808-75067 TRANSVERSE MARKINGS, PREFORMED PLASTIC, STOP LINE, 24 IN.	386.000 LFT	.		.	
0050	808-75071 PAVEMENT MESSAGE MARKINGS, PREFORMED PLASTIC LANE INDICATION ARROW	16.000 EACH	.		.	
0051	808-75073 PAVEMENT MESSAGE MARKINGS PREFORMED PLASTIC, WORD ONLY	24.000 EACH	.		.	
0052	808-75996 SNOWPLOWABLE RAISED PAVEMENT MARKER, REMOVE	1539.000 EACH	.		.	
0053	808-75998 SNOWPLOWABLE RAISED PAVEMENT MARKER	1539.000 EACH	.		.	



SCHEDULE OF PAY ITEMS REVISED:

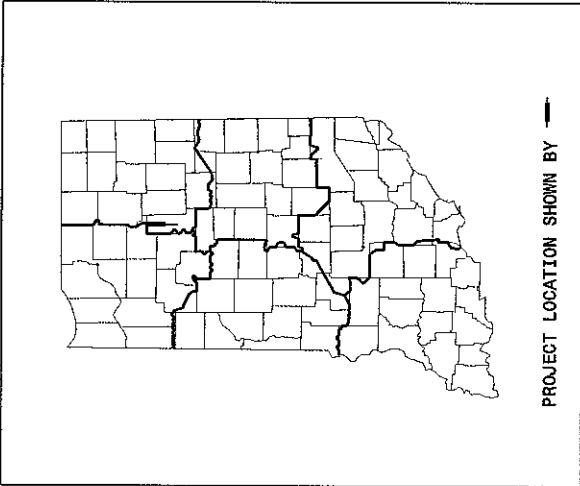
LETTING DATE: January 09, 2008

CONTRACT ID: RS-29837-A

CONTRACTOR: \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0054	808-97643 BUZZ STRIPS	288.000 LFT	.		.	
0055	808-99077 LINE, PREFORMED PLASTIC, SOLID, WHITE, 24 IN. GORE	150.000 LFT	.		.	
	SECTION 0001 TOTAL				.	
	TOTAL BID				.	

CONTRACT NO. RS-29837



INDIANA  
DEPARTMENT OF TRANSPORTATION

PROJECT DESCRIPTION

RESURFACE US 31 from SR 18 to 0.47 Mile S of Business US 31  
RPM 170+00 to RPM 179+29

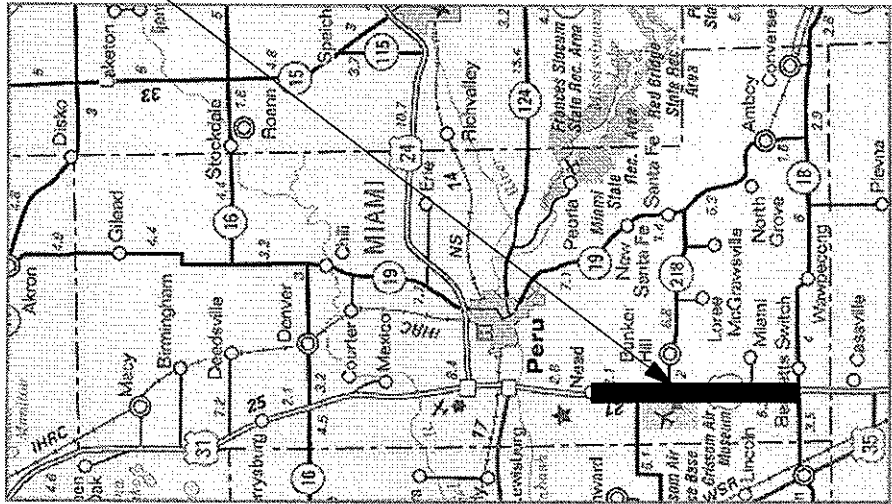
Gross Length 9.29 MI.

Latitude: 40° 42' N

Net Length 9.10 MI.

Longitude :86° 08' W

Project



Exceptions:

- Stn: 101+20 to 102+70
- Stn: 318+40 to 323+60
- Stn: 351+20 to 353+60

Des. No. 0600345

Indiana Department of Transportation  
Standard Specification dated 2008  
to be used with these plans.

Federal Road Region 5

TRAFFIC DATA

A.D.T. (2006)	22080	V.P.D.
A.D.T. (2016) Proj.	24180	V.P.D.
D.H.V. ( 2026)	8%	V.P.H.

Directional Distribution

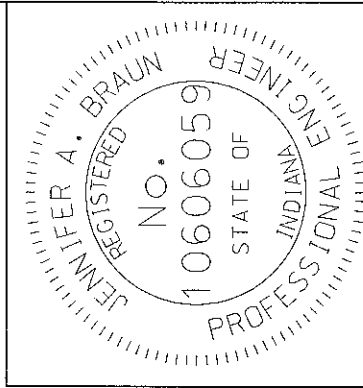
Trucks	7 % D.H.V.	13 % A.D.T.
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DESIGN DATA

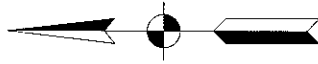
Design Speed	60 M.P.H.
Project Design Criteria	RESURFACING (NON-FREEWAY)
Functional Class	Rural/Principal Arterial
Rural/Urban	RURAL
Terrain	LEVEL

Vasu Ramiah

PLANS PREPARED BY:



Date: 10/15/07



CERTIFIED BY: *Jennifer Braun*

APPROVED FOR LETTING: *Joe J.*

## Construction Plan Index

RS - 29837  
US 31

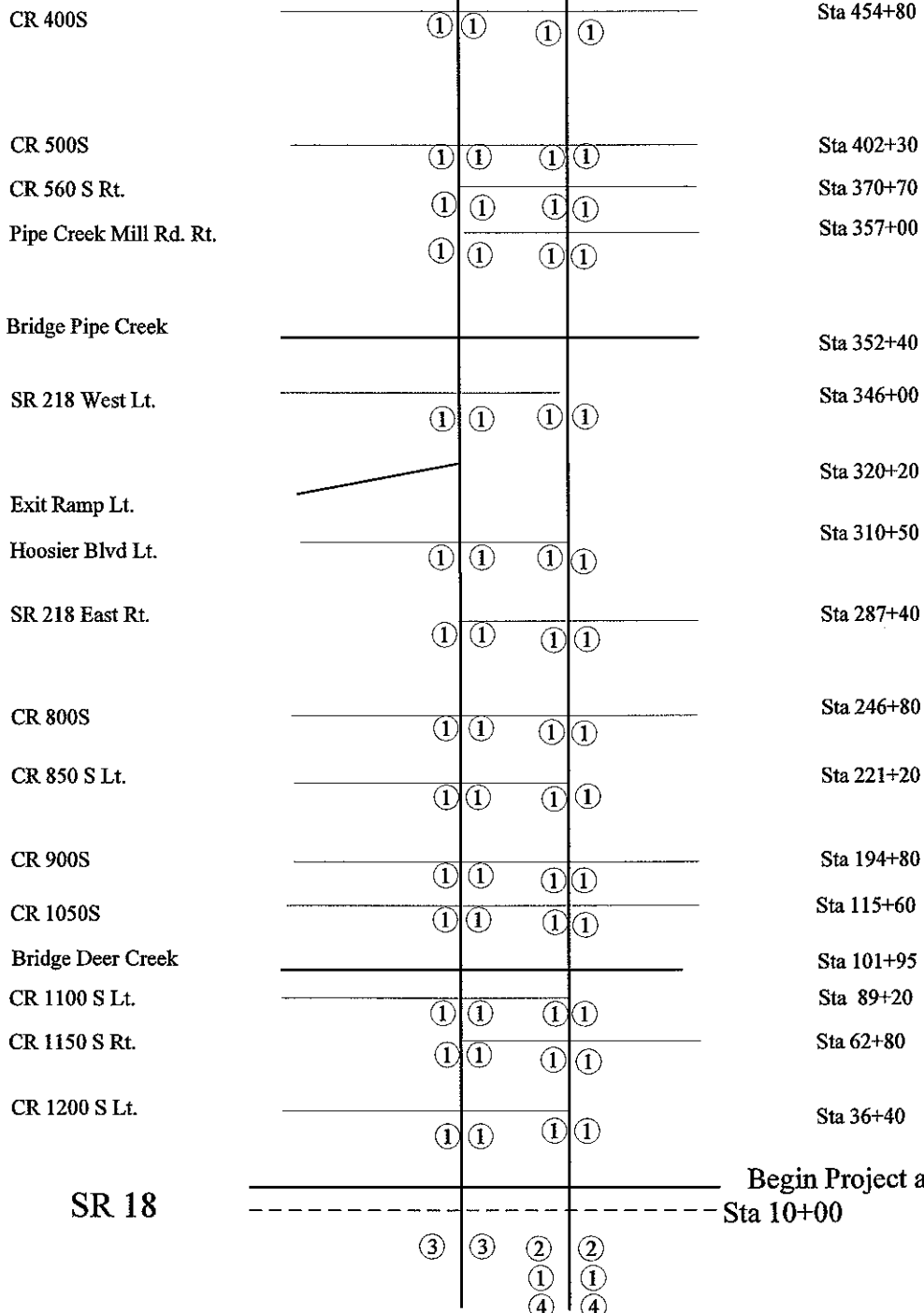
Page			Descriptions
1			Title Sheet
2			Construction Plan Index
3			Construction Sign Layout
4			Typical Section
5			Pipe Slip Lining Structure
6	Thru	20	Construction Details
21	Thru	25	Monuments Section Corner Locations

Fort Wayne District  
U.S. 31 Resurface  
Construction Sign Layout

North



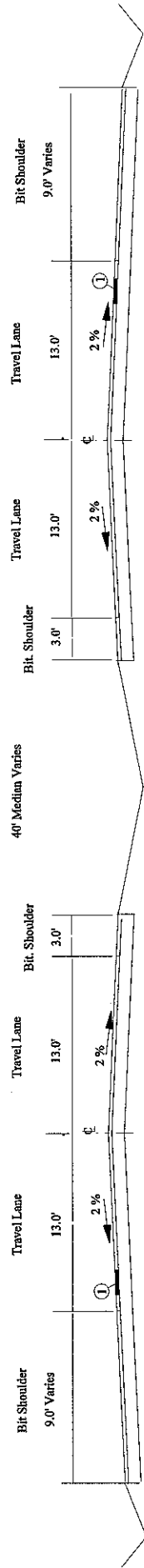
0.47 M S of Bus. US 31      End Project at 499+80



- Construction Signs, Type "A"
- ① Road Construction Ahead
  - ② Road Construction Next 9.29 Miles
  - ③ End Construction
- Construction Signs, Type "C"
- ④ Speeding Max \$1000
  - Reckless Driving Max 8 Yrs

Note: All Stationing on this Project are approximate  
All work locations shall be as approved by the Engineer

**US31 Bituminous Resurface  
Typical Cross Section From 10+30 to 499+80**



**Legend**

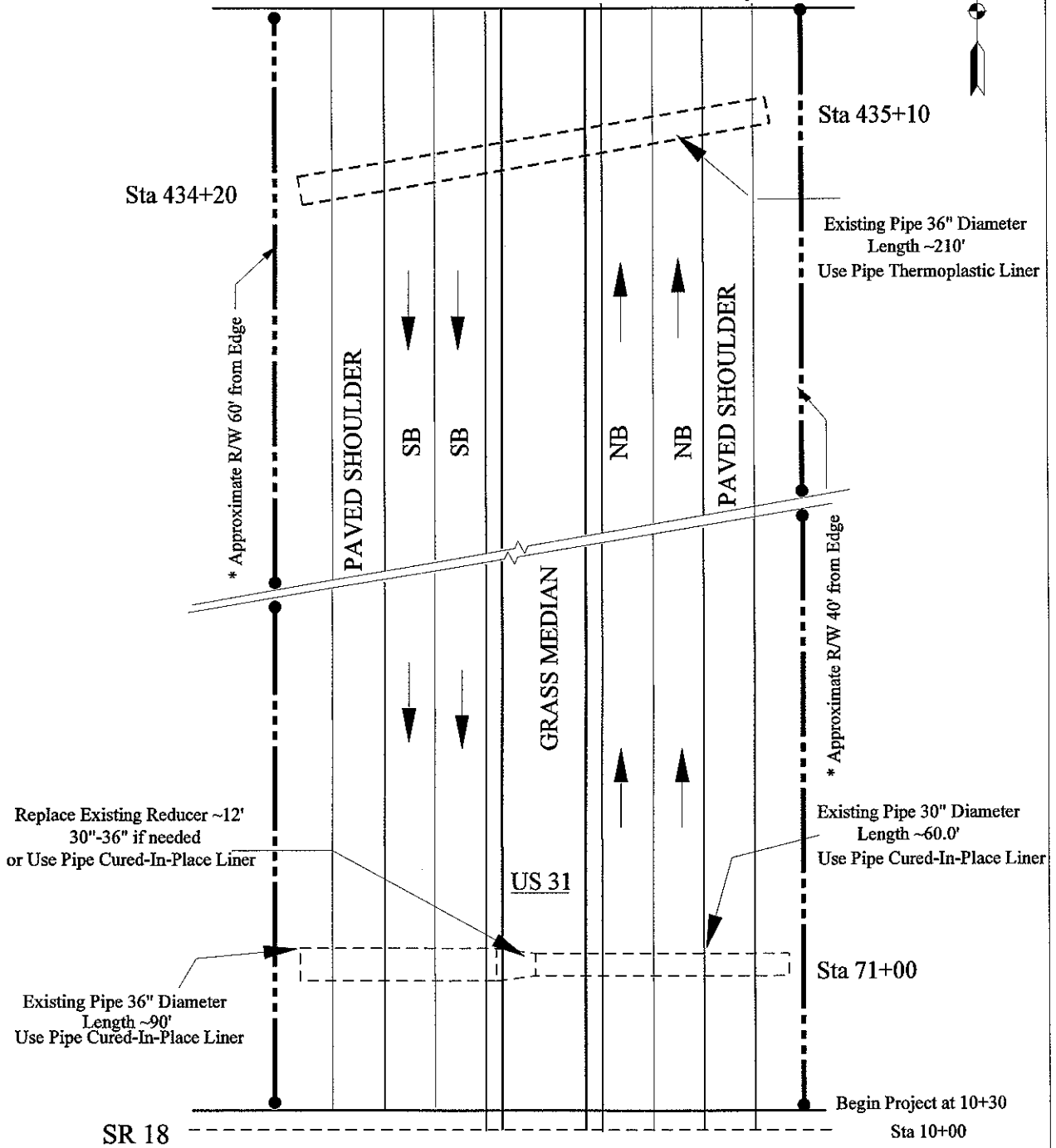
- ① Mill existing Asphalt 1.25" ( to be paid as Asphalt Milling 1.5") and Place 165 lbs/sys QC/QA HMA, 4,70, Surface 9.5mm, Mainline and Turn Lanes

**NOTE: Pave Mainline 13' Wide, but Stripe for 12' Lanes  
Outside shoulder surface and corrugations to be addressed in future Contract.**

North

0.47 M S of Bus. US 31

End Project at 499+80



Note: Contractor shall obtain Right of Entry as Needed before start

Note: All Stationing on this Project are approximate All work locations shall be as approved by the Engineer

Note: Installing Pipe Liner & Cured-In-Place subject to Engineer's review which may be changed or revised or removed

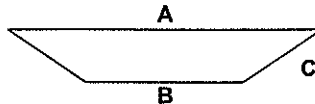
36" Thermoplastic Liner = 210'  
36" Cured-In-Place Liner = 90'  
30" Cured-In-Place Liner = 60'

PIPE SLIP LINING STRUCTURE

**PUBLIC ROAD APPROACH**  
NorthBound

ROAD NAME	LANE	MEASURED VALUES			AREA (SYS)
		A (FT)	B (FT)	C (FT)	
CR 1150 S Rt.	NBL	70	20	60	300
CR 1050 S	NBL	80	22	40	227
CR 900 S	NBL	95	22	60	390
CR 800 S	NBL	90	24	50	317
SR 218 East Rt.	NBL	140	40	65	650
Comm. Drive(Hoosier Blvd Lt.)	NBL	70	65	22	165
No Name (Prv. Dr .SR 218 West Lt.)	NBL	70	40	60	367
Pipe Creek Mill Rd. Rt.	NBL	80	30	24	147
CR 560 S Rt.	NBL	70	50	20	133
CR 500 S	NBL	110	30	40	311
CR 400 S	NBL	90	20	55	336
X-OVER @ CR 1200 S Lt.	NBL	60	45	15	88
X-OVER @ CR 1150 S Rt.	NBL	85	65	15	125
X-OVER @ CR 1100 S Lt.	NBL	70	50	15	100
X-OVER @ CR 1050 S	NBL	90	50	20	156
X-OVER @ SR 900S	NBL	80	60	15	117
X-OVER @ CR 850 S Lt.	NBL	135	75	25	292
X-OVER @ CR 800S	NBL	130	110	15	200
X-OVER @ SR 218 East Rt.	NBL	75	60	20	150
X-OVER @ Hoosier Blvd Lt.	NBL	95	65	15	133
X-OVER @ SR 218 West Lt.	NBL	85	60	15	121
X-OVER @ Pipe Creek Mill Rd.Rt.	NBL	80	50	25	181
X-OVER @ CR 560S Rt.	NBL	80	50	25	181
X-OVER @ CR 500 S	NBL	75	50	15	104
X-OVER @ CR 400S	NBL	90	60	15	125

Total **5413** **SYS**



<b>PUBLIC ROAD APPROACH</b>
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Southbound

ROAD NAME	LANE	MEASURED VALUES			AREA (SYS)
		A (FT)	B (FT)	C (FT)	
CR 400S	SBL	75	30	55	321
CR 500S	SBL	80	26	40	236
SR 218 West Lt.	SBL	120	40	70	622
EXIT RAMP* Lt.	SBL				517
Hoosier Blvd Lt.	SBL	105	60	40	367
CR 800S	SBL	135	65	40	444
CR 850S Lt.	SBL	105	40	40	322
CR 900 S	SBL	85	24	40	242
CR 1050	SBL	80	24	30	173
CR 1100 S Lt.	SBL	80	24	30	173
Comm. Drive(CR 1150S Rt.)	SBL	80	60	15	117
CR 1200 S Lt.	SBL	70	24	30	157
X-OVER @ CR 400S	SBL	95	60	15	129
X-OVER @ CR 500 S	SBL	80	50	15	108
X-OVER @ CR 560S Rt.	SBL	80	50	25	181
X-OVER @ Pipe Creek Mill Rd.Rt.	SBL	80	50	25	181
X-OVER @ SR 218 West Lt.	SBL	85	60	15	121
X-OVER @ Hoosier Blvd Lt.	SBL	100	65	15	138
X-OVER @ SR 218 East Rt.	SBL	120	60	20	200
X-OVER @ CR 800S	SBL	130	110	15	200
X-OVER @ CR 850 S Lt.	SBL	110	75	20	206
X-OVER @ SR 900S	SBL	85	60	15	121
X-OVER @ CR 1050 S	SBL	80	50	15	108
X-OVER @ CR 1100 S Lt.	SBL	100	50	25	208
X-OVER @ CR 1150 S Rt.	SBL	95	65	20	178
X-OVER @ CR 1200 S Lt.	SBL	80	45	20	139

\* Composite figure

Total

**5908****SYS**

TOTAL MILLING(NBL+SBL)

**11321****SYS**

BITUMINOUS QUANTITIES @ 165# /SYD

**934****Tons**



**Partial Depth PATCHING DETAIL SHEET**

DIRECTION	STATION	STATION	LENGTH	WIDTH	SYS	Lane
			FT.	FT.		
NBL	181+80	181+90	10	12	13	Passing Lane
NBL	317+30	318+00	70	6	47	Right Lane
NBL	323+70	323+80	10	6	7	Right Lane
NBL	435+20	435+30	10	12	13	Right Lane
SBL	461+60	461+50	10	12	13	Right Lane
SBL	324+00	323+80	20	6	13	Right Lane
SBL	317+00	316+70	30	6	20	Right Lane
SBL	283+10	283+00	10	12	13	Passing Lane
<b>Total</b>					<b>140</b>	<b>SYS</b>

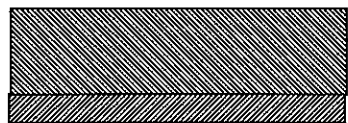
HMA Type C(6")	<b>46</b>	Tons
Undistributed	<b>100</b>	Tons
Total	<b>146</b>	Tons

Note: Patching locations are subject to Engineer's review.  
Locations may be added or changed.

\*\*Cost of asphalt milling, and any incidental work for patching operations including saw cut & pavement removal is included in HMA Patching, Type C items

**FULL Depth PATCHING DETAIL SHEET**

DIRECTION	STATION	STATION	LENGTH	WIDTH	SYS	Remark
			FT.	FT.		
NBL	173+60	173+70	10	12	13	Passing Lane
NBL	198+30	198+40	10	24	27	Full Width
NBL	267+85	267+95	10	24	27	Full Width
NBL	317+20	317+30	10	24	27	Full Width
SBL	436+80	436+70	10	24	27	Full Width
SBL	267+00	266+90	10	24	27	Full Width
SBL	256+90	256+80	10	24	27	Full Width
SBL	27+80	27+70	10	24	27	Full Width
<b>Total</b>					<b>200</b>	<b>SYS</b>



HMA Type C(~12")	<b>132</b>	Tons
Undistributed	<b>100</b>	Tons
Total	<b>232</b>	Tons

Compact Aggregate #53 (4") for Base as needed	<b>44</b>	Tons
Total	<b>44</b>	Tons

Note: Patching locations are subject to Engineer's review.  
Locations may be added or changed.

\*\*Cost of asphalt milling, and any incidental work for patching operations including saw cut & pavement removal is included in HMA Patching, Type C items

## Milling Quantities for RIGHT Tumlane - Northbound

BEGIN STA	END STA	LANE	LENGTH	WIDTH	SYS	REMARKS
010+30	012+60	NBITL	230.00	6.00	153	TAPER/SR 18
059+40	061+50	NBITL	210.00	6.00	140	TAPER
061+50	063+30	NBITL	180.00	12.00	240	CR 1150S Rt.
063+30	065+30	NBITL	200.00	6.00	133	TAPER
112+70	114+40	NBITL	170.00	6.00	113	TAPER
114+40	116+00	NBITL	160.00	12.00	213	CR 1050S
116+00	117+90	NBITL	190.00	6.00	127	TAPER
189+80	190+90	NBITL	110.00	6.00	73	TAPER
190+90	195+30	NBITL	440.00	12.00	587	CR 900S
195+30	196+60	NBITL	130.00	6.00	87	TAPER
241+60	242+80	NBITL	120.00	6.00	80	TAPER
242+80	261+60	NBITL	1880.00	12.00	2507	CR 800S
261+60	265+70	NBITL	410.00	6.00	273	TAPER
282+40	284+50	NBITL	210.00	6.00	140	TAPER
284+50	292+40	NBITL	790.00	12.00	1053	SR 218 East Rt.
292+40	296+60	NBITL	420.00	6.00	280	TAPER
304+40	305+60	NBITL	120.00	6.00	80	TAPER
305+60	311+10	NBITL	550.00	12.00	733	Comm. Drive(Hoosier Blvd Lt.)
311+10	312+80	NBITL	170.00	6.00	113	TAPER
341+90	343+40	NBITL	150.00	6.00	100	TAPER
343+40	346+60	NBITL	320.00	12.00	427	No Name (Prv. Dr .SR 218 West. Lt)
346+60	348+30	NBITL	170.00	6.00	113	TAPER
396+90	398+10	NBITL	120.00	6.00	80	TAPER
398+10	402+70	NBITL	460.00	12.00	613	CR 500S
402+70	403+90	NBITL	120.00	6.00	80	TAPER
452+00	453+30	NBITL	318.00	6.00	212	TAPER
453+30	455+30	NBITL	320.00	12.00	427	CR 400S
455+30	456+70	NBITL	153.00	6.00	102	TAPER

**TOTAL                    9281 SYS**

## Milling Quantities LEFT Turnlane - Northbound

BEGIN STA	END STA	LANE	LENGTH	WIDTH	SYS	REMARKS
010+30	013+80	NBOTL	350.00	6.00	233	TAPER/SR 18
033+20	036+00	NBOTL	280.00	6.00	187	TAPER
036+00	036+80	NBOTL	80.00	12.00	107	CR 1200 S Lt.
036+80	038+60	NBOTL	180.00	6.00	120	TAPER
059+60	061+60	NBOTL	200.00	6.00	133	TAPER
061+60	063+30	NBOTL	170.00	12.00	227	CR 1150 S Rt.
063+30	065+00	NBOTL	170.00	12.00	227	TAPER
086+00	088+80	NBOTL	280.00	6.00	187	TAPER
088+80	089+60	NBOTL	80.00	12.00	107	CR 1100 S Lt.
089+60	091+20	NBOTL	160.00	6.00	107	TAPER
192+40	194+40	NBOTL	200.00	6.00	133	TAPER
194+40	195+30	NBOTL	90.00	12.00	120	CR 900S
195+30	196+50	NBOTL	120.00	6.00	80	TAPER
214+70	216+30	NBOTL	160.00	6.00	107	TAPER
216+30	221+90	NBOTL	560.00	12.00	747	CR 850 S Lt.
221+90	222+70	NBOTL	80.00	6.00	53	TAPER
238+60	239+70	NBOTL	110.00	9.00	167	TAPER
239+70	247+50	NBOTL	780.00	18.00	555	CR 800 S
247+50	249+30	NBOTL	180.00	9.00	71	TAPER
306+50	308+30	NBOTL	180.00	6.50	130	TAPER
308+30	311+40	NBOTL	310.00	13.00	448	Hoosier Blvd Lt.
311+40	312+30	NBOTL	90.00	6.50	65	TAPER
341+10	343+30	NBOTL	220.00	6.50	159	TAPER
343+30	346+80	NBOTL	350.00	13.00	506	SR 218 West Lt.
346+80	347+80	NBOTL	100.00	6.50	72	TAPER
400+10	401+40	NBOTL	130.00	6.00	87	TAPER
401+40	402+80	NBOTL	140.00	12.00	187	CR 500 S
402+80	403+90	NBOTL	110.00	6.00	73	TAPER
449+40	450+60	NBOTL	120.00	6.00	80	TAPER
450+60	455+60	NBOTL	500.00	12.00	667	CR 400 S
455+60	456+70	NBOTL	110.00	6.00	73	TAPER
<b>TOTAL</b>					<b>6212</b>	<b>SYS</b>

## Milling Quantities for RIGHT Turnlane - Southbound

BEGIN STA	END STA	LANE	LENGTH	WIDTH	SYS	REMARKS
458+00	457+00	SBITL	100.00	6.00	67	TAPER
457+00	454+50	SBITL	250.00	12.00	333	CR 400S
454+50	453+30	SBITL	120.00	6.00	80	TAPER
407+20	406+10	SBITL	110.00	6.00	73	TAPER
406+10	401+80	SBITL	430.00	12.00	573	CR 500 S
401+80	400+50	SBITL	130.00	6.00	87	TAPER
350+70	348+80	SBITL	190.00	6.50	137	TAPER
348+80	345+70	SBITL	310.00	13.00	448	SR218 West Lt.
345+70	344+60	SBITL	110.00	6.50	79	TAPER
255+20	253+70	SBITL	150.00	8.50	142	TAPER
253+70	246+10	SBITL	760.00	17.00	1436	CR 800S
246+10	244+60	SBITL	150.00	8.50	142	TAPER
230+10	228+40	SBITL	170.00	6.00	113	TAPER
228+40	220+60	SBITL	780.00	12.00	1040	CR 850S Lt.
220+60	218+80	SBITL	180.00	6.00	120	TAPER
199+70	198+10	SBITL	160.00	6.00	107	TAPER
198+10	194+40	SBITL	370.00	12.00	493	CR 900S
194+40	194+10	SBITL	30.00	12.00	40	NO TAPER
118+30	116+90	SBITL	140.00	6.00	93	TAPER
116+90	115+10	SBITL	180.00	12.00	240	CR 1050S
115+10	113+10	SBITL	200.00	6.00	133	TAPER
094+20	092+70	SBITL	150.00	6.00	100	TAPER
092+70	088+70	SBITL	400.00	12.00	533	CR 1100 Lt.
088+70	087+70	SBITL	100.00	6.00	67	TAPER
068+00	065+60	SBITL	240.00	6.00	160	TAPER
065+60	061+90	SBITL	370.00	12.00	493	Comm. Drive(CR 1150 S Rt.)
061+90	060+00	SBITL	190.00	6.00	127	TAPER
040+00	038+00	SBITL	200.00	6.00	133	TAPER
038+00	035+70	SBITL	230.00	12.00	307	CR 1200 S Lt.
035+70	034+10	SBITL	160.00	6.00	107	TAPER
013+50	011+90	SBITL	259.00	6.50	187	TAPER
011+90	010+30	SBITL	385.00	13.00	556	SR 18
<b>TOTAL</b>					<b>8747</b>	<b>SYS</b>

## Milling Quantities for LEFT Turnlane - Southbound

BEGIN STA	END STA	LANE	LENGTH	WIDTH	SYS	REMARKS
460+90	459+70	SBOTL	120.00	6.00	80	TAPER
459+70	454+70	SBOTL	500.00	12.00	667	CR 400S
454+70	453+60	SBOTL	110.00	6.00	73	TAPER
404+40	403+40	SBOTL	100.00	6.00	67	TAPER
403+40	401+90	SBOTL	150.00	12.00	200	CR 500S
401+90	401+10	SBOTL	80.00	12.00	107	TAPER
350+90	348+70	SBOTL	220.00	6.00	147	TAPER
348+70	345+70	SBOTL	300.00	12.00	400	SR 218 West Lt.
345+70	345+20	SBOTL	50.00	6.00	33	TAPER
313+20	312+10	SBOTL	110.00	6.00	73	TAPER
312+10	310+30	SBOTL	180.00	12.00	240	Hoosier Blvd Lt.
310+30	309+40	SBOTL	90.00	6.00	60	TAPER
292+60	290+80	SBOTL	180.00	6.00	120	TAPER
290+80	286+80	SBOTL	400.00	12.00	533	SR 218 East Rt.
286+80	285+90	SBOTL	90.00	6.00	60	TAPER
254+30	253+10	SBOTL	120.00	6.00	80	TAPER
253+10	246+10	SBOTL	700.00	12.00	933	CR 800S
246+10	244+30	SBOTL	180.00	6.00	120	TAPER
197+10	196+00	SBOTL	110.00	6.00	73	TAPER
196+00	194+40	SBOTL	160.00	12.00	213	CR 900 S
194+40	193+10	SBOTL	130.00	6.00	87	TAPER
119+00	116+70	SBOTL	230.00	6.00	153	TAPER
116+70	115+00	SBOTL	170.00	12.00	227	CR 1050 S
115+00	113+60	SBOTL	140.00	6.00	93	TAPER
066+30	063+80	SBOTL	250.00	6.00	167	TAPER
063+80	062+00	SBOTL	180.00	12.00	240	CR 1150 S Rt.
062+00	060+70	SBOTL	130.00	6.00	87	TAPER
015+20	012+20	SBOTL	300.00	26.00	867	TAPER
012+20	010+30	SBOTL	190.00	12.00	253	SR 18

**TOTAL            6453 SYS**

**Milling Mainline & Turn Lanes**

BEGIN STA	END STA	LANE	LENGTH	WIDTH	SYS	REMARKS
010+30	101+20	Northbound	9090	26.00	26260	Mainline
101+20	102+70	Northbound				Bridge Exception
102+70	318+40	Northbound	21570	26.00	62313	Mainline
318+40	323+60	Northbound				Concrete Pavement
323+60	351+20	Northbound	2760	26.00	7973	Mainline
351+20	353+60	Northbound				Bridge Exception
353+60	499+80	Northbound	14620	26.00	42236	Mainline
499+80	353+60	Southbound	14620	26.00	42236	Mainline
353+60	351+20	Southbound				Bridge Exception
351+20	323+60	Southbound	2760	26.00	7973	Mainline
323+60	318+40	Southbound				Concrete Pavement
318+40	102+70	Southbound	21570	26.00	62313	Mainline
102+70	101+20	Southbound				Bridge Exception
101+20	010+30	Southbound	9090	26.00	26260	Mainline
010+30	499+80	NBRL			9281	Turnlanes
010+30	499+80	NBLT			6212	Turnlanes
010+30	499+80	SBRT			8747	Turnlanes
010+30	499+80	SBLT			6453	Turnlanes
Total					<b>308257</b>	Mainline + Turn Lanes

**Milling Approaches**

010+30	499+80	PBA			11321	Public Road Approaches
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**Transition Milling**

STA		LANE	LENGTH	WIDTH	SYS	REMARKS
010+30	Mainline	NBL	90	26	260	
010+30	Mainline	SBL	90	26	260	
499+80	Mainline	NBL	90	26	260	
499+80	Mainline	SBL	90	26	260	
101+20	Bridge Appr	NBL	90	26	260	
101+20	Bridge Appr	SBL	90	26	260	
102+70	Bridge Appr	NBL	90	26	260	
102+70	Bridge Appr	SBL	90	26	260	
318+40	Concrete Pavement	NBL	90	26	260	Under R X R
318+40	Concrete Pavement	SBL	90	26	260	Under R X R
323+60	Concrete Pavement	NBL	90	26	260	Under R X R
323+60	Concrete Pavement	SBL	90	26	260	Under R X R
351+20	Bridge Appr	NBL	90	26	260	
351+20	Bridge Appr	SBL	90	26	260	
353+60	Bridge Appr	NBL	90	26	260	
353+60	Bridge Appr	SBL	90	26	260	
Total					<b>4160</b>	<b>SYS</b>

**Bituminous Quantities**

QC/QA HMA Mainline, 165 Lb/Sq. yd	25474 Tons
Add 5%	<b>26748 Tons</b>
HMA Type C Approaches	934 Tons
Add 5%	<b>981 Tons</b>
Asphalt for Tack Coat	107 Tons
Add 5%	<b>113 Tons</b>

LINE, SOLID, WHITE, 4 IN. Northbound Turnlanes

RS -29837

BEGIN STA	END STA	LANE	LENGTH	REMARKS
NO TURN	LANE	NBRTL	0.00	SR18
NO TURN	LANE	NBRTL	0.00	CR 1200S Lt.
061+50	062+60	NBRTL	110.00	CR 1150 S Rt.
NO TURN	LANE	NBRTL	0.00	CR 1100 S Lt.
114+40	115+50	NBRTL	110.00	CR 1050 S
190+90	194+60	NBRTL	370.00	CR 900 S
NO TURN	LANE	NBRTL	0.00	CR 850 S Lt.
242+80	254+40	NBRTL	1090.00	CR 800 S
254+40	261+60	NBRTL	720.00	Broken
284+50	290+40	NBRTL	590.00	SR 218 East Rt.
290+40	292+40	NBRTL	200.00	Broken
305+60	310+40	NBRTL	480.00	Comm. Dr (Hoosier Blvd Lt.)
343+30	345+65	NBRTL	235.00	No Name(Prv. Dr.SR 218 West Lt.)
NO TURN	LANE	NBRTL	0.00	Pipe Creek Mill Rd. Rt.
NO TURN	LANE	NBRTL	0.00	CR 560 S Rt.
398+10	402+00	NBRTL	390.00	CR 500 S
453+30	454+80	NBRTL	150.00	CR 400 S
NO TURN	LANE	NBLTL	0.00	SR 18
NO WHITE	MARKING	NBLTL	0.00	CR 1200S Lt.
061+60	062+50	NBLTL	90.00	CR 1150 S Rt.
NO WHITE	MARKING	NBLTL	0.00	CR 1100 S Lt.
NO TURN	LANE	NBLTL	0.00	CR 1050 S
NO WHITE	MARKING	NBLTL	0.00	CR 900 S
216+30	221+20	NBLTL	490.00	CR 850 S Lt.
239+70	246+40	NBLTL	670.00	CR 800 S
NO TURN	LANE	NBLTL	0.00	SR 218 East Rt.
308+30	310+60	NBLTL	230.00	Hoosier Blvd Lt.
343+30	345+90	NBLTL	260.00	SR 218 West Lt.
NO TURN	LANE	NBLTL	0.00	Pipe Creek Mill Rd. Rt.
NO TURN	LANE	NBLTL	0.00	CR 560 S Rt.
401+40	402+20	NBLTL	80.00	CR 500 S
450+60	455+00	NBLTL	440.00	CR 400 S

BEGIN STA	END STA	LANE	LENGTH	REMARKS
011+90	010+30	SBRTL	160.00	SR 18
038+00	036+40	SBRTL	160.00	CR 1200S Lt.
065+60	063+00	SBRTL	260.00	Comm. Dr (CR 1150 S Rt.)
092+70	089+30	SBRTL	340.00	CR 1100 S Lt.
116+90	115+70	SBRTL	120.00	CR 1050 S
198+10	194+90	SBRTL	320.00	CR 900 S
228+40	221+40	SBRTL	700.00	CR 850 S Lt.
253+70	247+00	SBRTL	670.00	CR 800 S
NO TURN	LANE	SBRTL	0.00	SR 218 East Rt.
NO TURN	LANE	SBRTL	0.00	Hoosier Blvd Lt.
348+80	346+60	SBRTL	220.00	SR 218 West Lt.
NO TURN	LANE	SBRTL	0.00	Pipe Creek Mill Rd. Rt.
NO TURN	LANE	SBRTL	0.00	CR 560 S Rt.
406+10	402+50	SBRTL	360.00	CR 500 S
457+00	455+30	SBRTL	170.00	CR 400 S
012+20	010+30	SBLTL	190.00	SR 18
NO TURN	LANE	SBLTL	0.00	CR 1200S Lt.
063+80	062+60	SBLTL	120.00	CR 1150 S Rt.
NO TURN	LANE	SBLTL	0.00	CR 1100 S Lt.
116+70	115+70	SBLTL	100.00	CR 1050 S
196+00	194+90	SBLTL	110.00	CR 900 S
NO TURN	LANE	SBLTL	0.00	CR 850 S Lt.
253+10	246+90	SBLTL	620.00	CR 800 S
290+80	287+60	SBLTL	320.00	SR 218 East Rt.
312+10	311+00	SBLTL	110.00	Hoosier Blvd Lt.
348+70	346+60	SBLTL	210.00	SR 218 West Lt.
NO TURN	LANE	SBLTL	0.00	Pipe Creek Mill Rd. Rt.
NO TURN	LANE	SBLTL	0.00	CR 560 S Rt.
403+40	402+50	SBLTL	90.00	CR 500 S
459+70	455+30	SBLTL	440.00	CR 400 S



Summary of Pavement Marking Details for Turn Lanes

Intersection	Station	Northbound						Southbound						Remarks
		Turn Lanes		Pavement Message		RPM	Stop Bars	Turn Lanes		Pavement Message		RPM	Stop Bars	
		RT-Lft	LT-Lft	Arrows	Only			LFT	Arrows	Only	Arrows			
SR 18	010+00	0	0	x	x	0	x	160	190	2	2	9	70	Signal
CR 1200 S Lt.	036+40	0	0	x	x	0	x	160	0	x	x	4	x	
CR 1150 S Rt.	062+80	110	90	x	x	5	x	260	120	x	x	10	x	
CR 1100 S Lt.	089+20	0	0	x	x	0	x	340	0	x	x	9	x	
CR 1050 S	115+60	110	0	x	x	3	x	120	100	x	x	6	x	
CR 900 S	194+80	370	0	x	x	9	x	320	110	x	x	11	x	
CR 850 S Lt.	221+20	0	490	x	x	12	x	700	0	x	x	18	x	
CR 800 S	246+80	1090	670	5	x	44	20	670	620	5	2	32	42	
SR 218 East Rt.	287+40	590	0	2	2	15	20	0	320	x	x	8	x	
Hoosier Blvd Lt.	310+50	480	230	x	x	18	24	0	110	x	x	3	36	
SR 218 West Lt.	346+00	235	260	2	2	12	80	220	210	4	4	11	94	Signal
Pipe Creek Mill Rd. Rt.	357+00	0	0	x	x	0	x	0	0	x	x	0	x	
CR 560 S Rt.	370+70	0	0	x	x	0	x	0	0	x	x	0	x	
CR 500 S	402+30	390	80	x	x	12	x	360	90	x	x	11	x	
CR 400 S	454+80	150	440	2	2	15	x	170	440	2	2	15	x	
<b>TOTAL</b>		<b>3525</b>	<b>2260</b>	<b>11</b>	<b>6</b>	<b>145</b>	<b>144</b>	<b>3480</b>	<b>2310</b>	<b>13</b>	<b>10</b>	<b>145</b>	<b>242</b>	

**SUMMARY OF PAVEMENT MARKING****1 Pavement Marking for Mainline from SR 18 to 0.47 Mile S of Business 31**

Station	Station	Solid White	Broken White	Solid Yellow	Remarks
010+30	499+80	48950	12238	48950	North Bound Main Lane
499+80	010+30	48950	12238	48950	South Bound Main Lane
010+30	499+80	5785	230		North Bound Turn Lanes
499+80	010+30	5790			South Bound Turn Lanes
<b>Total</b>		<b>109475</b>	<b>24705</b>	<b>97900</b>	

**2 Pavement Message Markings & Stop Bars**

Station	Station	Arrows	Word "ONLY"	STOP Bars LFT	Remarks
010+30	499+80	11	6	144	Northbound
499+80	010+30	13	10	242	Southbound
<b>Total</b>		<b>24</b>	<b>16</b>	<b>386</b>	

**3 Pavement Marking for Gore Area (Ramps & SR 218 East)**

Intersection	Station	Gore 8"	Gore 24"	Remarks
		LFT	LFT	
EXIT Ramp	320+20	480	100	SB
SR 218 East	287+40	180	50	NB
<b>Total</b>		<b>660</b>	<b>150</b>	

**4 BUZZ STRIPS**

US 31	Station	LFT
Southbound	024+40	144
Southbound	019+40	144
<b>Total</b>		<b>288</b>

**5 Raised Pavement Markers**

Station	Station	RPM	Remarks
010+30	499+80	625	Northbound
499+80	010+30	625	Southbound
010+30	499+80	145	NB turn lanes
499+80	010+30	145	SB turn Lanes

**Total**      **1539**



## Stations Requiring Underseal

US 31 from SR 18 to Business US 31

**Northbound Lane from RP 170+00 to 179+29**

From Station #	To Station#	Length Ft.
282+56	285+61	305

Total Length of Underseal	305	Feet
Amount of Underseal(Tons)	1	Tons
Number of Holes	16	

\*This material estimates are based on 16 holes per every 328' (100 meter) of underseal and approximately 12 gallon of underseal material per hole.

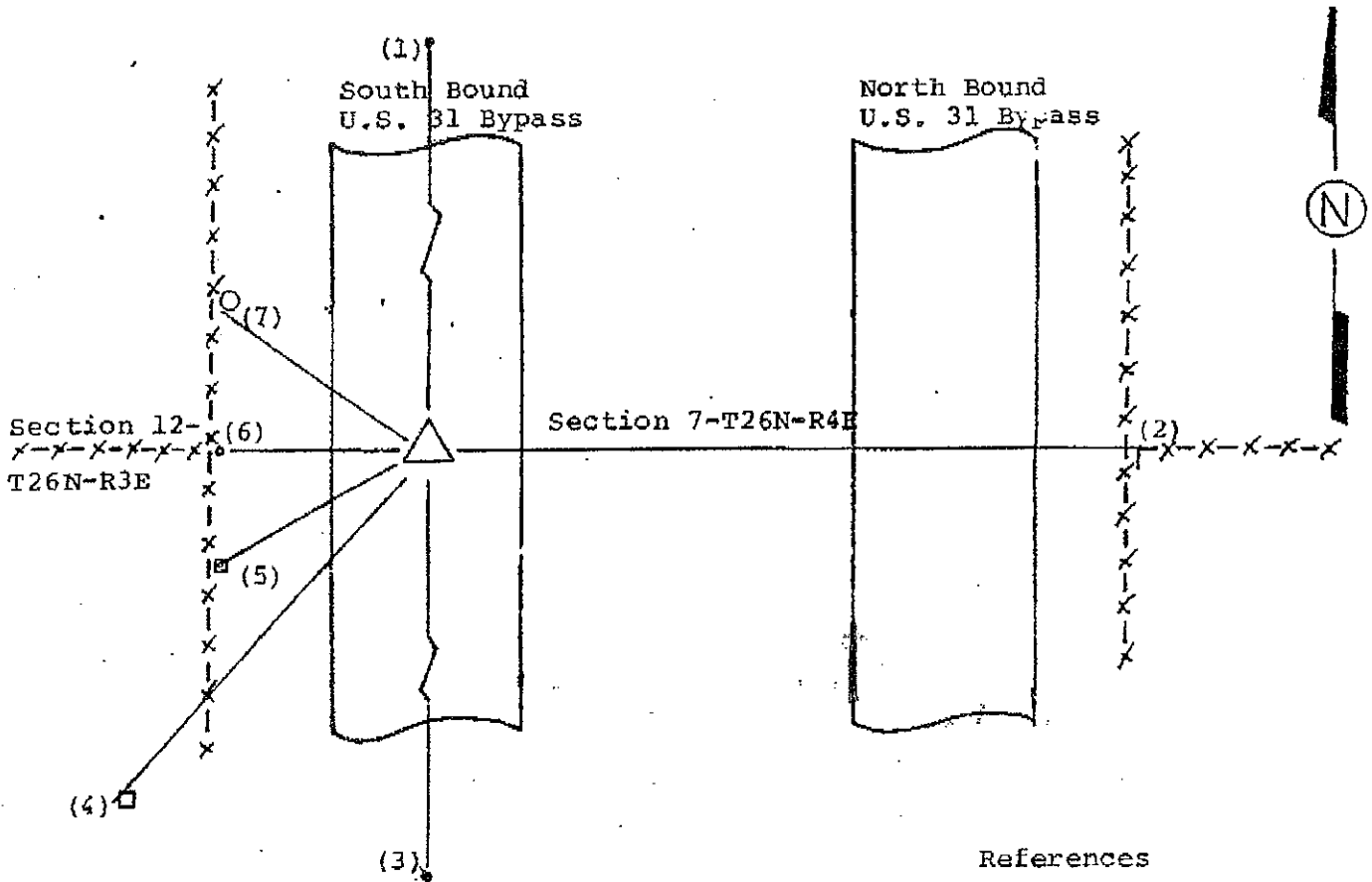
**Note:**    **No Underseal Southbound Lane**

**Cores Locations**

Road		US 31												
County		Miami												
Des #		0600345												
RP		169+10 to 179+91												
Project Description:		SR 18 to South Business of US 31												
Core No.	RP / Locations	WBL/NBL		T/L	EBL/SBL		Shldr	Depth						D/CL (ft)
		Shldr	Mainline		Mainline	Concrete (inches)		Asphalt (inches)		Brick (inches)				
				W/N		E/S		W/N	E/S	W/N	E/S			
1	170+10		1N				Unremovable	12					5	
2	171+20				2S			9		8			5	
3	172+20		3N				8		10				5	
4	173+20				4S		Unremovable			12			5.5	
5	174+20		5N				9		7.5				6	
6	175+00				6S			9		5.5			4.5	
7	176+00		7N				8.5		5				5.5	
8	177+00				8S		Unremovable			7.5			4.5	
10	179+00				10S					17.5			5	

RS-29837

### MIAMI COUNTY SECTION CORNER



#### References

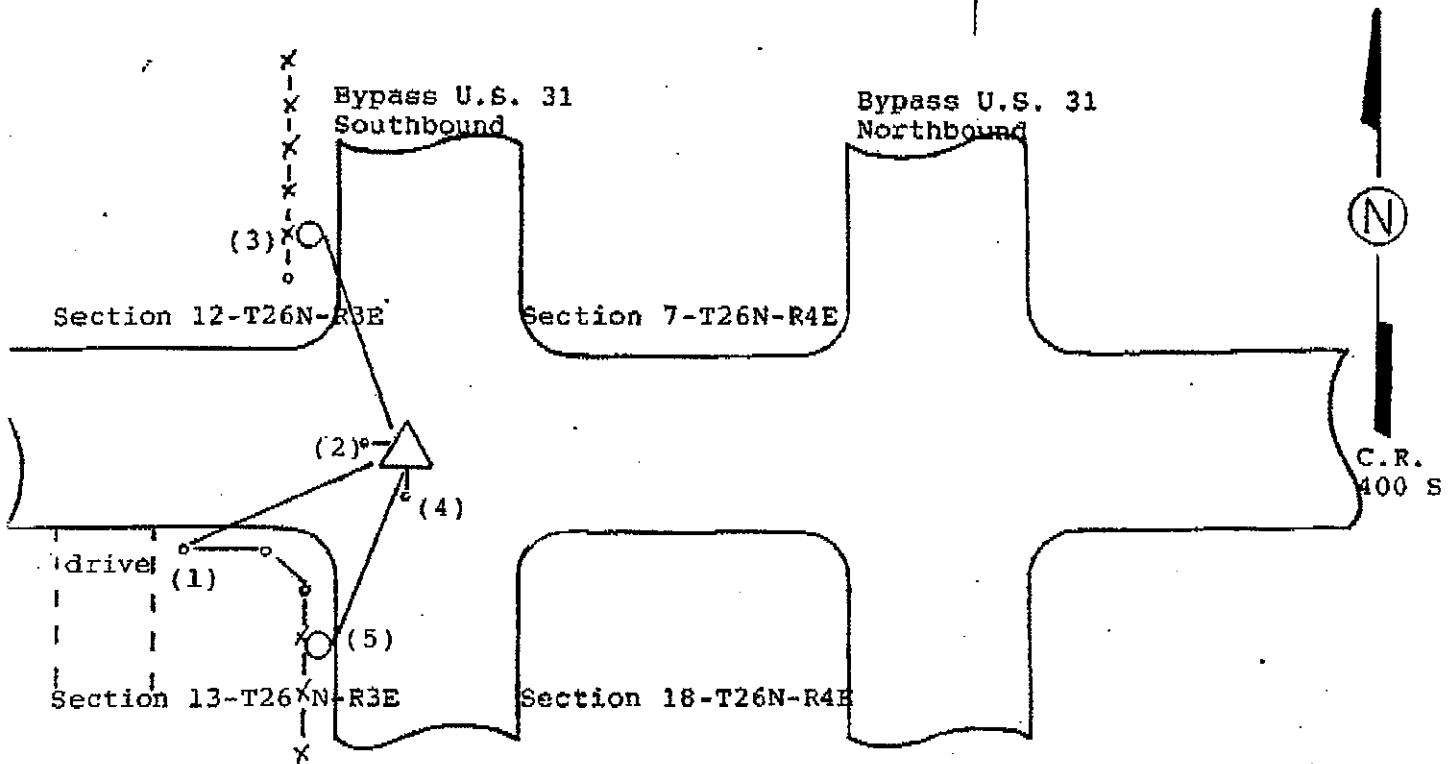
- (1) Miami County Surveyor's Section Corner Monument 2638.21'
- (2) West side of angle iron corner post 136.58'
- (3) Miami County Surveyor's Section Corner Monument 2638.21'
- (4) Center of west side of 6" concrete Indiana State Highway right of Way monument 338.78'
- (5) Top and center of U.S.G.S. Benchmark stamped F-24- Miami 121.97'
- FOUND CORNER  (6) A 1/2" iron rebar 50.00'
- OBLITERATED CORNER  (7) P.K. nail in southwest face of 8" wooden utility pole 111.06'
- LOST CORNER

**COMMENTS:** No stone was located and no indication of monument set by Indiana State Highway. Set a P.K. nail by existing fencelines which were proved by measurement.

**CERTIFIED BY:** Greg D. Deeds      **DATE:** October 1989  
**LS# :** S0476      **LOCATION:** E-40

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### MIAMI COUNTY SECTION CORNER



#### References

(1) Northeast face of 2" steel corner post	99.00'
(2) P.K. nail in pavement	3.00'
(3) P.K. nail in east face of 12" wooden utility pole	99.00'
(4) P.K. nail in pavement	3.00'
(5) P.K. nail in east face of 12" wooden utility pole	79.21'

FOUND CORNER

OBLITERATED CORNER

LOST CORNER

COMMENTS: No monument was found as called out by Indiana State Highway plans. Set a 3/4", 8" long aluminum rod with a Miami County Surveyor's cap according to highway plans.

CERTIFIED BY: Greg D. Deeds

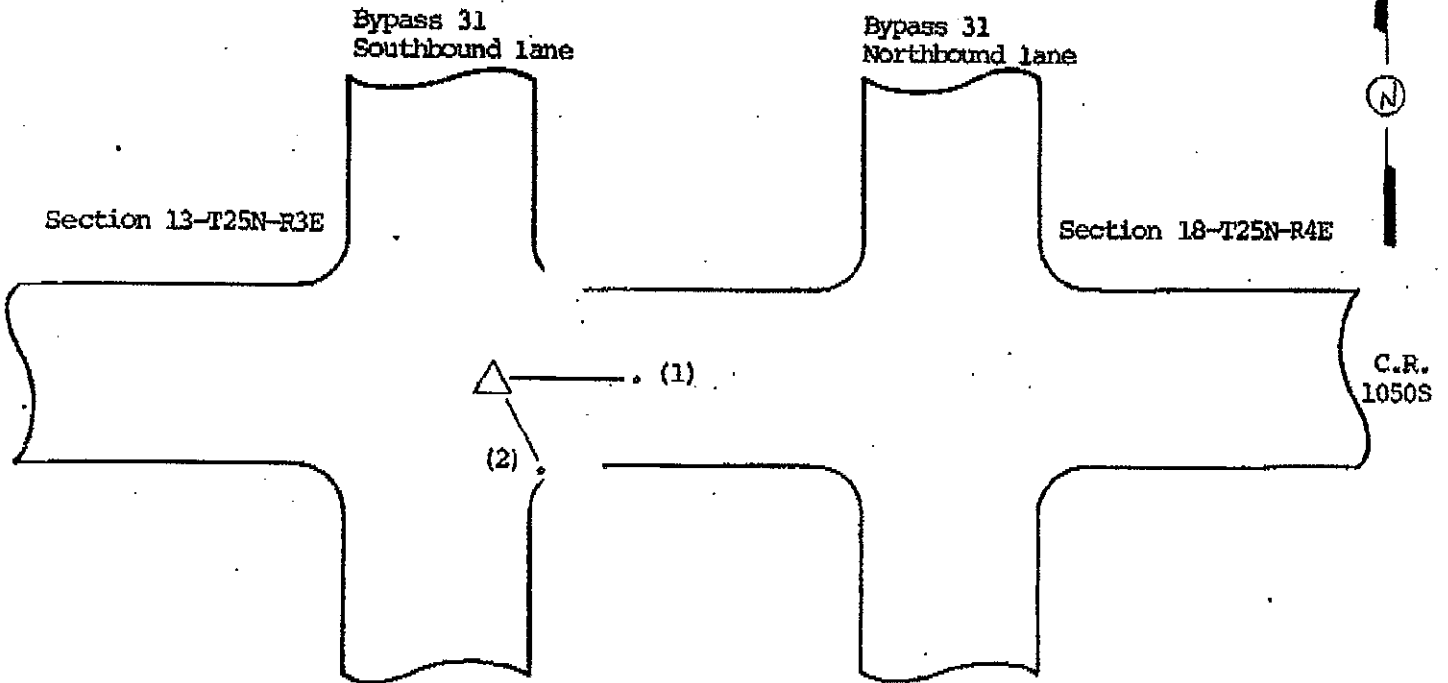
DATE: November 29, 1989

LS# : SO476

LOCATION: E-41

### MIAMI COUNTY SECTION CORNER

RS-29837



FOUND CORNER

OBLITERATED CORNER

LOST CORNER

COMMENTS: Location of corner determined but not searched for.

\_\_\_\_\_  
\_\_\_\_\_

CERTIFIED BY: \_\_\_\_\_

DATE: May 25, 1988

LS# : \_\_\_\_\_

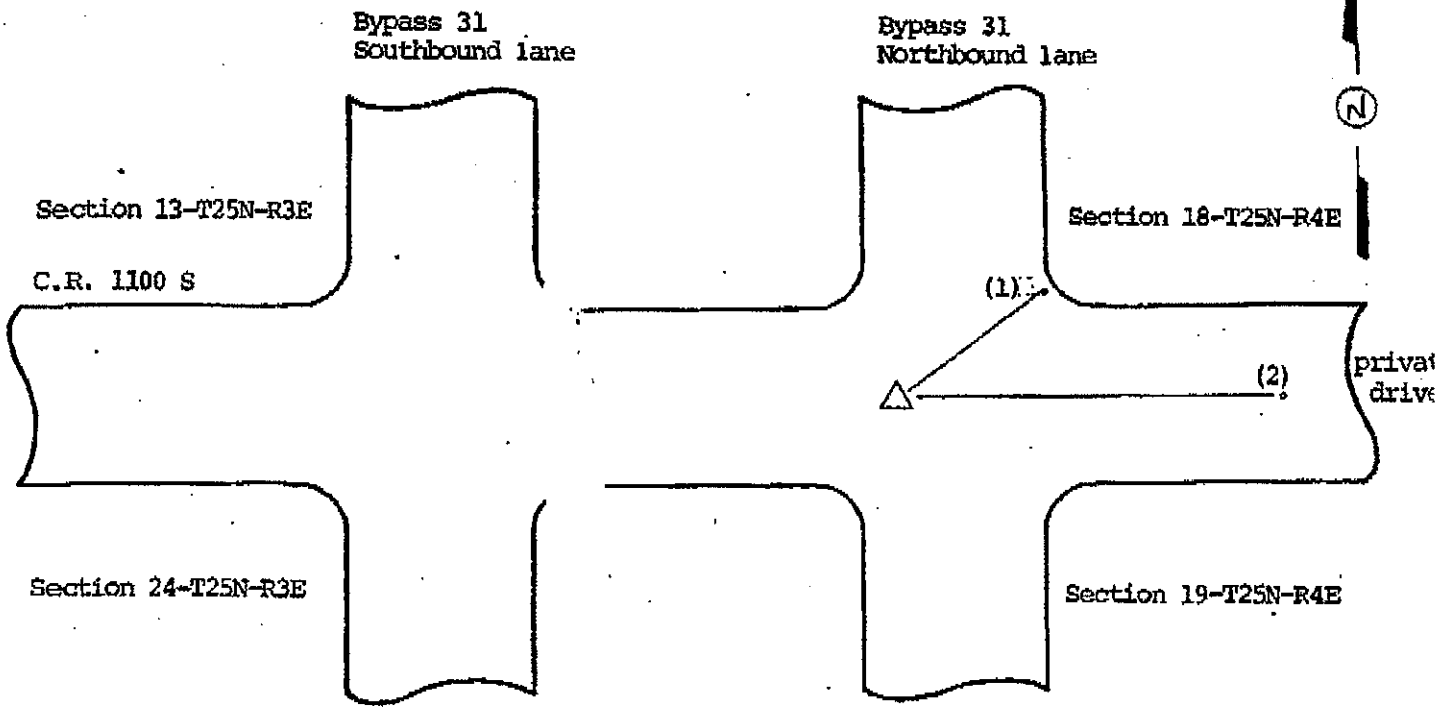
LOCATION: E-54

Location of Monuments  
Page 23



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### MIAMI COUNTY SECTION CORNER



#### References

- (1) P.K. nail in edge of pavement 38.8'
- (2) P.K. nail in pavement 91.6'

FOUND CORNER

OBLITERATED CORNER

LOST CORNER

COMMENTS: Location determined but not searched for.

CERTIFIED BY: \_\_\_\_\_

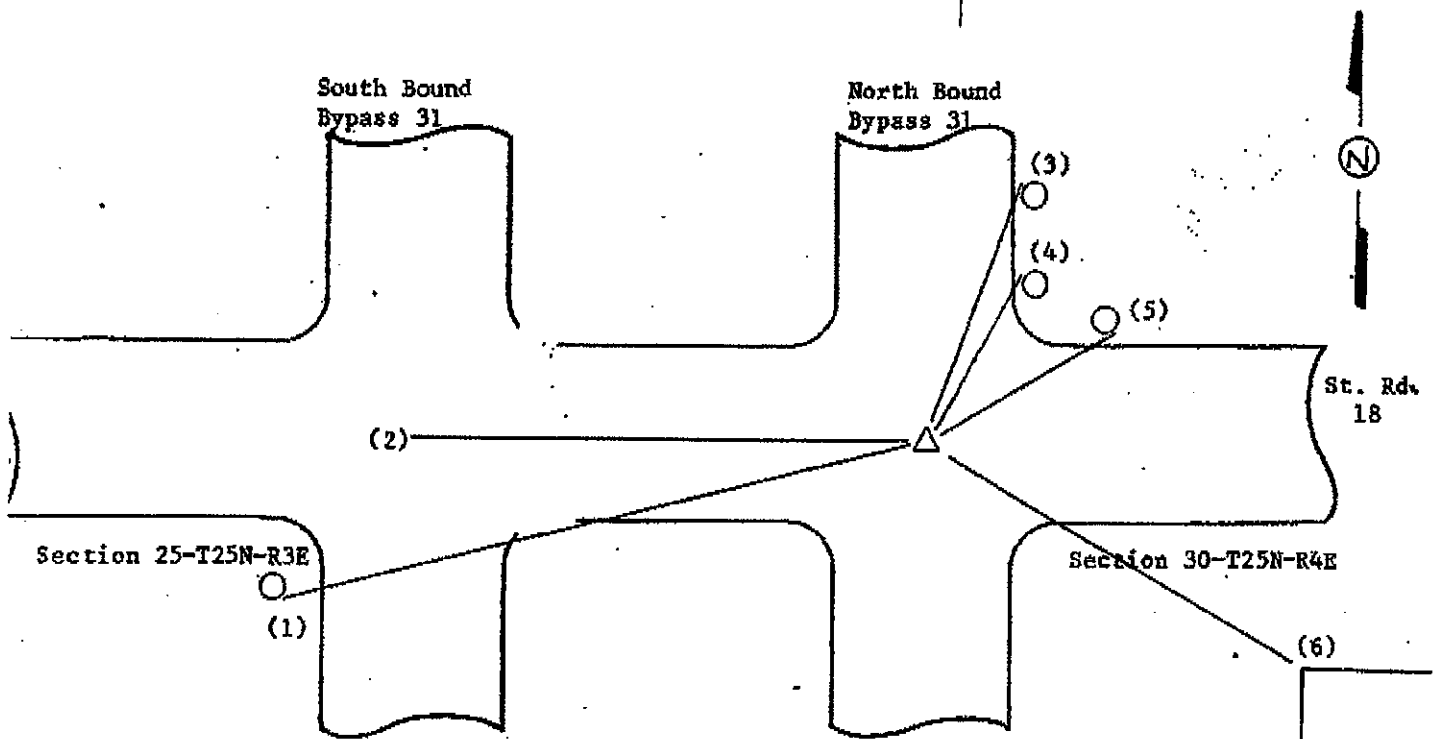
DATE: May 25, 1988

LS# : \_\_\_\_\_

LOCATION: B-55

MIAMI COUNTY SECTION CORNER

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References

- (1) Bottle cap in southeast face of 16" power pole 135.72'
- (2) Approximate center line of south bound lane of Bypass 31 73.00'
- (3) Bottle cap in northwest face of 16" power pole 87.32'
- (4) P.K. nail in northwest face of 16" power pole 71.15'
- (5) P.K. nail in southeast face of 16" power pole 92.47'
- (6) Northwest corner of a 2 story brick house 152.55'

FOUND CORNER

OBLITERATED CORNER

LOST CORNER

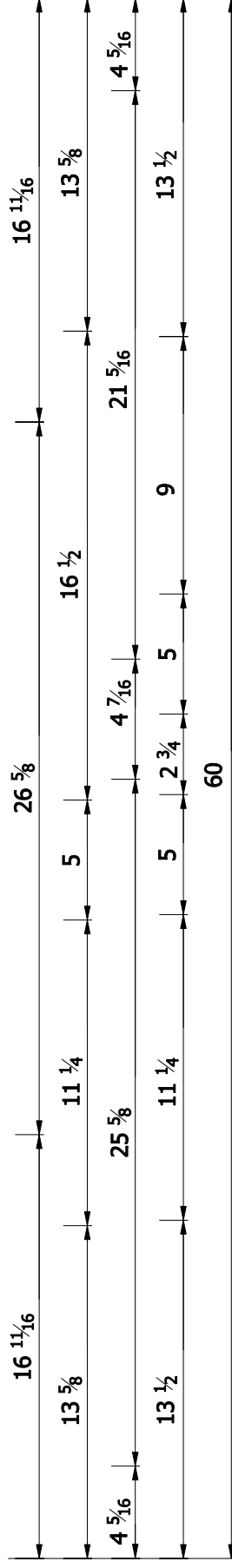
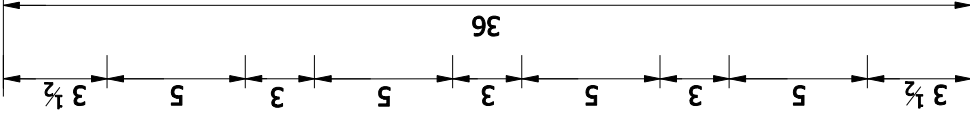
COMMENTS: A Type D, Indiana State Highway monument found approximately 6" deep under road surface.

CERTIFIED BY: David W. Smoll & Greg D. Deed DATE: April 1, 1986

LS#: S0421 & S0476 LOCATION: E-58



**Speeding  
 Max \$1000  
 Reckless Driving  
 Max 8 Yrs**

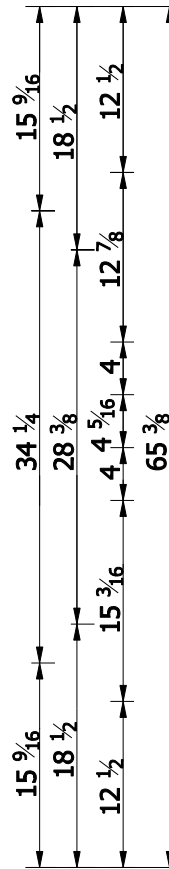
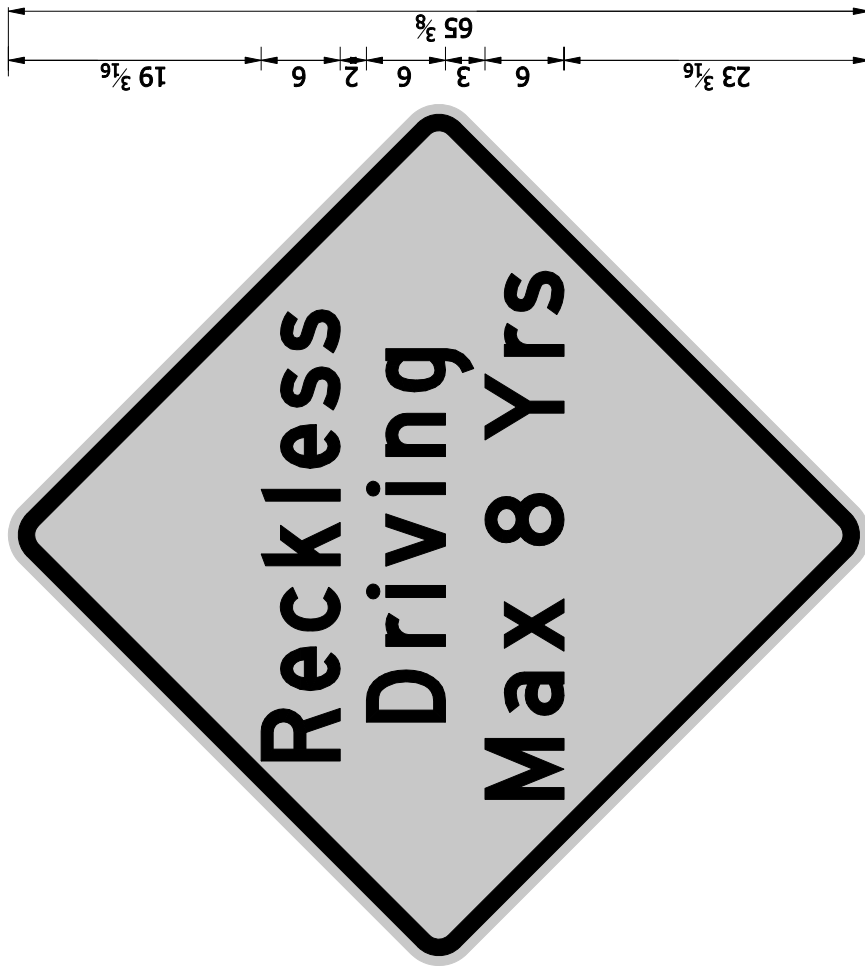


5 C UPPER AND LOWER; 2.250" Radius, 0.875" Border, 0.625" Indent, Black on Orange;  
 [Speeding] C; [Max \$1000] C; [Reckless Driving] C; [Max 8 Yrs] C;

XG 20-7a

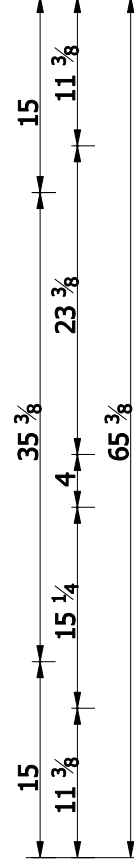
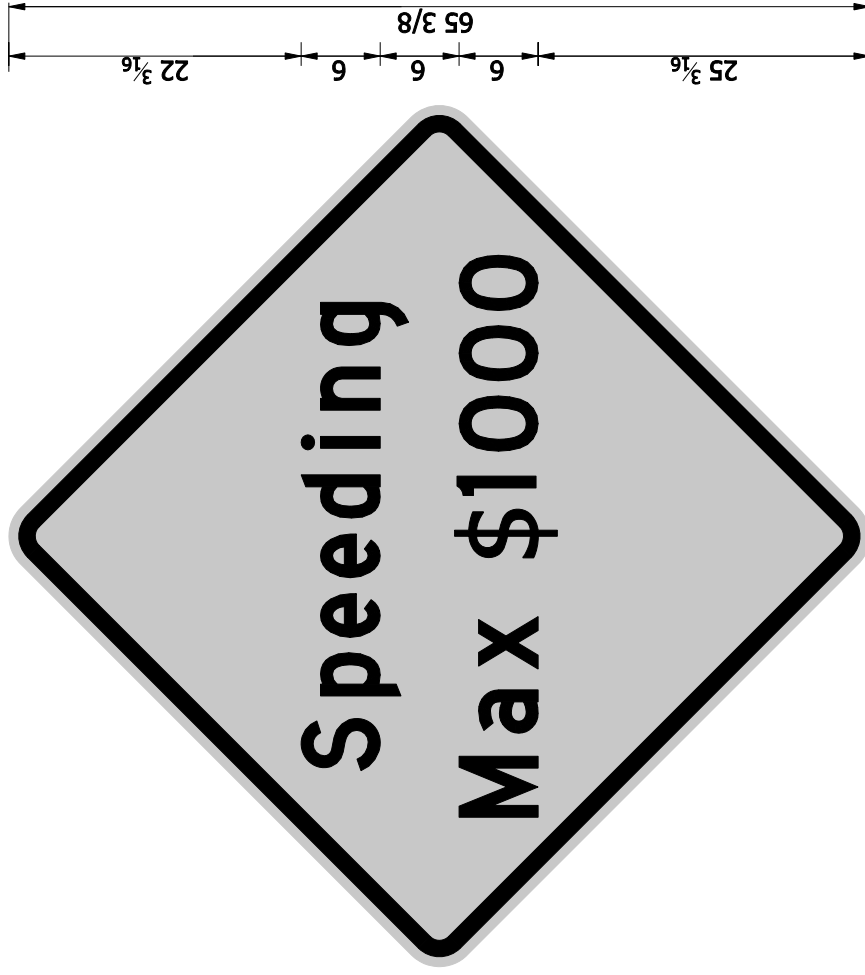
INDIANA DEPARTMENT OF TRANSPORTATION

WORKSITE ADDED  
 PENALTY SIGN 60 x 36



48x48 ; 6 D UPPER AND LOWER  
 48.000" across sides 3.000" Radius, 1.250" Border, 0.750" Indent, Black on Orange;  
 [Reckless] D; [Driving] D; [Max 8 Yrs] D;

XG20-7b



48x48 ; 6 D UPPER AND LOWER  
 48.000" across sides 3.000" Radius, 1.250" Border, 0.750" Indent, Black on Orange;  
 [Speeding] D; [Max \$1000] D;

XG20-7c

INDIANA DEPARTMENT OF TRANSPORTATION

WORKSITE ADDED  
 PENALTY SIGNS 48 x 48



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100-C-147 PAYMENT OF PREDETERMINED MINIMUM WAGE DETERMINATION  
(DAVIS-BACON ACT)  
General Decision Number IN070006

(Revised 10-01-07)

General Decision Number IN070006 shall apply to this contract.

The above referenced wage determination is available at the Department's Contract Administration Division website location: <http://www.in.gov/dot/div/contracts/letting/index.html>

The modification number and publication date for the General Decision effective for the bid opening is posted on the Contract Administration website ten days prior to the bid opening. The bidder shall enter the appropriate modification number, General Decision Number, and publication date in the proposal form.

100-C-151a FHWA-1273

REQUIRED CONTRACT PROVISIONS  
FEDERAL-AID CONSTRUCTION CONTRACTS

(Revised 03-10-94)

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ATTACHMENTS

A. Employment Preference for Appalachian Contracts  
(included in Appalachian contracts only)

**I. GENERAL**

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.

4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

- Section I, paragraph 2;
- Section IV, paragraphs 1, 2, 3, 4, and 7;
- Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.

6. **Selection of Labor:** During the performance of this contract, the contractor shall not:

a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or

b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

## II. NONDISCRIMINATION

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630 and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.

b. The contractor will accept as his operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training."

2. **EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

3. **Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. **Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer". All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)

c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

**5. Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

**6. Training and Promotion:**

a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

**7. Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.

**8. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 26, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.

c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

**9. Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and

(4) The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.

b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.

### **III. NONSEGREGATED FACILITIES**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of \$10,000 or more and that it will retain such certifications in its files.

### **IV. PAYMENT OF PREDETERMINED MINIMUM WAGE**

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

**1. General:**

a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c)] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.

c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

**2. Classification:**

a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

(1) the work to be performed by the additional classification requested is not performed by a classification in the wage determination;

(2) the additional classification is utilized in the area by the construction industry;

(3) the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

(4) with respect to helpers, when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

**3. Payment of Fringe Benefits:**

a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate, shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

**4. Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:**

a. Apprentices:

(1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

(2) The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

(3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

(4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

(1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.

(2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.

(4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under an approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

**5. Apprentices and Trainees (Programs of the U.S. DOT):**

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

**6. Withholding:**

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

**7. Overtime Requirements:**

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

**8. Violation:**

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

**9. Withholding for Unpaid Wages and Liquidated Damages:**

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

**V. STATEMENTS AND PAYROLLS**

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

**1. Compliance with Copeland Regulations (29 CFR 3):**

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

**2. Payrolls and Payroll Records:**

a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.

b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof of the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing

benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.

c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;

(2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;

(3) that each laborer or mechanic has been paid not less than the applicable wage rate and fringe benefits or cash equivalent for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

## **VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR**

1. On all Federal-aid contracts on the National Highway System, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than \$1,000,000 (23 CFR 635) the contractor shall:

a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.

b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.

c. Furnish, upon the completion of the contract, to the SHA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.

2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

## **VII. SUBLETTING OR ASSIGNING THE CONTRACT**



1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).

a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

#### **VIII. SAFETY: ACCIDENT PREVENTION**

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

#### **IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS**

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

##### **NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS**

18 U.S.C. 1020 reads as follows:

*"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or*

*Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or*

*Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;*

*Shall be fined not more than \$10,000 or imprisoned not more than 5 years or both."*

#### **X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 *et seq.*, as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 *et seq.*, as amended by Pub.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.

3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

#### **XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION**

##### **1. Instructions for Certification - Primary Covered Transactions:**

(Applicable to all Federal-aid contracts - 49 CFR 29)

a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is

compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

\* \* \* \* \*

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – Primary Covered Transactions**

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and

d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

\* \* \* \* \*

**2. Instructions for Certification - Lower Tier Covered Transactions:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions of \$25,000 or more - 49 CFR 29)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

\* \* \* \* \*

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – Lower Tier Covered Transactions:**

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

\* \* \* \* \*

**XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING**

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

**ATTACHMENT A - EMPLOYMENT PREFERENCE FOR APPALACHIAN CONTRACTS**

(Applicable to Appalachian contracts only.)

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph 1c shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph 4 below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which he estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, he shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within 1 week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph 1c above.

5. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

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100-C-151b DISADVANTAGED BUSINESS ENTERPRISE PROCEDURE AND GOOD FAITH  
EFFORTS

(Revised 04-09-07)

The Standard Specifications are revised as follows:

SECTION 103, AFTER LINE 1, DELETE AND INSERT AS FOLLOWS:

**SECTION 103 – AWARD AND EXECUTION OF CONTRACT**

**103.01 Disadvantaged Business Enterprise Program**

This requirement will apply only to a federal aid contract.

**(a) General Requirements**

Failure to carry out the requirements set forth in 49 CFR ~~23.43(a)~~ 26, *as outlined in the Department's DBE Program Manual*, shall constitute a breach of contract and, after notification may result in termination of the contract or such remedy as the State deems appropriate.

The above referenced CFR section requires the following policy and disadvantaged business enterprise obligation to be included in all subsequent agreements between the Contractor and all subcontractors as follows:

1. It will be the policy of the Department ~~that disadvantaged business enterprises, as defined in 49 CFR Part 23, shall have the maximum opportunity to participate in the performance of contract work financed in whole or in part with Federal funds provided under this contract to create a level playing field on which DBE's can compete fairly for federally funded contracts.~~ Consequently, the disadvantaged business enterprise requirements of 49 CFR Part ~~23~~ 26, *as outlined in the Department's DBE Program Manual*, apply to this contract.

2. ~~The Contractor agrees to ensure that disadvantaged business enterprises certified by the State shall have the maximum opportunity to participate in the performance of contract work or subcontract work financed in whole or in part with Federal funds provided under this contract. In this regard, the Contractor shall take all necessary and reasonable steps, in accordance with 49CFR Part 23, to ensure that disadvantaged business enterprises have the maximum opportunity to compete for and perform work in this contract. The Contractor shall not discriminate on the basis of race, color, national origin, or sex, in the award and performance of this contract. *The Contractor shall carry out the applicable DBE requirements in the award and administration of federally funded contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or such other remedy as the Department deems appropriate. The Contractor shall include language prohibiting discrimination on the basis of race, color, national origin, or sex in the performance of this contract in all subcontracts.*~~

SECTION 103, BEGIN LINE 59, DELETE AND INSERT AS FOLLOWS:

#### **4. Certified DBE**

A business enterprise which has completed and filed a request for certification with the ~~Indiana Department of Administration~~, and that the business enterprise has been reviewed and determined to comply with the guidelines established in 49 CFR Part ~~23~~ 26. Business enterprises which are determined to be eligible will be certified as DBEs *to perform specific types of work.*

#### **(c) Goal**

A contract provision *DBE* goal may be shown on the Proposal sheet. Such goal, if required, has been established as the *desired minimum* amount to be contracted to DBEs. The Contractor shall meet or exceed the goal, or demonstrate that it could not be met despite ~~best good faith~~ efforts. Achievement of the ~~contract provision~~ goal does not relieve the Contractor of the requirement for affirmative action on subsequent subcontracting on this contract. Only work with listed DBEs ~~which~~ *that* are certified prior to the date of the letting will count toward the goal. *Credit towards contract goals will be given only for work performed by certified DBEs in the work areas for which they have been certified. The same requirements with respect to obtaining the goal apply for a Contractor that is certified as a DBE. A DBE Contractor must either achieve the goal utilizing other DBE firms or demonstrate that the goal could not be met despite good faith efforts.*

Contracting may be in the form of *a* subcontract, lease agreement, or material supply *agreement*. Full credit will be given for subcontracts and lease agreements. Credit for utilization of a DBE material supplier will be limited to those DBEs certified as suppliers prior to the letting at the rate of 60% of the expenditure to the supplier unless the supplier is also the manufacturer. Suppliers that do not manufacture the items shall also perform a commercially useful function in order for credit to be received.

*A written request for changes in utilization of race/gender conscious DBE firms listed in the Affirmative Action Certification shall be approved prior to start of listed services or purchase of listed materials. Requests to reduce or eliminate the services or material provided by a listed race/gender conscious DBE that include written approval by the DBE will be considered sufficient justification if the committed DBE utilization after the requested change will meet or exceed the contract goal or a lesser percentage approved prior to execution of the contract. If the committed DBE utilization after the change does not meet or exceed the contract goal or a lesser percentage approved prior to execution of the contract, or the listed race/gender conscious DBE does not approve the change, the Contractor shall submit documented evidence that the DBE is unable to perform successfully. Disposition of the request for change will be determined on the basis of the affirmative actions taken as required herein.*

*When a race/gender conscious DBE firm is removed from eligibility, the Contractor shall take the following steps:*

- 1. If a subcontract has not yet been executed, the Contractor shall not count work performed by the firm toward the contract goal. The Contractor will be directed to meet the contract goal with an eligible DBE firm or demonstrate that it has made a good faith effort to do so.*
- 2. If a subcontract has been executed before the firm has been declared ineligible, the Contractor shall continue to count work performed by the firm toward the contract goal.*

SECTION 103, BEGIN LINE 95, DELETE AND INSERT AS FOLLOWS:

DBE joint ventures type A do not require DBE joint venture certification. DBE joint venture type B do require DBE joint venture certification. A request for DBE joint ventures type B certification shall be submitted not later than 9:00 a.m. local time the last ~~work~~ business day before the letting and shall be approved prior to bidding in order to receive credit toward the DBE goal. The DBE shall be certified with the Department prior to requesting DBE joint venture certification. The work for the DBE shall be identified, performed, managed, and supervised by its forces.

SECTION 103, DELETE LINES 102 THROUGH 119.

SECTION 103, DELETE LINES 143 THROUGH 242.

SECTION 103, AFTER LINE 243, INSERT AS FOLLOWS:

***(e) Determination of Good Faith Efforts***

*Appendix A of 49 CFR Part 26 has been used for guidance in preparing the Department's procedures to determine the adequacy of good faith efforts. Additional factors consistent with 49 CFR Part 26, and the Department's policies and procedures have also been utilized.*

***1. Good Faith Efforts Prior to Award***

*The following factors will be considered in determining good faith efforts prior to award of a contract. The Contractor, including DBE Contractors, shall submit evidence on each of the factors.*

1. *The Contractor shall make reasonable effort to contact all ready, willing, and able DBEs who express a desire to work on any of the pay items of the contract.*
2. *To effectively participate, the DBE shall have the opportunity to analyze the contract and submit quotations prior to letting. Information provided by the Contractor to the DBEs shall include, at a minimum, the contract number, pay items, quantities for those pay items to be subcontracted, and the date the subcontract bid is desired.*
3. *The Contractor shall select the portions of the work to be performed by DBEs in order to increase the likelihood of DBE participation. This shall include, where appropriate, an attempt to break down the contract into economically feasible units to facilitate DBE participation.*
4. *The Contractor shall provide the interested DBEs with complete information about the plans, specifications, and requirements of the contract. Attempts shall be made to have plans available or to notify the DBE of the location of available plans. The Contractor shall notify the DBE of revisions to the contract.*
5. *It will be considered unacceptable to avoid subcontracting to DBEs if such subcontracting to DBEs results in the need to further subdivide remaining work items.*
6. *The Contractor shall negotiate in good faith with interested DBEs and not reject such DBEs as unqualified without sound reasons based on thorough investigation of their capabilities. Confirmed documentation that a DBE has not been able to perform previous work through no fault of others will be considered to be sound reason. Unacceptable criteria include, but are not limited to, unsubstantiated oral statements and unsigned documentation.*
7. *The Contractor shall make efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance required by the State. However, the Contractor shall affirmatively consider waiving requirements it may have in order to assist the DBE.*
8. *Only firms certified as DBEs prior to the letting date can be used to meet the contract goal for the Department's DBE program.*

*The Contractor will be considered to have made good faith efforts if it either:*

1. *Documents that it has obtained enough DBE participation to meet the goal, or*
2. *Documents that it made adequate good faith efforts in accordance with the factors set out above to meet the goal even though it did not succeed in obtaining enough DBE participation to do so.*



*If a DBE goal has been established for the contract, the Contractor shall take good faith efforts to achieve the established goal prior to the bid opening. The Affirmative Action Certification shall be completed and submitted with the Proposal Book to indicate both race/gender conscious and race/gender neutral proposed DBE utilization.*

*The award of the contract will be made to the lowest and best bidder when all other requirements have been met and good faith efforts have been taken toward meeting the DBE goal, if required, in accordance with these requirements.*

*If the apparent low bidder has not achieved the contract DBE goal, the bidder shall respond in writing within three business days after notification by the Department of the failure to meet the DBE goal. The response shall provide evidence identifying the bidder's good faith efforts and all affirmative actions taken prior to letting to achieve the required DBE goal. Failure to respond within the three business day period will result in rejection of the bid, and may result in forfeiture of the bid bond, and the referral of the bidder to the Prequalification Committee.*

*Responses shall be sent to the Department's Division of Contract Administration. The Department will review the bidder's good faith efforts for compliance with these requirements.*

*If the Department determines that adequate good faith efforts have been made, and the bidder has met all other bidding requirements, the contract will be awarded.*

*If the Department determines that good faith efforts were inadequate, the Department will issue written notification of the determination to the bidder. The determination will outline the reasons for determination of non-compliance with good faith effort requirements.*

*The bidder may request a review of a determination of non-compliance by making a written submittal within five business days of the bidder's receipt of notification of non-compliance from the Department. The request for review shall include evidence disputing the Department's reasons for issuing a determination of non-compliance. The request shall be sent to the Department's Division of Contract Administration.*

*Upon receipt of a request, the Department will contact the bidder to schedule a review. The review will be held by the Department's Deputy Commissioner and Chief Counsel, or a designee who did not participate in the original determination of non-compliance. The review will be conducted in accordance with the Department's policy for review of good faith efforts requirements. A copy of the policy is available on the Department's website or through the Division of Contract Administration.*

*If the Deputy Commissioner's finding determines that the bidder's good faith efforts were adequate, and the bidder has met all other bidding requirements, the contract will be awarded and the Department will adjust the contract time by the number of calendar days from the date of the original determination of non-compliance to and including the date of the Deputy Commissioner's findings.*

*If the Deputy Commissioner's finding determines that the bidder's good faith efforts were inadequate, the finding will be forwarded to the Commissioner. The Commissioner will review the Deputy Commissioner's finding and issue a written Contract Award Determination.*

*If the Commissioner's Contract Award Determination finds that the bidder's good faith efforts were adequate, and the bidder has met all other bidding requirements, the contract will be awarded and the Department will adjust the contract time by the number of calendar days from the start of the original determination of non-compliance to and including the date of the Commissioner's determination.*

*If the Commissioner's Contract Award Determination finds that the bidder's good faith efforts were inadequate, at the Commissioner's sole option and without further proceedings, either all bids will be rejected or the contract will be awarded to the next lowest and qualified bidder. An apparent low bidder who has not met the DBE goal and requirements for good faith efforts may be requested not to rebid on this contract during subsequent lettings.*

*The Commissioner's Contract Award Determination will be the final decision of the Department.*

## **2. Good Faith Efforts for Extra Work**

*When extra work in accordance with 104.03 is added to a contract with a DBE goal, the Contractor shall hire or make good faith efforts to hire a DBE subcontractor to perform significant extra work.*

*For purposes of DBE good faith efforts, significant extra work is defined as new pay items added to a Contract that result in a new contracting opportunity not reasonably related to existing pay items being performed by the Contractor or a subcontractor.*

*When significant extra work related to existing pay items being performed by a DBE subcontractor is added to a contract with a DBE goal, the Contractor shall offer that same DBE subcontractor the opportunity to perform the extra work whether or not the existing pay items are counted toward the DBE goal. The Contractor shall consider other DBE subcontractors if the extra work would result in the original DBE subcontractor exceeding its prequalification limits. The Department may consider an exception to a DBE subcontractor's prequalification limit. If the DBE subcontractor is unable to perform the extra work, the Contractor shall hire or make good faith efforts to hire an alternate DBE subcontractor to perform the work.*

*When significant extra work related to existing pay items being performed by a non-DBE subcontractor is added to a contract with a DBE goal, the non-DBE subcontractor may perform the extra work. If the non-DBE subcontractor is unable to perform the extra work, the Contractor may self-perform the extra work. If the Contractor chooses not to self-perform the extra work, the Contractor shall hire or make good faith efforts to hire a DBE firm to perform the work.*

*When significant extra work related to existing pay items being performed by the Contractor is added to a contract with a DBE goal, the Contractor may self-perform the extra work. If the Contractor chooses not to self-perform the extra work, the Contractor shall hire or make good faith efforts to hire a DBE firm to perform the work.*

*The Contractor shall forward documentation of good faith efforts to hire a DBE subcontractor to perform extra work to the District Equal Employment Opportunity (EEO) Officer for review. The EEO Officer will determine if good faith efforts have been met in accordance with 103.01(e)1.*

*If the EEO Officer determines that the Contractor failed to make good faith efforts to hire a DBE firm when required as a result of significant extra work, written notice will be sent to the Contractor. The Contractor may appeal the determination in accordance with 103.01(e)1.*

**(f) Affirmative Action Certification**

The Affirmative Action Certification, included in the Proposal book, shall be completed when the Proposal book is submitted to the Department. The certification shall list ~~DBEs or shall state the reasons DBEs are not listed~~ *all DBE firms the Contractor plans to utilize, either race/gender consciously or race/gender neutrally.* Blank certifications shall cause the bid to be rejected. If a portion of a pay item is to be performed by a DBE, an explanation shall be included stating exactly what the DBE is performing or supplying. Failure to do so may affect the award of the contract. *The Contractor shall ensure that DBE firms listed on the Affirmative Action Certification are certified DBE firms as listed in the Department's DBE directory at the time of letting. In addition to the listing of DBE firms that will be used race/gender consciously to meet the goal, the Contractor shall also provide a total for the amount of work that it anticipates will be performed by other DBE firms used race/gender neutrally on the contract beyond the goal requirements.*

*Race/gender neutral awards involve the utilization of a DBE firm because the DBE firm is the best firm to perform the work. Race/gender conscious awards involve the utilization of a DBE firm primarily to achieve the contract DBE goal.*

SECTION 103, BEGIN LINE 269, DELETE AND INSERT AS FOLLOWS:

Upon receipt of notification from the Department, a Disadvantaged Business Enterprise Utilization Affidavit, Form ~~MBE-3~~ *DBE-3*, shall be completed by the Contractor and returned to the Department. The Contractor and the subcontractor/lessor/supplier shall certify on Form ~~MBE-3~~ *DBE-3* that specific amounts have been paid and received. *A DBE-3 Form certification shall be completed and submitted for every DBE utilized on the contract, not just those listed on the Affirmative Action Certification.*

SECTION 103, BEGIN LINE 285, DELETE AND INSERT AS FOLLOWS:

by the DBE, or leased from another DBE, that are utilized on the project. ~~DBE hauling lessors who sublease a portion of their hauling shall take positive affirmative actions to sublease to DBEs and shall provide Form MBE-2 to the Department, evidencing those efforts prior to commencing work.~~ Trucks that are leased by a DBE for a period of at least 12 months will be considered the same as trucks owned by the DBE. In addition, DBE credit will also be given for any fee or commission the DBE receives as a result of the lease arrangement for any additional non-DBE trucks.

*In order to count leased trucks toward the goal, the lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from being used by others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE. The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and there cannot be a contrived arrangement for the purpose of meeting the DBE goals.*

*The Contractor shall provide the Engineer copies of any lease agreements between DBE trucking subcontractors and any DBE or non-DBE trucking firms or owner/operators that will be used to supplement the DBE trucking subcontractor's trucks for the purpose of meeting the DBE goal. Copies of these lease agreements shall be provided by the time of use of any supplemental trucks on the Contract.*

*In addition to delivery ticket information required by Section 106, the following information shall be included on each ticket for material delivered to the job site by a DBE trucking subcontractor or lessee:*

- 1. Name of trucking firm*
- 2. Printed name of the driver*

*The Contractor shall submit weekly reports to the Engineer on forms provided by the Department, documenting the number of DBE trucks utilized and a breakdown of the dollar amount credited toward the Contract DBE goal. The reports shall be submitted within 5 business days of the end of the week being reported. Forms are available on the Department's website or from the Division of Contract Administration.*

SECTION 103, BEGIN LINE 304, DELETE AND INSERT AS FOLLOWS:

**(i) Records and Reports**

The Contractor shall keep such records as necessary to determine compliance with its DBE utilization obligations and compliance with Determination of Good Faith Efforts ~~for Goal Contracts~~. The records kept by the Contractor shall indicate the minimum requirements as follows:

SECTION 103, AFTER LINE 341, INSERT AS FOLLOWS:

**103.02.1 Record Keeping**

*All firms performing work on Department contracts, bidding on Department contracts, or offering quotes for subcontract or trucking services shall register with the Department, annually, by submitting the following information to the Department's Economic Opportunity Division.*

- (a) firm's name;*
- (b) firm's address;*
- (c) firm's status as a DBE or non-DBE;*
- (d) the age of the firm; and*
- (e) the annual gross receipts of the firm*
- (f) approximately how many Department projects has the firm bid or quoted in the past 12 months. (If none, please indicate 0)*
- (g) in which of the following markets has the firm participated?*
  - 1. prime Contractor*
  - 2. subcontractor*
  - 3. trucking firm*
  - 4. consultant*

SECTION 109, AFTER LINE 618, INSERT AS FOLLOWS:

*Within 10 business days of receipt of payment for any such estimate, the Contractor shall make payment to all subcontractors for the value of their work performed and materials complete in place in accordance with this contract. Failure to comply with this clause shall constitute a material breach of the contract and may result in sanctions under the contract.*

*Any delay or postponement of payment among the parties may take place only for good cause, with the Department's written approval. The explanation from the Contractor shall be made in writing to the Department.*

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100-C-151d EXECUTIVE ORDER 11246

(Revised 03-09-06)

The Standard Specifications are revised as follows:

SECTION 103, LINE 342, DELETE AND INSERT AS FOLLOWS:

**103.03 ~~Blank~~. Executive Order 11246: Notice of Requirements for Affirmative Action to Ensure Equal Employment Opportunity**

*This requirement will apply only to a federal aid contract. The Code of Federal Regulations 41 CFR 60-4.2(d) is amended by revising Paragraph 2 of the Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246), to read as follows:*

- 2. The Contractor's or Bidder's attention is called to the Equal Opportunity Clause and the Standard Federal Equal Employment Opportunity Construction Contract Specifications set forth herein.*

**(a) Timetables**

*The timetables for minority and female participation for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:*

**1. Minorities**

*Immediately.*

**2. Women**

*April 1, 1980 to indefinite.*

*The goals are shown in 103.03(j) and 103.03(k).*

*Contractors who are signatory to an area (Hometown) plan are covered by 103.03(b). All Contractors, signatory or not to an area (Hometown) plan, will be covered by the minority goals as shown in 103.03(j).*

*These goals are applicable to all the Contractor's construction work, whether or not it is Federal or federally-assisted, performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed, in accordance with 41 CFR 60-4 as set out in Volume 45, No. 194 of the Federal Register dated October 3, 1980. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and non-federally involved construction.*

**(b) Area (Hometown) Plans**

*Until further notice, the following goals and timetables for minority utilization shall be included in all Federal or federally-assisted construction contracts and subcontracts in excess of \$10,000.00 to be performed in the respective covered areas. The goals are applicable to the Contractor's aggregate on-site construction workforce whether or not part of that workforce is performing work on a Federal or federally-assisted construction contract or subcontract.*

**1. Cincinnati, Ohio Area**

*Area Covered: Ohio counties of Clermont, Hamilton, and Warren; Kentucky counties of Boone, Campbell, and Kenton; and Indiana county of Dearborn. The minority hiring goal in Dearborn County, Indiana is 11 percent.*

**2. Indianapolis, Indiana Area**

*Area Covered: Marion County. The minority hiring goal in Marion County is 12.5 percent.*

**(c) Written Notification**

*The Contractor shall provide written notification to the Department within ten work days of award of any construction subcontract in excess of \$10,000.00 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor, employer identification number, estimated dollar amount of the contract, estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.*

**(d) 41 CFR 60-4.3 Equal Opportunity Clauses**

*The equal opportunity clause published as 41 CFR 60-1.4(a) of this chapter is*

*required to be included in, and is part of, all non-exempt Federal contracts and subcontracts, including construction contracts and subcontracts. The equal opportunity clause published at 41 CFR 60-1.4(b) is required to be included in, and is a part of, all non-exempt federally-assisted construction contracts and subcontracts. In addition to the clause described above, all Federal contracting officers, all applicants and all non-construction Contractors, as applicable, shall include the specification set forth in this section in all Federal and federally-assisted construction contracts in excess of \$10,000.00 to be performed in geographical areas designated by the Department pursuant to 41 CFR-60-4.6 of this part and in construction subcontracts in excess of \$10,000.00 necessary in whole or in part to the performance of non-construction Federal contracts and subcontracts covered under the Executive Order.*

1. *As used in these specifications:*
  - a. *“Covered area” means the geographical area described in the solicitation from which this contract resulted.*
  - b. *“Director” means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority.*
  - c. *“Employer Identification Number” means the Federal Social Security number used on the Employer’s Quarterly Federal Tax Return, U.S. Treasury Department Form 941.*
  - d. *“Minority” includes:*
    - (1) *Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);*
    - (2) *Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);*
    - (3) *Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and*
    - (4) *American Indian or Alaskan Native original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification.*
2. *Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000.00 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.*
3. *If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the*

*covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.*

4. *The Contractor shall implement the specific affirmative action standards provided in Paragraphs 7.a through 7.p of this specification. The goals set forth in the solicitation form which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization, the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.*
5. *Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.*
6. *In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.*
7. *The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:*
  - a. *Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of*



*and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.*

- b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organization when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.*
- c. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.*
- d. Provide immediate written notification to the Department when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.*
- e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the source compiled under 7b above.*
- f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.*
- g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job*

*site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.*

- h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.*
- i. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.*
- j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of the Contractor's workforce.*
- k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.*
- l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to see or to prepare for, through appropriate training, etc., such opportunities.*
- m. Ensure that seniority practices, job classifications, work assignments, and other personnel practices, do not have discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.*
- n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.*
- o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.*
- p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the Contractor's EEO policies and affirmative action obligations.*

8. *Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations under 7.a. through 7.p. of this specification. The efforts of a contractors' association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7.a. through 7.p. of this specification provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's non-compliance.*
9. *A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).*
10. *The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.*
11. *The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.*
12. *The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspensions, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.*
13. *The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in Paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of*

*the Executive Order, the implementing regulations, of these specifications, the Department will proceed in accordance with 41 CFR 60-4.8.*

14. *The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records.*

*Records shall at least include for each employee the name, address, telephone number, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g. mechanic, trainee, helper, or laborer), date of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, Contractors shall not be required to maintain separate records.*

15. *Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g. those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).*

*The notice set forth in 41 CFR 60-4.2 and the specifications set forth in 41 CFR 60-4.3 replace the New Form for Federal Equal Employment Opportunity Bid Conditions for Federal and Federally-Assisted Construction published as 41 CFR 32482 and commonly known as the Model Federal EEO Bid Conditions. The New Form shall not be used after the regulations in 41 CFR part 60-4 become effective.*

***(e) 41 CFR 60-4.5 Hometown Plans***

*If the Contractor is participating, either individually or through an association, in an approved Hometown Plan (including heavy highway affirmative action plans) it shall comply with its affirmative action obligations under Executive Order 11246 by complying with its obligations under the Plan: Provided, that each Contractor or subcontractor participating in an approved Plan is individually required to comply with the equal opportunity clause set forth in 41 CFR 60-1.4; to make a good faith effort to achieve the goals for each trade participating in the Plan in which it has employees; and that the overall good performance by other Contractors or subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or subcontractor's failure to take good faith efforts to achieve the Plan's goals and timetables. If the Contractor is not participating in an approved Hometown Plan it shall comply with the specifications set forth in 41 CFR 60-4.3 and with the goals and timetables for the appropriate area as listed in the Notice required by 41 CFR 60-4.2 with regard to that trade. For the purposes of 41 CFR 60-4, the Contractor is not participating in a Hometown Plan for a particular trade if it:*

1. *Ceases to be signatory to a Hometown Plan covering that trade.*
2. *Is signatory to a Hometown Plan for that trade but is not party to a collective bargaining agreement for that trade.*

3. *Is signatory to a Hometown Plan for that trade but is party to a collective bargaining agreement with labor organizations which are not or cease to be signatories to the same Hometown Plan for that trade.*
4. *Is signatory to a Hometown Plan for that trade and is party to a collective bargaining agreement with a labor organization for that trade but the two have not jointly executed a specific commitment in the Hometown Plan for that trade.*
5. *In participating in a Hometown Plan for that trade which is no longer acceptable to the Office of Federal Contract Compliance Programs.*
6. *Is signatory to a Hometown Plan for that trade but is party to a collective bargaining agreement with a labor organization for that trade and the labor organization and the Contractor have failed to make a good faith effort to comply with their obligations under the Hometown Plan for that trade.*
7. *If the Contractor participates in Hometown Plans, it must be able to demonstrate its participation and document its compliance with the provisions of the Hometown Plan.*

**(f) 41 CFR 60-4.6 Goals and Timetables**

*The Department, from time to time, shall issue goals and timetables for minority and female utilization which shall be based on appropriate workforce, demographic or other relevant data and which shall cover construction projects, or construction contracts performed in specific geographical areas. The goals shall be applicable to each construction trade in a covered Contractor's or subcontractor's entire workforce which is working in the area covered by the goals and timetables, shall be published as notices in the Federal Register, and shall be inserted by the contracting officers and applicants, as applicable, in the Notice required by 41 CFR 60-4.2.*

**(g) 41 CFR 60-4.7 Effect on Other Regulations**

*The regulations in this part are in addition to the regulations contained in this chapter which apply to construction Contractors and subcontractors generally. So particularly, 41 CFR 60-1.4(a), (b), (c), (d), and (e); 60-1.5; 60-1.7; 60-1.8; 60-1.26; 60-1.29; 60-1.30; 60-1.32; 60-1.42; 60-1.43; and 41 CFR part 60-3; part 60-20; part 60-30; part 60-40; and part 60-50.*

**(h) 41 CFR 60-4.8 Show Cause Notice**

*If an investigation or compliance review reveals that a construction Contractor or subcontractor has violated the Executive Order, any contract clause, specifications or the regulations in this chapter and if administrative enforcement is contemplated, the Department will issue to the Contractor or subcontractor a notice to show cause which shall contain the items specified in 41 CFR 60-2.2(c)(1). If the Contractor does not show good cause within 30 days, or in the alternative, fails to enter an acceptable conciliation agreement which includes where appropriate, make up goals and timetables, back pay, and seniority relief for affected class members, the compliance agency shall follow the procedure described in 41 CFR 60-1.26(b), provided that where a conciliation agreement has been violated, no show cause notice is required prior to the initiation of enforcement proceedings.*

**(i) 41 CFR 60-4.9 Incorporation by Operation of the Order**

By operation of the Order, the equal opportunity clause contained in 41 CFR 60-1.4, 41 CFR 60-4.2 and 41 CFR 60-4.3 shall be deemed to be a part of every solicitation or of every contract and subcontract, as appropriate, required by the Order and regulations in this chapter to include such clauses whether or not they are physically incorporated in such solicitation or contract and whether or not the contract is written.

**(j) Minority Hiring Goals by County**

<i>COUNTY</i>	<i>PCT.</i>	<i>COUNTY</i>	<i>PCT.</i>	<i>COUNTY</i>	<i>PCT</i>
<i>Adams</i>	<i>4.4</i>	<i>Hendricks</i>	<i>12.5</i>	<i>Pike</i>	<i>3.5</i>
<i>Allen</i>	<i>4.4</i>	<i>Henry</i>	<i>3.9</i>	<i>Porter</i>	<i>20.9</i>
<i>Bartholomew</i>	<i>9.7</i>	<i>Howard</i>	<i>4.4</i>	<i>Posey</i>	<i>4.8</i>
<i>Benton</i>	<i>1.5</i>	<i>Huntington</i>	<i>4.4</i>	<i>Pulaski</i>	<i>18.4</i>
<i>Blackford</i>	<i>3.9</i>	<i>Jackson</i>	<i>9.7</i>	<i>Putnam</i>	<i>9.7</i>
<i>Boone</i>	<i>12.5</i>	<i>Jasper</i>	<i>18.4</i>	<i>Randolph</i>	<i>3.9</i>
<i>Brown</i>	<i>9.7</i>	<i>Jay</i>	<i>3.9</i>	<i>Ripley</i>	<i>9.2</i>
<i>Carroll</i>	<i>1.5</i>	<i>Jefferson</i>	<i>9.6</i>	<i>Rush</i>	<i>9.7</i>
<i>Cass</i>	<i>3.7</i>	<i>Jennings</i>	<i>9.7</i>	<i>St. Joseph</i>	<i>7.1</i>
<i>Clark</i>	<i>11.2</i>	<i>Johnson</i>	<i>12.5</i>	<i>Scott</i>	<i>9.6</i>
<i>Clay</i>	<i>3.1</i>	<i>Knox</i>	<i>3.5</i>	<i>Shelby</i>	<i>12.5</i>
<i>Clinton</i>	<i>1.5</i>	<i>Kosciusko</i>	<i>6.2</i>	<i>Spencer</i>	<i>3.5</i>
<i>Crawford</i>	<i>9.6</i>	<i>LaGrange</i>	<i>6.2</i>	<i>Starke</i>	<i>18.4</i>
<i>Daviess</i>	<i>9.7</i>	<i>Lake</i>	<i>20.9</i>	<i>Steuben</i>	<i>4.4</i>
<i>Dearborn</i>	<i>11.0</i>	<i>LaPorte</i>	<i>18.4</i>	<i>Sullivan</i>	<i>3.1</i>
<i>Decatur</i>	<i>9.7</i>	<i>Lawrence</i>	<i>9.7</i>	<i>Switzerland</i>	<i>9.2</i>
<i>Dekalb</i>	<i>4.4</i>	<i>Madison</i>	<i>4.9</i>	<i>Tippecanoe</i>	<i>2.7</i>
<i>Delaware</i>	<i>5.3</i>	<i>Marion</i>	<i>12.5</i>	<i>Tipton</i>	<i>4.4</i>
<i>Dubois</i>	<i>3.5</i>	<i>Marshall</i>	<i>7.1</i>	<i>Union</i>	<i>3.9</i>
<i>Elkhart</i>	<i>4.0</i>	<i>Martin</i>	<i>9.7</i>	<i>Vanderburgh</i>	<i>4.8</i>
<i>Fayette</i>	<i>3.9</i>	<i>Miami</i>	<i>3.7</i>	<i>Vermillion</i>	<i>3.1</i>
<i>Floyd</i>	<i>11.2</i>	<i>Monroe</i>	<i>3.1</i>	<i>Vigo</i>	<i>3.1</i>
<i>Fountain</i>	<i>1.5</i>	<i>Montgomery</i>	<i>1.5</i>	<i>Wabash</i>	<i>3.7</i>
<i>Franklin</i>	<i>9.2</i>	<i>Morgan</i>	<i>12.5</i>	<i>Warren</i>	<i>1.5</i>
<i>Fulton</i>	<i>6.2</i>	<i>Newton</i>	<i>18.4</i>	<i>Warrick</i>	<i>4.8</i>
<i>Gibson</i>	<i>4.8</i>	<i>Noble</i>	<i>4.4</i>	<i>Washington</i>	<i>9.6</i>
<i>Grant</i>	<i>3.7</i>	<i>Ohio</i>	<i>9.2</i>	<i>Wayne</i>	<i>3.9</i>
<i>Greene</i>	<i>9.7</i>	<i>Orange</i>	<i>9.6</i>	<i>Wells</i>	<i>4.4</i>
<i>Hamilton</i>	<i>12.5</i>	<i>Owen</i>	<i>9.7</i>	<i>White</i>	<i>1.5</i>
<i>Hancock</i>	<i>12.5</i>	<i>Parke</i>	<i>2.5</i>	<i>Whitley</i>	<i>4.4</i>
<i>Harrison</i>	<i>9.6</i>	<i>Perry</i>	<i>3.5</i>		

**(k) Female Hiring Goal**

The female hiring goal is 6.9 percent throughout the State. Minority females may be counted both as a minority and as a female. Double counting will be permitted for reporting on Form CC-257.

100-C-188 2008 STANDARD SPECIFICATIONS

(Revised 04-18-07)

Wherever in the contract documents the 1999 or 2006 Standard Specifications are referenced, it shall be interpreted to mean the 2008 Standard Specifications.

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100-C-201 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)

(Adopted 12-15-06)

Wherever in the Contract Documents reference is made to the Manual On Uniform Traffic Control Devices, MUTCD, it shall be interpreted to mean the 2003 Edition of the Federal Manual On Uniform Traffic Control Devices.

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100-C-214 E-MAIL SUBMITTAL OF ELECTRONIC DOCUMENTS FOR BID EXPRESS

(Revised 08-17-07)

The Contractor has the option to submit certain contract bid documents, as defined in the proposal, either as original paper copies filed with the proposal or as electronic documents.

To submit electronic documents, the Contractor shall attach the documents to an e-mail sent to the following address:

[constructionletting@indot.in.gov](mailto:constructionletting@indot.in.gov)

To ensure that the electronic documents are placed in the correct contract folder with a date and time stamp and that they cannot be altered, the subject line of the e-mail shall contain the following information in the exact format shown:

CompanyNameDocumentTitleLettingDate-ContractNumber

The subject line shall contain no spaces, periods, commas, apostrophes or other punctuation marks other than the one hyphen indicated between CompanyNameDocumentTitleLettingDate and ContractNumber.

LettingDate shall be in the format MMDDYY.

ContractNumber shall be in the format AA#####Z, where AA is the 1 or 2 letter prefix, ##### is the 5 digit number and Z is the 1 letter suffix.

The following is an example of the subject line for the Jones Construction Co., Inc., submitting a drug testing plan for contract IR-30999-A for a March 15, 2008 letting:

JonesConstructionCoIncDrugPlan031508-IR30999A

Documents must be time stamped by the INDOT e-mail box prior to the time stated in the advertisement.

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105-C-071b FAX MACHINE IN FIELD OFFICE  
(ADVANCED FEATURES)

*(Revised 09-01-05)*

The Standard Specifications are revised as follows:

SECTION 105, LINE 774, DELETE AND INSERT AS FOLLOWS:

- b. automatically dial a minimum of ~~25~~ 40 preprogrammed fax numbers, and have the ability to program at least 2 groups of numbers;

SECTION 105, AFTER LINE 806, INSERT AS FOLLOWS:

- (6) telephone list*

SECTION 105, AFTER LINE 814, INSERT AS FOLLOWS:

- n. *automatically redial a number if line is busy, up to 3 times;*
- o. *have the ability to send messages in off-peak hours when rates are lower.*

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105-C-164 CELLULAR TELEPHONES/RADIOS

*(Adopted 01-30-06)*

The Contractor shall provide radio or cellular telephone/radio equipment and services, as specified below, for use by the Department on the contract.

Each radio or cellular telephone/radio unit shall be capable of 2-way radio communication with all other units provided under this contract. Each radio or cellular telephone/radio unit shall have a service coverage area that includes the limits of the contract. Each radio or cellular telephone/radio unit shall include a belt clip system, a 120v AC charger, and a 12v DC mobile charger.

All equipment shall be covered by normal manufacturer's warranties. All radio or cellular telephone/radio units and associated equipment will remain the property of the Contractor and will be returned to the Contractor upon completion of the contract.

The Contractor shall provide the following services for each radio or cellular telephone/radio unit.

**Radio Service**

Radio service shall include the following:

- (a) unlimited direct connect radio service
- (b) no cellular telephone service



**Cellular Telephone/Radio Service**

Cellular telephone/radio service shall include the following:

- (a) 500 cellular telephone anytime minutes per month
- (b) unlimited nights and weekends service
- (c) unlimited direct connect radio service
- (d) voice mail and caller ID

The Department will be responsible for damage and/or loss of the units beyond that covered by normal manufacture's warranties, while in use by the Department. The Contractor shall provide replacement cellular telephone/radio units, batteries, chargers, etc within one business day of notification of need for the item.

The Contractor shall not enter into any agreement with any service provider or purchase any radio or cellular telephone/radio units for use by the Department until authorized by the Engineer. The Engineer will notify the Contractor a minimum of 10 business days prior to the need for the units.

Radio and cellular telephone/radio units will be paid for at the contract unit price per each. Radio and cellular telephone/radio service will be paid for at the contract unit price per month per each phone. Monthly charges for cellular telephone minutes in excess of those specified in the contract will be paid for by the dollar amount for the invoiced price per each occurrence as cellular telephone/radio, additional charges.

<b>Pay Item</b>	<b>Pay Unit Symbol</b>
Cellular Telephone/Radio.....	EACH
Cellular Telephone/Radio Service.....	MOS
Radio.....	EACH
Radio Only Service.....	MOS
Cellular Telephone/Radio, Additional Minutes.....	DOL

The Contractor shall provide a copy of the detailed invoice from the service provider for each cellular telephone/radio or radio unit each month.

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105-C-207 FIELD OFFICE COPIER

(Adopted 03-19-07)

The Standard Specifications are revised as follows:

SECTION 105, BEGIN LINE 760, INSERT AS FOLLOWS:

All field offices shall be equipped with a table top dry ink copier machine using plain paper and capable of making full size copies of 11 in. x 17 in. (279 mm x 432 mm) originals. The copier shall be capable of reducing and increasing copy sizes. The copier shall have a self-feeding *paper* tray and an *automatic document feeder* and be capable of producing at least 12 copies per minute.

105-C-208 REVISED FIELD OFFICE EQUIPMENT SPECIFICATIONS  
(Revised 07-06-07)

The Standard Specifications are revised as follows:

SECTION 105, BEGIN LINE 649, DELETE AND INSERT AS FOLLOWS:

Answering Machine/voice mail	1	1	1
Telephones Lines	<del>3</del> 2	<del>3</del> 2	<del>4</del> 2
File Drawers	4	8	12

SECTION 105, BEGIN LINE 664, DELETE AND INSERT AS FOLLOWS:

Fax Machine	1	1	1
<del>Computers</del>	<del>1</del>	<del>1</del>	<del>2</del>
Shredder	1	1	1
Electrical Service	100 amp	100 amp	100 amp

SECTION 105, DELETE LINES 815 THROUGH 912.

SECTION 105, BEGIN LINE 815, INSERT AS FOLLOWS:

*The shredder shall be maintained in good working condition. If the machine becomes inoperable, requires repair or is stolen, it shall be repaired or replaced within five business days from the time the Contractor is notified. The shredder shall meet the following minimum requirements:*

- a. *Power rating of 540*
- b. *Sheet capacity of 12 sheets (20 lb. paper)*
- c. *Shred paper clips and staples*
- d. *5 gallon capacity waste basket*
- e. *9 inch throat width*

SECTION 105, AFTER LINE 913, INSERT AS FOLLOWS:

**(a) Laptop Computer System**

*When specified as a pay item, the Contractor shall provide 1 fully operational laptop computer systems for use by Department personnel assigned to the contract. Each laptop computer system shall meet the following minimum requirements:*

1. *Processor – Intel or AMD compatible processor, 2.0 GHz*
2. *Operating System – Windows XP Professional (no substitution)*
3. *Display – 15” XWGA LCD panel*
4. *Memory – 1.0 GB, DDR2 – 533 MHz SDRAM*
5. *Graphics – 256 MB graphics card*
6. *Hard Drive – 60GB, 5400 rpm , or faster*
7. *Module Bay Device – 8x DVD+/-RW drive*
8. *Module Bay Device – 1.44 MB floppy disk drive*
9. *Battery – 9 cell lithium ion*
10. *Wireless LAN – 802.11 a/g mini wireless card*
11. *Modem – Integrated 56KB V.92 modem*
12. *USB Ports – Two USB 2.0 compliant ports*
13. *Network Port – RJ45 ethernet/network port (10/100 connection)*
14. *Mouse – USB 2-button scroll mouse and mouse pad*

15. *External Keyboard – USB enhanced multimedia keyboard*
16. *Productivity Software – Microsoft Office XP Professional 2003 SP2 and Adobe Acrobat Professional (no substitutions)*
17. *Security Software – McAfee Internet Security Suite (no substitution)*
18. *All software shall be the most current version and include the most current updates and patches at the time the laptop computer system is placed in the field office.*
19. *The Contractor shall provide for installation of all current updates and patches for the operating system and required productivity and security software throughout the term of use of the laptop computer system by the Department. Updates and patches shall be provided via an auto-update method.*
20. *One compatible port replicator with AC adapter*
21. *One AC adapter for the laptop computer*
22. *One DC adapter for the laptop computer*
23. *One padded carrying case for the laptop computer*
24. *All installation CDs for the operating system, device drivers and required software installed on the laptop shall remain in the field office.*
25. *The Department may install and maintain proprietary software on the laptop in order to run the Department's construction management programs.*

*In addition to the requirements set out above, the Contractor shall provide one LCD flat panel monitor for use with one of the laptop computer systems. The monitor shall meet the following minimum requirements:*

1. *24 inch widescreen LCD display*
2. *Optimum resolution 1920 x 1200*
3. *Non-glare screen*
4. *Adjustable height stand*
5. *Compatible with the laptop computer system*

*Equipment or software which exceeds the minimum requirements may be substituted unless otherwise noted. All hardware, software and peripherals shall be compatible with the laptop computer system.*

***(b) Broadband Internet Service***

*When specified as a pay item, the Contractor shall provide for broadband internet service for the field office. The internet service shall be accessible by each laptop computer system when used within the field office. All hardware and software necessary for connecting the internet service to the field office and for connecting each laptop computer system to the internet shall be provided. Access to the internet service within the field office may be provided by a wireless hub or by direct connection via the network port to a network hub. Broadband internet access shall be provided by one of the following methods in order of availability:*

1. *Cable or DSL broadband*
2. *Mobile broadband*

**(c) Printer**

*The Contractor shall provide a printer compatible with the laptop computer system for use by the Department in the field office. The printer shall be capable of simultaneous connection within the field office to each laptop computer system by means of a wireless hub or by direct connection via network port to a network hub. The printer shall be a laserjet printer capable of printing letter and legal size documents and capable of automatic duplex printing. The printer shall be compatible with the Department's Citrix Client for printing from the laptop computer systems. The following printers are known to be compatible with Citrix Client:*

1. *Dell 1720dn*
2. *Dell 3110cn Color*
3. *Dell 1815dn Multi-function*
4. *HP Laserjet 1320*
5. *HP Color Laserjet 2500*
6. *HP Laserjet 3020 All-in-One*
7. *Lexmark E250dn*
8. *Lexmark E450dn*
9. *Lexmark C500n*

*Other printers may also meet compatibility requirements. Questions related to compatibility of printers with Citrix Client shall be directed to the Department contact identified on the Table of Contents page of the Contract Information Book.*

**(d) Scanner**

*The Contractor shall provide a flatbed scanner compatible with the laptop computer system for use by the Department in the field office. The scanner shall be capable of scanning letter and legal size documents and shall be capable of connection within the field office to each laptop computer system by means of a wireless hub or by direct connection via network port to a network hub. The scanner shall meet the following minimum requirements:*

1. *48-bit color*
2. *Automatic document feeder*
3. *2400 dpi resolution*

*In lieu of a separate scanner, the Contractor may provide an all-in-one unit that meets all requirements for printer, scanner and fax machine. An all-in-one unit will not be accepted as a substitute for the copier required for the field office.*

**(e) Miscellaneous Requirements**

*The initial condition of each laptop computer system, printer, scanner and all related equipment shall be nearly pristine. No owner installed e-mail accounts, games, spyware, online services, applications, network or other profiles shall be set up on the laptop system prior to placement. If the laptop system was used in a previous contract, all software not specified above, or otherwise provided by the Department, shall be removed prior to placement in the current field office.*

*The laptop computer system, printer, scanner and all related equipment shall be installed and maintained in good working order. If a piece of equipment becomes defective, inoperative, damaged, or stolen, that equipment shall be repaired or replaced within five calendar days after the Contractor is notified.*

*All manuals and documentation normally furnished with each piece of equipment or software when purchased shall be provided with the equipment.*

*The Contractor shall provide surge protection equipment appropriate for each piece of equipment.*

*Toner cartridges and letter and legal size paper for the printer shall be supplied and replenished as needed.*

*The Department will be utilizing the hardware and software specified herein to run construction management programs. These applications are known to run on Intel and AMD compatible equipment. If the Department experiences problems running these applications due to equipment incompatibility, the Contractor shall, within five calendar days replace and set up appropriate equipment to ensure compatibility to the satisfaction of the Department.*

SECTION 105, AFTER LINE 931, INSERT AS FOLLOWS:

*Laptop computer systems will be measured by the month for each system specified. Partial months will be rounded up to the next half or whole month.*

*Field office internet service will be measured by the month. Partial months will be rounded up to the next half or whole month.*

*Printers and scanners for the field office will not be measured for payment.*

SECTION 105, AFTER LINE 935, INSERT AS FOLLOWS:

*Laptop computer systems will be paid for at the contract unit price per month for each system provided.*

*Field office internet service will be paid for at the contract unit price per month.*

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit Symbol</b>
<i>Field Office, _____ Type</i>	<i>MOS</i>
<i>Laptop Computer System .....</i>	<i>MOS</i>
<i>Field Office Internet Service .....</i>	<i>MOS</i>

SECTION 105, AFTER LINE 955, INSERT AS FOLLOWS:

*All costs necessary to provide the laptop computer system, including the required software, manuals, peripherals and related equipment and technical support shall be included in the cost of the pay item for laptop computer system. The cost of the LCD monitor, including all necessary connections, shall be included in the cost of the laptop computer system.*

*All costs necessary to establish, install and maintain field office internet service, including any required hardware, software, fees, monthly charges, setup, installation and technical support shall be included in the cost of the pay item for field office internet service. The service shall include all necessary connections for notebook computer systems.*

*All costs necessary to provide the field office printer, including setup, installation, all required connections to laptop computer systems and technical support shall be included in the cost of the pay item for field office.*

*All costs necessary to provide the field office scanner, including setup, installation, all required connections to laptop computer systems and technical support shall be included in the cost of the pay item for field office.*

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107-C-029 EQUAL EMPLOYMENT OPPORTUNITY TRAINEES

(Revised 09-01-05)

A total of 2000 training hours are assigned to this contract.

This requirement does not apply if the Contractor is participating in the pilot program as approved by the Department.

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107-C-208 USE OF CONES IN LIEU OF DRUMS

(Adopted 03-30-07)

SECTION 107, BEGIN LINE 416, DELETE AND INSERT AS FOLLOWS:

Pavements and shoulders having an edge drop of more than 3 in. (75 mm) shall be delineated with drums in accordance with 801.09. Delineation shall be at a maximum spacing of 200 ft (60 m). The use of cones in accordance with 801.08 will be permitted ~~during daylight hours in lieu of drums~~ *as shown on the plans except cones shall not be used for interstate lane restrictions.*

SECTION 801, BEGIN LINE 259, DELETE AND INSERT AS FOLLOWS:

Cones shall be made of a material to withstand impact without damage to striking vehicles. They shall have a substantial base to restrict overturning. Cones and tubular markers shall be as shown on the plans.

Cones shall be used only during temporary activities where portability is advantageous and they remain in place and do not create a hazard to traffic. The use of cones in lieu of drums will be permitted ~~during daylight hours unless otherwise directed as shown on the plans except cones shall not be used for interstate lane restrictions.~~

Tubular markers shall be used for separating two-lane two-way traffic as shown on the plans or as directed.

Cones and tubular markers shall be secured in place either by weighting or adhesives. The use of metal bases will not be permitted.

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107-R-169 STATEMENTS ABOUT EXISTING CONDITIONS OF UTILITIES, ADDITIONAL  
RIGHT-OF-WAY, AND ENCROACHMENTS

(Revised 11-18-05)

The Standard Specifications are revised as follows:

SECTION 107, AFTER LINE 723, INSERT AS FOLLOWS:

***107.26 Existing Conditions of Utilities, Additional Right-of-Way, and Encroachments***

*Such existing conditions are as described below.*

***(a) Utilities***

*The status of all utility companies and organizations potentially involved with the work to be performed are described below as know at the time this contract was prepared.*

*The status of all utility companies and organizations potentially involved with the work to be performed are described below as know at the time this contract was prepared.*

*The facilities of Duke Energy exist within the project limits, but are not expected to be affected by the proposed construction. If questions arise, Jim Shields of the utility may be contacted at (812)375-2071*

*The facilities of Comcast Logansport- Indy exists within the project limits, but are not expected to be affected by the proposed construction. If questions arise, Jim Patton of the utility may be contacted at (317)275-6356*

*The facilities of Insight Communication of Kokomo-Hartford City exist within the project limits. but are not expected to be affected by the proposed construction. If questions arise, Tracy Michael of the utility may be contacted at (765)348-4858*

*The facilities of Countrymark Cooperative, LLP exists within the project limits, but are not expected to be affected by the proposed construction. If questions arise, Micky Smith of the utility may be contacted at (812)838-8111*

*The facilities of Kokomo Gas & Fuel Co. exist within the project limits. but are not expected to be affected by the proposed construction. If questions arise, Pete Beko of the utility may be contacted at (765)459-4101*

*The facilities of Miami Cass REMC exist within the project limits, but are not expected to be affected by the proposed construction. If questions arise, James Yates of the utility may be contacted at (765)473-6668*

*The facilities of NIPSCO exists within the project limits, but are not expected to be affected by the proposed construction. If questions arise, Mark Pasyk of the utility may be contacted at (219)647-4299*

*The facilities of Rochester Telephone exists within the project limits, but are not expected to be affected by the proposed construction. If questions arise, Chad Morgan of the utility may be contacted at (574)233-2191*

*The facilities of Peru Utilities Electric Dept. exists within the project limits,. but are not expected to be affected by the proposed construction. If questions arise, Jeff Plohow of the utility may be contacted at (765)473-3652*

**(b) Right-of-Entry**

*The right-of-entry to the following properties is anticipated as set out below. The properties listed below shall not be entered until authorized in writing.*

<u>Parcel No.</u>	<u>Owner</u>	<u>Location</u>	<u>Right-of-Entry</u>
005-32002-00	Whorley, Matthew Jacob Et Al C/O Dianna F Whorley Life Est 5382 C.R. N 200E Kokomo, IN 46901	Pipe 1 at St. 71+00 <b>North Bound</b>	Required
005-32003-00	Ulerick, Loren Dean & Marilyn J 513 East Rd 1350 Kokomo, IN 46970	Pipe 1 at Stn. 71+00 <b>North Bound</b>	Required
005-11203-00	Whorley, Matthew Jacob Et al C/O Dianna F Whorley Life Est 5382 C.R. N 200E Kokomo, IN 46901	Pipe 1 at Stn. 71+00 <b>South Bound</b>	Required
016-33801-06	Graber, Edward L. & Debra A. R R # 5 Box 12CCC Peru, IN 46970	Pipe 2 at Stn. 435+10 <b>North Bound</b>	Required



016-33801-05	Graber, Edward L. & Debra A. R R # 5 Box 12CCC Peru, IN 46970	Pipe 2 at Stn. 435+10 <b>North Bound</b>	Required
016-33612-01	Sonafrank, David L & Delores A Smyth 4285 US 31 South Peru, IN 46970	Pipe 2 at Stn. 435+10 <b>North Bound</b>	Required
016-06400-90	Phelps, Judith 3263 W 400 S Peru, IN 46970	Pipe 2 at Stn: 434+20 <b>South Bound</b>	Required

**(c) Encroachments**

*There is no involvement of encroachments for the contract.*

**(d) Other Noteworthy Conditions**

*There are no other noteworthy conditions which may affect the prosecution and progress of the contract.*

**(e) Preconstruction Conference Notification**

*The Contractor shall provide notification during the preconstruction conference about known corrections to or omissions of the information presented in 107.25(a) through 107.25(d) above. Otherwise, notification shall be provided as required in 105.06. Notifications regarding such corrections or omissions shall not alleviate the Contractor's inquiry or interpretation obligations as contained in 120 IAC 3-6-6.*

108-C-192 TEMPORARY EROSION CONTROL MEASURES

(Adopted 09-27-06)

The Standard Specifications are revised as follows:

SECTION 108, BEGIN LINE 107, DELETE AND INSERT AS FOLLOWS:

An amended Erosion Control Plan shall be submitted in accordance with 327 IAC 15-5 for those areas not included in the Department submittal or as necessary for changes initiated by the Contractor. Items to include consist of sequencing of operations, borrow and disposal areas, and haul roads as well as any revision to the Department's submittal. *If borrow and stockpile sites are used, the Contractor shall indicate the erosion and sediment control measures to be implemented and the sequencing of the erosion and sediment control measures to be used on the sites. The Contractor shall also state where the spoil from the project, if any, will be placed. The Contractor shall provide this information following the guidelines for Rule 5 (327IAC 15-5). The Contractor shall also submit a sequencing of the erosion and sediment control measures to be used on the project to:*

*IDEM  
Rule 5 Coordinator  
100 N. Senate Avenue  
Mail Code 65-42 Rm 1255  
Indianapolis, IN 46204*

*Indiana Dept. of Transportation  
Rick Phillabaum  
Room N642  
100 N. Senate Avenue  
Indianapolis, IN 46204*

*The borrow, stockpile, and spoil sites must be permitted by the IDEM Notice of Intent, NOI. The Contractor shall submit either a new IDEM NOI or revise the original NOI for the project. A copy of the revised NOI or the new NOI shall be given to the Engineer.*

*All information shall be submitted and approved prior to land disturbing activities. All appropriate erosion control items shall be in place prior to disturbing the project site. A copy of the amended plan shall be provided to the Engineer.*

*The Contractor shall designate one or more of its employees as an Erosion Control Supervisor. The Erosion Control Supervisor shall be responsible for the preparation, submittal, and ensuring receipt of the approval of the amended erosion control plan. Such individual(s) shall also be responsible for obtaining all other necessary permits including the wetland inspection and archaeological record check and field survey in accordance with 203.08, and for all environmental inspections. Such individual(s) shall oversee the installation of all erosion control measures and shall conduct ~~regular~~ weekly and post-event inspections and perform all other tasks related to the installation, maintenance, and removal of erosion control measures. The Erosion Control Supervisor shall accompany personnel from IDEM or other governmental agencies, as required, during site visits by those agencies. ~~And~~ The Erosion Control Supervisor shall be responsible for completion of all reports in accordance with 205.*

*A minimum of 10 days prior to commencing work, the Contractor shall prepare and submit to the Engineer, for approval, an erosion control plan that includes, at a minimum, the following items:*

- (a) Locations of all proposed soil stockpiles, borrow areas, or disposal areas.*
- (b) Locations of all proposed vehicle and equipment parking areas, vehicle and equipment fueling locations, placement of the site construction trailers, location of all on-site batch plants, and designated concrete truck washout areas.*
- (c) Proposed construction sequence and phasing of erosion control measures.*
- (d) Location of all construction entrances where vehicles and equipment will enter and exit the site.*

- (e) *Material handling and spill prevention plan, which shall include a list of expected materials that may be present on the site during construction operations, as well as a written description of how these materials will be handled to minimize the potential that the materials may enter the storm water runoff from the site.*
- (f) *Statements that the erosion control measures for the project shall, at a minimum, be inspected on a weekly basis and within 24 h of every 1/2 in. (13 mm) rain event.*
- (g) *Monitoring and maintenance plan for erosion control measures.*

*The erosion control plan shall be signed by the Erosion Control Supervisor. The Engineer will submit the erosion control plan, for approval, to IDEM through the Department's Office of Environmental Services Permit Coordinator.*

The name(s) of the ~~designated individual(s)~~ Erosion Control Supervisor shall be furnished the Engineer at, or prior to, the preconstruction meeting. Should the designated individual(s) need to be replaced during the contract, replacements shall be designated within seven calendar days and notification shall be furnished the Engineer.

Permanent erosion control measures shall be incorporated into the work at the earliest practicable time as the construction progresses to stabilize the site.

In order to minimize pollution to bodies of water, the practices and controls set out below shall be followed.

- (a) When work areas are located in or adjacent to bodies of water, such areas shall be separated by a dike or other barrier to keep contained. Sediment disturbance of these bodies of waters shall be minimized during the construction and removal of such barriers.
- (b) All waterways shall be cleared as soon as practicable of false-work, temporary piling, debris, or other obstructions placed during construction operations.
- (c) Water from aggregate washing or other operations containing sediment shall be treated by filtration, a settling basin, or other means sufficient to reduce the sediment content.
- (d) Pollutants such a fuels, lubricants, asphalt, sewage, wash water, or waste from concrete mixing operations, and other harmful materials shall not be discharged into existing bodies of water.
- (e) All applicable regulations and statutes relating to the prevention and abatement of pollution shall be complied with in the performance of the contract.

SECTION 108, AFTER LINE 177, INSERT AS FOLLOWS:

*The cost of preparation of the erosion control plan shall be included in the cost of the various erosion and sediment control items.*

SECTION 205, AFTER LINE 33, INSERT AS FOLLOWS:

*Temporary erosion control measures shall be placed as soon as possible. Silt fence and sediment traps shall be installed prior to beginning earth disturbing activities.*

*Temporary seeding shall be placed on disturbed areas that are expected to be undisturbed for over 7 days or as directed by the Engineer.*

*Check dams shall be installed as soon as possible in areas of construction. Once ditches are to grade, permanent erosion control measures shall be placed as soon as possible and no later than 5 workdays after ditch grading is completed. During construction, if ditch flow patterns change, erosion control measures may need to be moved or adjusted so that no areas are left unprotected.*

*Pipe end sections and anchors shall be placed when the structure is installed. If the pipe end sections or anchors cannot be placed at the same time, temporary riprap splashpads shall be placed at the outlets of the pipes until the pipe end sections or anchors can be placed.*

SECTION 205, AFTER LINE 108, INSERT AS FOLLOWS:

**(o) Stable Construction Entrance**

*The Contractor shall provide a stable construction entrance at the points where construction traffic will enter onto an existing road. This entrance shall be a minimum of 12 ft wide, 50 ft long, and constructed of 12 in. of No. 2 stone. The radii shall be large enough to accommodate the vehicles utilizing the entrance. Additional stone may be required, as directed, to maintain the usefulness of the stable construction entrance. Where there is insufficient room for a stable construction entrance, other measures shall be taken to prevent the tracking of sediment onto the pavement.*

SECTION 205, AFTER LINE 118, DELETE AND INSERT AS FOLLOWS:

**205.04 Maintenance**

Temporary erosion and sediment control measures shall be inspected by the Contractor's *Erosion Control Supervisor* once every seven days and after *each rain activities activity*. Inspections shall be documented and records shall be maintained by the Contractor, to be made available for review upon request. Records shall include, at a minimum, the date, the inspector's name, the maintenance and corrections needed based on this inspection, and the status of previously identified deficiencies. The temporary protection measures shall be returned to good working conditions within 48 hours after inspection or as directed. Sediment shall be removed as approved and disposed of in accordance with 201.03 and 203.08. *Inspection records shall be kept until the entire contract is complete and has been permanently stabilized.*

SECTION 205, AFTER LINE 148, INSERT AS FOLLOWS:

*No. 2 stone for stable construction entrances will be measured by the ton (megagram) in accordance with 109.01(b).*

SECTION 205, LINE 166, INSERT AS FOLLOWS:

for at the contract unit price per each unit installed. *No. 2 stone for stable construction entrances will be paid for at the contract unit price per ton.*

SECTION 205, AFTER LINE 176, INSERT AS FOLLOWS:

*No. 2 Stone ..... TON (Mg)*

SECTION 205, AFTER LINE 213, INSERT AS FOLLOWS:

*The cost of constructing, maintaining, and removal of the stable construction entrance shall be included in the cost of No. 2 stone.*

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108-C-202 WORKING RESTRICTIONS DURING MEMORIAL DAY, JULY FOURTH, AND  
LABOR DAY WEEKENDS

*(Adopted 02-07-07)*

The Standard Specifications are revised as follows:

SECTION 108, AFTER LINE 204, INSERT AS FOLLOWS:

*This Special Provision concerns Summer Holiday Weekends. Contracts that already have language in the Contract Proposal referring to this subject will be governed by that language.*

*For all other Contracts, unless prior approval is received from the District Construction Engineer, Contractors will not be permitted to work as follows:*

*Memorial Day Weekend: No work from Noon Friday before Memorial Day, to Sunrise Tuesday after Memorial Day.*

*July 4<sup>th</sup> Weekend:*

*If July 4<sup>th</sup> is: Sunday – No work from Noon Friday, July 2nd, to Sunrise Tuesday, July 6th.*

*Monday – No work from Noon Friday, July 1st, to Sunrise Tuesday, July 5th.*

*Tuesday – No work from Noon Friday, June 30th, to Sunrise Wednesday, July 5th.*

*Wednesday – No work from Sunset Tuesday, July 3rd, to Sunrise Thursday, July 5th.*

*Thursday – No work from Noon Wednesday, July 3rd, to Sunrise Monday, July 8th.*

*Friday – No work from Noon Thursday, July 3rd, to Sunrise Monday, July 7th.*

*Saturday – No work from Noon Thursday, July 2nd, to Sunrise Monday, July 6th.*

*Labor Day Weekend: No work from Noon Friday, before Labor Day, to Sunrise Tuesday, after Labor Day.*

*This includes all traffic coming from the Suppliers.*

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108-C-209 REPORTING SUBCONTRACT PAYMENTS

*(Adopted 07-11-07)*

The Standard Specifications are revised as follows:

SECTION 108, AFTER LINE 28, INSERT AS FOLLOWS:

*The Contractor shall submit monthly reports, in a format approved by the Department, of all payments made to subcontractors. Reports shall be submitted no later than 10 days after the end of each month in which a subcontractor is paid for work on the contract. Reports shall include any release of retainage payments made to subcontractors.*

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108-C-210 DETERMINATION AND EXTENSION OF CONTRACT TIME

*(Adopted 07-19-07)*

The Standard Specifications are revised as follows:

SECTION 108, BEGIN LINE 335, DELETE AND INSERT AS FOLLOWS:

The Department may order suspension of work either wholly or in part, for a period of time for certain holidays. For such orders, *if the contract suspension is not stated in the contract documents*, the contract completion time will be adjusted as follows:

- (a) If the contract completion time is on a work day basis, no work days will be charged on those days that work on the controlling operation is suspended.
- (b) If the contract completion time is on a calendar day basis, all calendar days on which work on the controlling operation is suspended will be excluded.
- (c) If the contract completion time is a fixed calendar date, the contract will ~~not~~ be extended *by the number of days that work on the controlling operation is suspended.*

- (d) If the contract contains an intermediate completion time, said time will be adjusted in accordance with the requirements of (a) or (b), above as appropriate, provided that the suspension occurs within the time period while the intermediate completion time is in effect.

109-C-213 CONTRACT LIENS

(Adopted 07/27/07)

Upon receipt of a claim under Indiana Code 8-23-9-26, the Department will retain out of the amount due the Contractor the amount of the claim. The amount to be retained will be withheld from partial payment estimates until the total amount of the claim has been retained.

In order to retain an amount when required by the code, the Engineer will apply a negative quantity to the contract liens pay item for the actual dollar amount of the claim. Upon resolution of the claim, the Engineer will post a positive quantity to the contract liens pay item equal to the amount originally retained. The final quantity of the contract liens pay item will be zero prior to final payment.

The contract unit price for contract liens will be one dollar.

Payment will be made under:

<b>Pay Item</b>	<b>Unit Symbol</b>
Contract Liens.....	DOL

111-C-178 STOCKPILED MATERIALS

(Adopted 09-01-05)

The Standard Specifications are revised as follows:

SECTION 111, BEGIN LINE 9, DELETE AND INSERT AS FOLLOWS:

be incorporated into the work and delivered in the vicinity of the project, or stored in approved storage facilities. Such materials shall be limited to structural steel, concrete structural members, ~~pavement~~ reinforcing steel, pavement contraction joints, granular base and subbase materials, aggregates for HMA and concrete pavements, and structural supports for signals, signs, and luminaires.

*In addition to the aforementioned, the Department will consider the stockpiling of other steel products, such as guardrail, culvert pipe, etc if it has been determined that a critical shortage of material would cause delay to the project.*

SECTION 111, BEGIN LINE 115, DELETE AS FOLLOWS:

Approval of partial payment for stockpiled materials will not constitute final acceptance of such materials for use in completing the work. Structural steel members and ~~pavement~~ reinforcing steel may be subjected to additional inspection and testing prior to final acceptance and incorporation into the work. All other stockpiled pay items will be subjected to additional inspection and testing prior to final acceptance and incorporation into the work.

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400-R-520 MOISTURE TEST FOR HMA AND SMA

(Adopted 04-03-06)

The Standard Specifications are revised as follows:

SECTION 401, BEGIN LINE 177, DELETE AS FOLLOWS:

**401.09 Acceptance of Mixtures**

Acceptance of mixtures for binder content, VMA at  $N_{des}$ , and air voids at  $N_{des}$  for each lot will be based on tests performed by the Engineer. ~~Acceptance testing for surface mixtures will include tests for moisture content.~~ The Engineer will randomly

SECTION 401, BEGIN LINE 215, DELETE AS FOLLOWS:

~~The maximum percent of moisture in the mixture shall not exceed 0.10 from plate samples.~~

A binder draindown test in accordance with AASHTO T 305 for open graded mixtures shall be completed once per lot in accordance with 401.07 and shall not exceed 0.50%.

The Engineer's acceptance test results for each subplot will be available after the subplot and testing are complete.

Air voids, binder content and VMA values will be reported to the nearest 0.1%. ~~Moisture and draindown~~ Draindown test results will be rounded to the nearest 0.01%. Rounding will be in accordance with 109.01(a).

SECTION 410, BEGIN LINE 136, DELETE AS FOLLOWS:

**410.09 Acceptance of Mixtures**

Acceptance of mixtures for binder content, ~~moisture~~, and gradation for each lot will be based on tests performed by the Engineer. The Engineer will randomly select the location(s) within each subplot for sampling in accordance with ITM 802.

Samples from each location shall be obtained from each subplot from the pavement in accordance with ITM 580. ~~The second sample shall be located from the random sample by offsetting 1 ft (0.3 m) transversely towards the center of the mat and will be used for the moisture sample.~~ The test results of the sublots will be averaged and shall meet the requirements for tolerances from the JMF for each sieve and binder content.



~~The maximum percent of moisture in the mixture shall not exceed 0.10 from plate samples.~~

SECTION 410, BEGIN LINE 170, DELETE AS FOLLOWS:

~~Single test values and averages will be reported to the nearest 0.1% except moisture will be reported to the nearest 0.01%. Rounding will be in accordance with 109.01(a).~~

801-C-157 CERTIFICATION OF TEMPORARY TRAFFIC CONTROL DEVICES

(Revised 09-01-05)

**Category 1 Devices**

The Contractor shall certify that the following temporary traffic control devices to be used do not exceed the maximum values shown in the table below, and are considered crashworthy at Test Level 3 in accordance with National Cooperative Highway Research Program Report No. 350.

Device	Composition	Maximum Weight (Mass)	Maximum Height
Single Piece Traffic Cones	Rubber	20 lb (9 kg)	36 in. (920 mm)
	Plastic	20 lb (9 kg)	48 in. (1220 mm)
Tubular Markers	Rubber	13 lb (6 kg)	36 in. (920 mm)
	Plastic	13 lb (6 kg)	36 in. (920 mm)
Single Piece Drums	High Density Plastic	77 lb (35 kg)	36 in. (920 mm)
	Low Density Plastic	77 lb (35 kg)	36 in. (920 mm)
Delineators	Plastic, Fiberglass	N/A	48 in. (1220 mm)

No lights, signs, flags, or other auxiliary attachments are included in the weight (mass) of the devices listed above. Reflective sheeting or reflective buttons are included on delineators. Maximum weights (masses), including ballast, do not exceed the values shown in the table. "Single piece" refers to the construction of the body of the drum exclusive of a separate base, if any.

Type A or type C warning lights in accordance with the following specifications will be allowed on drums if they are firmly attached with vandal resistant 1/2 in. (13 mm) diameter by 4 in. (95 mm) cadmium plated steel bolt with nut and a 1 1/2 in. (38 mm) high cup washer.

1. The weight (mass) shall be no more than 5 lb (2.4 kg).
2. The lens diameter shall be 7 to 8 in. (180 to 200 mm).
3. The height of the light shall be 11 to 14 in. (270 to 340 mm).

**Category II Devices**

Category II temporary traffic control devices include type III barricades, vertical panels, portable sign standards, and other light-weight traffic control devices.

Category II temporary traffic control devices shall be in accordance with the NCHRP Report 350, test level 3.

A form will be provided at the pre-construction conference for the Contractor to complete and return to the Engineer prior to the placement of category I or II traffic control devices.

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801-M-006 MAINTAINING TRAFFIC FOR MAINTENANCE OR RESURFACE WORK

(Revised 09-01-05)

The Standard Specifications are revised as follows:

SECTION 801, AFTER LINE 142, INSERT AS FOLLOWS:

*Traffic shall be maintained for maintenance activities or for HMA resurface work as shown on the plans or as described herein. The Contractor shall have an extra set of construction signs and an extra flashing arrow sign on the project site so that the taper may be moved forward without suspending the operations and clearing the work area. Additional traffic control devices shall be furnished for situations determined to be more complex, for protection in hazardous areas, and when traffic conditions warrant.*

*All non-fixed signs shall be removed at the completion of each day's operations. All lanes shall be open to normal traffic during hours other than daylight hours. If a traffic lane is directed to remain closed during hours other than daylight hours, traffic shall be maintained on the remaining lanes as shown on the plans.*

*All fixed signs shall remain in place until all temporary pavement markings have been removed. Work days will not be charged from the time of completion of other work until the markings have been removed.*

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801-R-253 MOBILE CONSTRUCTION SIGNS

(Adopted 09-01-05)

This work shall consist of furnishing and placing mobile construction signs for a moving operation. The mobile construction signs shall be in close proximity to the operation as shown on the plans.

This work will be measured per each day that each sign is in use. This work will be paid for at the contract unit price per day for construction signs, mobile, for each day that each sign is used. Payment will be made without regard to the sizes of signs used.

801-R-542 WORKSITE ADDED PENALTY SIGNS  
(Revised 06-25-07)

Worksite Added Penalty signs shall be placed as shown in the plans or as directed by the Engineer. The signs shall typically be placed in advance of the first Road Construction Ahead signs at either end of the project. The actual location and quantity of the signs will be determined by the Engineer in coordination with the Worksite Traffic Control Supervisor.

The XG20-7a "WORKSITE ADDED PENALTY SIGN, 60 x 36" shall only be installed on projects in urban areas that have a posted speed limit of 35 MPH or less and also meet one of the following conditions:

1. The existing surfaces outside the edge of pavement make installation of driven posts impractical, or
2. The width of the Right-of-Way outside of the edge of pavement is not sufficient to accommodate the larger XG20-7 "WORKSITE ADDED PENALTY SIGN, 78 x 42" sign.

The XG20-7b and XG20-7c "WORKSITE ADDED PENALTY SIGNS, 48 x 48" shall be used in series with each other and shall only be used on projects that meet one of the following conditions:

1. Rural projects where the width of the Right-of-Way outside of the edge of pavement is not sufficient to accommodate the larger XG20-7 "WORKSITE ADDED PENALTY SIGN, 78 x 42" sign, or
2. Contracts using only moving operations where construction signs are set and removed each day to accommodate the changing location of the work.

The XG20-7 "WORKSITE ADDED PENALTY SIGN, 78 x 42" shall be installed on all projects in all cases not otherwise described above.

Worksite Added Penalty signs will be measured and paid for as Construction Sign, Type C in accordance with 801.17 and 801.18.

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801-T-165 TEMPORARY PAVEMENT MARKINGS

(Adopted 7-19-07)

The Standard Specifications are revised as follows:

SECTION 801, AFTER LINE 25, INSERT AS FOLLOWS:

<i>Temporary Pavement Marking Tape</i> .....	923.01
<i>Temporary Raised Pavement Markers</i> .....	923.02

SECTION 801, BEGIN LINE 547, DELETE AND INSERT AS FOLLOWS:

**801.12 Temporary Pavement Marking**

Temporary pavement markings shall be *new materials placed* in accordance with 808.04 and 808.05. However, *when temporary markings are to be in place for 14 calendar days or less* the dashed line pattern used on center line and lane lines may be 4 ft (1.2 m) line segments on 40 ft (12 m) centers; *and gore* ~~Gore~~ areas shall be marked by outline only and may be 5 in. (125 mm) wide lines. *No-passing zones on all undivided two-way roadways shall be identified with signs and centerline markings.* ~~However, the dashed line pattern used on center line and lane lines may be 4 ft (1.2 m) line segments on 40 ft (12 m) centers. Gore areas shall be marked by outline only and may be 5 in. (125 mm) wide lines.~~ All temporary markings shall be maintained and replaced until they are no longer applicable.

~~Temporary markings placed on the final surface course shall be temporary marking tape type 1.~~ *Where possible, where non-removable temporary markings are used on a final surface, such markings shall be placed at the same location where permanent markings will later be affixed or parallel to and within 12 in. (300 mm) of the permanent marking pattern.*

Where temporary pavement markings are to be placed on a pavement which has existing markings, the existing markings which conflict with the temporary markings shall be removed in accordance with 808.10.

When working under traffic, the temporary pavement markings shall be placed before opening the lane to traffic. This shall include, but not be limited to, the marking patterns of gore areas, outside edge line of deceleration and acceleration lanes, narrow bridge markings, lane reduction transitions, lane lines, centerlines, and transverse markings as appropriate.

~~If a pavement course is to be in place for a period greater than 14 calendar days, all temporary pavement markings shall be placed in accordance with 808.04 and stop lines shall be placed in accordance with 808.05. No passing zones on all undivided two-way roadways shall be identified with signs and centerline markings.~~

~~If the temporary~~ Temporary pavement markings which are to be in service from December 1 through the following March 31 ~~shall be painted markings., such~~ Such markings shall be placed in the standard pavement marking pattern and applied prior to the suspension of the work, or within seven work days after the Contractor is directed to place the markings. *Adjustments to these dates to accommodate actual seasonal suspension and continuance of work are subject to approval by the Engineer upon written request.*

SECTION 801, BEGIN LINE 589, DELETE AND INSERT AS FOLLOWS:

### **1. Paint**

Painted ~~lines markings on new HMA courses~~ shall require a second application of paint *and beads* as soon as practical after the first application is dry.

### **2. Temporary Pavement Marking Tape**

Temporary pavement marking tape shall be applied in accordance with the manufacturer's recommendations. Temporary marking tape shall be new type I or type II material.

All temporary pavement marking tape shall be removed prior to ~~placement of an HMA overlay or final pavement markings~~ *to placing the next pavement course, prior to placing an overlay, prior to recycling the pavement, or prior to placing the final pavement markings, except as otherwise described herein.*

#### **a. Type I**

Type I tape is a removable material. It may be used for longitudinal and transverse markings. ~~It shall be used for longitudinal and transverse markings on the final surface.~~

Type I tape shall be removed without the use of solvents, grinding, abrasive blasting, or other methods which may damage the pavement. All visible adhesive residue shall be removed without use of solvents or grinding.

#### **b. Type II**

Type II tape is a non-removable material. It may be used on PCCP to be removed or *on PCCP to be overlaid with an HMA course greater than 440 lb/sq yd (60 90 kg/m<sup>2</sup>).* ~~If it is Type II tape placed on HMA pavement, the tape shall be removed prior to the recycling of the HMA material~~ *placing the next pavement course.*

If it is necessary to remove type II tape, it shall be removed without the use of solvents. All damage to the pavement shall be repaired.

### **3. Temporary Raised Pavement Marker**

The temporary raised pavement marker shall be grade 1 or grade 2. When used, it shall be a supplement to other temporary pavement markings. The color of the reflector shall be in accordance with the other temporary pavement marking. The color of the shell of the grade 1 marker shall be in accordance with the color of the other temporary pavement marking.

Temporary raised pavement markers shall be removed before the next layer of pavement is placed and before the final pavement markings are applied. All damage to the pavement shall be repaired.

#### **4. Temporary Buzz Strips**

Temporary buzz strips shall be a set of transverse markings *constructed of removable or durable marking material*. Durable marking material shall be used in accordance with 808.07(b). ~~Temporary buzz strips shall be removed in accordance with 808.10 when no longer required or as directed.~~

SECTION 801, BEGIN LINE 860, INSERT AS FOLLOWS:

with 621.13. Removal and subsequent replacement of permanent pavement markings and snowplowable raised pavement markers *for temporary crossovers* will be measured in accordance with 808.12. Removal and resetting of guardrail, if required for temporary crossovers, will be measured in accordance with 601.13.

SECTION 801, BEGIN LINE 872, INSERT AS FOLLOWS:

Temporary *pavement message markings* will be measured by the number of each type placed. Longitudinal and transverse temporary pavement markings will be measured by the linear foot (meter) of material actually placed. Temporary buzz strips will be measured by the linear foot (meter) for each *8 in. (200 mm)* strip placed, without regard to the number of passes required to attain the specified height.

*Removal, when necessary, of any type of non-removable temporary pavement markings will be measured in accordance with 808.12. Removal of removable temporary pavement markings will not be measured for payment.*

*Where temporary pavement markings are to be placed on a pavement which has existing markings, removal of existing markings which conflict with the temporary markings will be measured in accordance with 808.12.*

~~If, due to a Department initiated change or an approved expedited construction schedule, it is necessary to remove temporary non-removable pavement markings, such removal will be measured in accordance with 808.12. The removal of existing pavement markings which are in conflict with temporary markings, will be measured in accordance with 808.11.~~

The removal and replacement of *prismatic* reflectors on existing snowplowable raised pavement markers will be measured in accordance with 808.12.

SECTION 801, BEGIN LINE 896, INSERT AS FOLLOWS:

#### **801.18 Basis of Payment**

The accepted quantities of construction signs, detour route marker assemblies, detour route marker assemblies-multiple routes, temporary worksite speed limit sign assemblies, road closure sign assemblies, *permanent road closure sign assemblies* and temporary raised pavement markers will be paid for at the contract unit price per each. Payment for temporary worksite speed limit assemblies and temporary changeable

message signs will be made for the maximum number of such assemblies in place at any one time during the life of the contract. Type III-A, type III-B, and permanent type III barricades will be paid for at the contract unit price per linear foot (meter).

SECTION 801, BEGIN LINE 933, INSERT AS FOLLOWS:

Removal and subsequent replacement of permanent pavement markings and snowplowable raised pavement markers *for temporary crossovers* will be paid for in accordance with 808.13. Removal and resetting of guardrail, if required for temporary crossovers, will be paid for in accordance with 601.14.

SECTION 801, BEGIN LINE 950, DELETE AND INSERT AS FOLLOWS:

*Temporary pavement message markings placed will be paid for at the contract unit price per each, for the message specified. Longitudinal and transverse temporary* ~~Temporary~~ pavement markings and temporary buzz strips, will be paid for at the contract unit price per linear foot (meter) of material, complete in place, ~~except as set out below.~~

*Removal, when necessary, of non-removable temporary pavement lines and message markings will be paid for in accordance with 808.13. The cost of removal of removable temporary pavement markings shall be included in the cost of the pay item for placement of the markings.*

*Where temporary pavement markings are to be placed on a pavement which has existing markings, removal of the existing markings which conflict with the temporary markings will be paid for in accordance with 808.13.*

Permanent tubular markers *and permanent drums* will be paid for at the contract unit price per each.

~~The removal of temporary non removable pavement markings caused by a Department initiated change or an approved expedited construction schedule, and the removal of existing pavement markings which are in conflict with temporary markings will be paid for in accordance with 808.13.~~

SECTION 801, BEGIN LINE 1056, INSERT AS FOLLOWS:

The cost of furnishing, installing, maintaining, and subsequent removal of *temporary raised pavement marker* shall be included in the cost of temporary raised pavement marker.

*The cost of placement, maintenance and replacement of temporary pavement markings shall be included in the cost of the markings.*

SECTION 801, BEGIN LINE 1071, DELETE AND INSERT AS FOLLOWS:

The cost of the second application of *paint and beads for painted temporary markings* ~~painted lines on new HMA courses~~ shall be included in the cost of *the first application of painted temporary pavement markings.*

SECTION 801, BEGIN LINE 1103, DELETE AS FOLLOWS:

The cost of necessary flaggers; protection of traffic at structure foundations; and furnishing, erecting, placing, maintaining, relocating, and removing lights, cones, flexible channelizers, tubular markers, drums, delineators, ~~temporary pavement markings,~~ or other devices as directed shall be included in the cost of maintaining traffic.

SECTION 808, BEGIN LINE 348, DELETE AS FOLLOWS:

~~On Federal aid contracts, the 180 day warranty shall apply only to thermoplastic pavement marking material.~~

SECTION 808, BEGIN LINE 351, DELETE AND INSERT AS FOLLOWS:

**808.10 Removal of Pavement Markings**

Pavement markings which conflict with revised traffic patterns and may confuse motorists shall be removed immediately before, or immediately following, any change in traffic patterns as directed or approved.

Removal of pavement markings shall be to the fullest extent possible without materially damaging the pavement surface. Pavement marking removal methods shall be sandblasting, steel shot blasting, waterblasting, grinding or other approved mechanical means. Grooving will not be permitted. Grinding will only be permitted ~~when removing thermoplastic or epoxy pavement markings.~~ *under the following conditions:*

- (a) when removing durable pavement markings, or*
- (b) when removing non-durable markings where another course of material is to be placed on the existing course.*

Painting over existing pavement markings to obliterate them will not be permitted.

SECTION 808, BEGIN LINE 544, INSERT AS FOLLOWS:

No additional payment will be made for the second application of traffic paint and glass beads as required in 808.07(a)1.

*No additional payment will be made for the replacement of markings that fail to meet the warranty conditions of 808.09.*

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805-T-144 TRAFFIC VEHICLE DETECTION LOOP SHAPE

*(Adopted 01-11-06)*

The Standard Specifications are revised as follows:

SECTION 805, BEGIN LINE 287, INSERT AS FOLLOWS:

Loops shall be of a regular octagon shape with side of 2.5 ft (0.75 m) in length *or a circular shape with a 6 ft (1.83 m) diameter.* An outline shall be laid out and painted where the loops shall be sawed. The loop locations shall be subject to the review and approval of the District Traffic Engineer. The District Traffic Engineer shall be notified 48 h prior to such field review.



The slots shall be saw-cut as shown on the plans. *A diamond cutting blade shall be used for sawing all loops. A carborundum blade may be used if the outside temperature is below 38°F (4°C).* Slots shall be thoroughly

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808-T-116 SNOWPLOWABLE RAISED PAVEMENT MARKERS

(Adopted 09-01-05)

Snowplowable raised pavement markers manufactured by the following companies will be considered approved to meet the requirements of this contract. The slots cut in the pavement shall be in accordance with the manufacturer's recommendations.

MKRM-10	Stimsonite Corporation 6565 W. Howard Street Niles, Illinois 60714	Models detailed on Standard Sheets 808- or 808-MKRM-11
	Hallen Products Ltd. 39960 N. Millcreek Rd. Wadsworth, Illinois 60083.	Iron Star Model 664H

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808-T-141 REMOVAL OF SNOWPLOWABLE RAISED PAVEMENT MARKERS

(Revised 09-01-05)

The Standard Specifications are revised as follows:

SECTION 808, BEGIN LINE 440, DELETE AND INSERT AS FOLLOWS:

Removed markers shall ~~remain~~ *become* the property of the ~~Department unless otherwise specified~~ *Contractor and removed from the jobsite prior to the completion of the work.*

~~Removed snowplowable raised pavement markers shall be delivered to the District Traffic Division. The markers shall be delivered in 55 gal (210 L) metal containers with lids which may be sealed. The metal containers shall be furnished either by the Contractor or by the District Traffic Division as specified in the contract. Approximately 50 markers shall be placed in each container. Each container shall be labeled as to how many markers it contains.~~

~~All metal containers used for delivering removed markers will remain the property of the Department when no longer required for the contract.~~

SECTION 808, BEGIN LINE 547, DELETE AS FOLLOWS:

~~The cost of metal containers for disposal of removed snowplowable raised pavement markers, if furnished by the Contractor, shall be included in the cost of other pay items. The cost of picking up and returning such metal containers, if furnished by the District Traffic Division, shall be included in the cost of other pay items.~~

~~The cost of delivering removed and packaged snowplowable raised pavement markers to the designated location shall be included in the cost of transportation of salvageable materials.~~

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913-T-120 REFLECTIVE LENSES FOR SNOWPLOWABLE RAISED PAVEMENT MARKERS

(Revised 09-01-05)

Reflective lenses for snowplowable raised pavement markers manufactured by the following companies will be considered approved to meet the requirements of this contract.

<u>Model Number</u>	<u>Manufacturer</u>
Stimsonite #944	Avery Dennison/Stimsonite
Ray-O-Lite #2004	PAC-TEC, Inc.
3M #190	3M Corporation

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922-T-137 TRAFFIC SIGNAL MATERIALS AND EQUIPMENT

(Revised 03-22-07)

The Standard Specifications are revised as follows:

SECTION 922, DELETE LINES 1 THROUGH 1856.

SECTION 922, AFTER LINE 1857, INSERT AS FOLLOWS:

**SECTION 922 – TRAFFIC SIGNAL MATERIALS**

**922.01 Description**

*All traffic signal materials and equipment shall be in strict accordance with the NEMA TS 2-2003 Standards Publication, and be fully compatible with the Department's current inventory of signal equipment, unless specifically outlined in the following specification.*

**922.02 Traffic Signal Control Equipment**

**(a) Model Approval**

*Each model of controller assembly (CA) and all major units, as defined in NEMA TS2-2.1.1, will be tested, evaluated by the Evaluations Section of Operations Support Division, and approved prior to use. The CA, as defined by NEMA TS2-1.1.7, as being a complete electrical unit, shall include major units operational in a TS2 environment. Major units of the CA are defined as Controller Unit (CU), Malfunction Management Unit (MMU), Bus Interface Unit(s) (BIUs), Cabinet Power Supply, Load Switches, Vehicle Detector equipment, and Flasher. The evaluation of a product will be considered when the Department receives the preliminary product evaluation submittal form. The Department will advise the manufacturer or vendor, of the date of delivery at which time*

*a presentation of the product will be required accompanied by the product brochure(s), the operational manual(s) containing procedures for all features incorporated in the CU's design, and the maintenance manual(s) containing all schematics, pictorial parts layouts, components parts listings, and documented theory of operation. Certification in accordance with 922.02(d) shall also accompany the preliminary product evaluation form. If a product has TS2 communicative capabilities, then a data analysis interpretation offered in a decimal form expressing frames by an SDLC Protocol Analyzer shall accompany the initial documentation as well. When accuracy of documentation is validated, the evaluation period may commence. In addition, all computer system software applicable to a manufacturer's product shall work with the Department's current operating systems so that upgrades will not be needed to recognize the full potential of the product. Any product under evaluation that has an operational failure occurring during the bench test procedure will be rejected and returned to the submitter. The product will not be considered for future evaluation without a cover letter documenting failures encountered and changes to the design to correct the failures. A presentation by the manufacturer of the product in question and explanation of why the product failed will be required. Resubmittal of the original product will be expected for testing, evaluation, and approval. Furthermore, two more rejections of a product submitted for evaluation will be cause to deny approval of that model permanently.*

*Continued failures indicative of a trend, repeated random malfunctions, or NEMA non-compliance of an approved product shall be cause to remove that model from the Department's list of approved Traffic Signal Control Equipment. If the manufacturer makes any changes to an approved model of major unit and/or controller cabinet terminal/facilities to correct a non-NEMA compliant or safety issue, the Department is to be notified immediately. The manufacturer will be required to correct all existing equipment purchased by the Department either directly, by contract, or through agreement prior to the change being incorporated at the manufacturer's production level.*

*A design change to an approved model of a CA or any major unit will require a submittal of documented changes. At the discretion of the Department, resubmission of the model for testing, evaluation, and approval may be required. Permanent addition or removal of component parts or wires, printed circuit board modifications, or revisions to memory or processor software, are examples of items that are considered to be design changes.*

***(b) Controller Assemblies or Major Units Furnished and Installed by the Contractor***

*A CA, as defined by NEMA TS2-1.1.7, shall be provided by the Contractor and shall be built to the specifications of the intersection design. The Contractor shall prepare three packets for each CA and provide these packets to the Engineer. Packet 1 shall consist of one complete set of wiring and schematic diagrams for the CA's TF Backpanel, a parts list indicating model name and serial number of all major units incorporated in the CA, and an 11 in. x 17 in. intersection design plan. Also included shall be an instructional programming manual identical in nature to that approved for use during the evaluation of the product(s) being supplied. Each packet shall be labeled with the name of the intersection, the contract number, the commission number and the*

*date of installation. Packet 1 will be forwarded to the Operations Support Division, Highway Support Section, and shall be the responsibility of the vendor to provide this packet upon Contractor purchase. Packet number 2 will be retained in the controller assembly and shall additionally include a TS2 type 2 to TS2 type 1 adapter harness. Packet 3 will be retained by the District Traffic Office.*

*The Department will maintain a list of approved models. Only models from the Department's list of approved Traffic Signal Control Equipment in effect as of the date of letting, or as otherwise specified, shall be used in the contract.*

*A 60 day burn-in period of traffic control equipment shall be required prior to acceptance of the contract. The Contractor shall be responsible for all costs associated with vendor or manufacturer warranty service until acceptance of the contract, or acceptance of that portion of the contract where the traffic control equipment is installed.*

**(c) Warranty**

*A five-year manufacturer's or vendor's warranty shall be provided for all major units operating in a TS2 environment. Light Emitting Diode (LED) signal indications shall have a five-year manufacturer's or vendor's warranty. Video detection equipment shall have a 10-year manufacturer's or vendor's warranty period on processors, integrated camera/processor units, rack mount cards, hubs, minihubs and camera interface panels. CCD video cameras shall have a 5-year manufacturer's or vendor's warranty. Load switches and flashers, shall have a 2-year manufacturer's or vendor's warranty. Warranty periods shall commence from the date of field placement of the device or on the date of signal turn-on as shown on the I.C. 636a form if purchased through a contracting agent.*

**(d) Certification of NEMA TS2 Traffic Control Equipment**

*The following certifications shall be furnished.*

**1. Certification of a Production Run Model**

*A certification representing each model of approved major unit of a CA shall be on file with the Department. A certification of a production run model for a CU will be valid for a maximum period of five years from the date of approval or unless a significant change is made in the CU. If a significant change is made, a new certification shall be submitted. A significant change shall be the addition or deletion of any function or feature in the control unit, or any other change as defined in 922.02(a) to the circuitry in the product.*

**2. Certification of Environmental Testing**

*A certification shall be furnished with each major unit approval request indicating it has been tested and is in accordance with the tests from NEMA TS2-2. The certification shall specify the model and serial number of the product being tested. A complete log of each test shall be provided to the Department and will be maintained by the Department. The log shall show which, if any, controller component failed during the test, when it failed, and what steps were taken to repair the controller. The log shall include the date of testing, name and title of person conducting the tests, a record of*

*conditions throughout the tests, and a temperature and humidity verses time chart. The maximum report interval of any chart shall be 24 h. The chart shall be from a recording machine used to monitor the status of the environmental chamber during testing.*

***(e) NEMA TS2 Fully Actuated Solid State Controller Unit (CU)***

*The following requirements are the minimum for the design and operation of a 16 channel fully-actuated solid state CU. The NEMA TS2 configuration will consist of two types of CU's, type A1 and type A2, as defined in NEMA TS2-3.2.*

*The CU shall be in accordance with NEMA TS2 Standards, all provisions contained herein, and the Department's specifications. Manufacturer specific enhancements are acceptable, however no function or device shall preclude the interchangeability of a CU with another CU of like NEMA specification within a controller assembly.*

***1. General Requirements***

*The CU shall be microprocessor based and both versions shall contain a three port configuration and shall operate in the NEMA TS2 type A1 environment.*

*The CU shall include provisions for time-of-day programming. The CU shall be capable of a minimum of 50 programmed events and be in accordance with NEMA TS2-3.8.*

*A removable nonvolatile EEPROM module shall be utilized in each CU to maintain all programmed data. A real-time clock shall be battery-backed and active during a power outage so as to provide complete time keeping functions and leap year corrections. A switch or other means shall be provided to turn off or disconnect battery power during storage. This shall be accomplished without physical removal of the battery. Batteries within the CU shall be turned off or disconnected during storage and shipment.*

*Programming and maintenance manuals for approved CU's shall be identical in nature to that approved for use during the evaluation period of the CU. The Department shall be notified of any changes to the manuals.*

*Serial number and model numbers shall be permanently applied on or near the front of circuit boards of the CU and viewable without removing or disconnecting the board. Serial number and model number of the main frame shall be permanently applied externally on top or on the front panel.*

***2. CU Requirements***

*The requirements set forth herein refer to a type A1 and A2 CU. Where differences occur between types, it will be designated.*

*The CU shall have, as a minimum, the internal diagnostics defined by NEMA TS2-3.9.3.*

*The CU shall monitor and log the status of events as specified in NEMA TS2-3.9.3.1.5 in non-volatile memory and shall be selectable via program entry and be retrievable by the system computer via NEMA Port 2 or 3. In addition, the CU shall have the ability to log an MMU fault as it occurs. A minimum of 16 entries shall be stored in non-volatile memory. When capacity is exceeded, the oldest entry will be replaced by the newest. Logged entries shall at minimum contain the date and time denoted in military style with minute resolution, description of the fault as it would appear on the MMU, and the status of each of the channel inputs at the time the fault occurred, clearly denoting the presence of activity on a channel.*

*The CU shall be capable of all inputs and outputs listed by controller type in NEMA TS2-Section 3. Pedestrian timing shall be provided on all phases of a CU. Unless otherwise indicated on the plans, the CU, when delivered, shall be programmed to initialize in phase 2 and phase 6 green, however, the CU shall be keyboard programmable to permit initialization in any color and phase. Initialization shall occur after a recognized power interruption, upon MMU reset, or upon return from manual or time-of-day flash. The CU shall be programmable from a closed loop computer system, a laptop computer using the RS232 port, front panel programming, and by downloading from another like CU through the RS232 port.*

*Keystroke buttons shall be clearly marked as to function. All programming buttons and indicators pertinent to the operation of a phase shall be on the front of the CU and shall have programmable phase omitting and phase skipping capabilities.*

*The TS2 Type A2 version CU shall be in accordance with all applicable requirements for a Type A2 CU as defined by NEMA TS2-3 and shall contain a full compliment of connectors.*

### **3. Internal Modules**

*All plug-in modules shall be equipped for easy removal or installation without the use of tools and shall be readily accessible for maintenance. All internal module plugs and edge card plugs shall have the corresponding pin connector position labeled with the first and last numbers or the first and last letters.*

### **4. CU Enclosure**

*The enclosure shall be of adequate strength to protect the components during normal handling. The keypad, liquid crystal display and all interface connectors required for the operation and standard field adjustments shall be mounted on the front panel. Fusing shall be on the front panel of the CU and shall provide protection from internal or external overload.*

*The front panel of the controller shall be fastened to the frame such that no special tools shall be required to remove or replace printed circuit board modules nor to gain access through the front panel. All hinges shall have stainless steel pins.*

### **5. Firmware and Software Revisions**

*The Operations Support Division Evaluations Section shall be notified each time an update or revision of the firmware or software is released, explain the changes, and the benefits of the change. Operations Support will determine if and to what extent a revision is to be placed into field operation and may fully re-evaluate the CU with the revision.*

### **(f) NEMA TS2 Cabinet, Auxiliary Equipment, and Terminal and Facilities (TF) Requirements**

*These standards define the minimum requirements for a TS2 Type A1 cabinet, both inside and out. The performance and construction of the cabinet shall be in accordance with the applicable requirements of NEMA TS2 sections 4, 5, 6, & 7. The serial number and model number of the auxiliary equipment shall be permanently applied externally on or near the front of the product. Programming and maintenance manuals for approved products shall be identical in nature to that approved for use during the evaluation period of the product. The Department shall be notified of all changes to the documentation. Manufacturer specific enhancements are acceptable, however no function or device shall preclude the interchangeability of an auxiliary product with another product of like NEMA specification within a controller assembly.*

#### **1. Controller Cabinet Requirements**

*The NEMA TS2 Type A1 controller cabinet shall be in accordance with the following requirements.*

##### **a. General**

*The cabinet and the shelf or shelves shall be fabricated of aluminum. The cabinet shall be 0.125 in. (3.175 mm) minimum thickness sheet aluminum or 0.25 in. (6.35 mm) minimum thickness die-cast aluminum. The cabinet exterior and interior including shelves shall have a sandblasted, roughened, or chemically etched finish that reduces gloss, reflection, and glare.*

*The main cabinet door shall use a Corbin Lock No. 2 and each cabinet shall be furnished with two No. 2 keys. The lock shall open in a counterclockwise motion only. The door shall be capable of being opened and stopped in at least the following two ranges of degree opening as measured from the face of the cabinet door on the hinged side: 80 to 100°, and 170 to 190°. The door shall be hinged on the right side of the cabinet. The main door and the police panel door shall close against a weatherproof and dustproof gasket seal, which shall be permanently bonded to the cabinet. A standard police panel key shall be provided with each cabinet.*

*A rain channel shall be incorporated into the design of the main door panel to prevent liquids from entering the enclosure. A 1.5 in. (38 mm) deep drawer shall be provided in the cabinet, mounted directly beneath the controller support shelf. The drawer shall have a hinged top cover and shall be capable of accommodating one complete set of cabinet prints and manuals. This drawer shall support 50 lb (23 kg) in weight when fully extended. The drawer shall open and close smoothly. Drawer dimensions shall make maximum use of available depth offered by the controller shelf and be a minimum of 24 in. (610 mm) wide.*

***b. Switches, Auxiliary, and Environmental Feature Requirements***

*The cabinet shall have a police door and a police control panel within the main door. The police panel shall have two different switches, one switch for field indication cutoff and one switch to transfer between automatic signal control and flashing operation. The switches shall be protected from water when the cabinet door is open.*

*A test switch panel shall be mounted on the inside of the main door. The test switch panel shall include, as a minimum, the following switches. An Auto/Flash Switch shall be installed so that when in the flash position, power shall be maintained to the controller and the intersection shall be placed in flash. A Stop Time Switch shall be installed so that when in the 'On' position the controller shall be stop timed in the current interval. A Controller Equipment Power On/Off Switch shall be installed which shall control AC power to the CU, MMU, and cabinet power supply. All switches mounted on the switch panel on the inside of the main door shall have in place a mechanism to prevent accidental activation of the switch. "Locking bat" type switches or side switch guards are acceptable. Switch guards, if used, shall be in place for each switch, shall be made of the same material as the cabinet, and shall permit the operation of the switch without the use of tools.*

*All switch functions shall be permanently and clearly labeled. Hand written labeling will not be permitted.*

*The cabinet shall include all required wiring, connectors and adapters to provide full compatibility and interchangeability with either a TS2 type A1 or type A2 controller.*

*The cabinet shall contain one duplex convenience outlet and a lamp receptacle that is actuated and turns on when the door is open and goes off upon closing of the door and an internal ON/OFF switch which can override the preceding. The convenience outlet shall be duplex, three-prong, NEMA Type 5-15R grounding outlet in accordance with NEMA WD-6, with ground-fault circuit interruption as defined by the National Electric Code. These units shall be protected with a 15-amp cartridge fuse wired ahead of the multi-breakers.*

*The cabinet shall contain a thermostatically controlled ventilating fan and a vent with a commercially classified uniform 1 in. (25 mm) thick filter. The thermostat shall be manually adjustable from 90 to 115°F (33 to 45°C). The fan shall be mounted internally at the top and toward the front of the cabinet to exhaust out the front top lip of the cabinet. The fan shall be rated at a minimum of 100 ft<sup>3</sup> (3 m<sup>3</sup>) per minute as designated by NEMA TS2, Section 7.9.1. The thermostat shall be located within 6 in. (150 mm) of the fan.*

*The filter size will be according to the provisions for the type of cabinet as stated in NEMA TS2, Section 7.9.2.3 and shall be a replaceable pleated air filter with a Minimum Efficiency Reporting Value (MERV) rating of 5 or higher as defined by the ASHRAE 52.2-1999 specification. The cabinet ventilation shall be in accordance with NEMA TS2-7.9.*



*Each inductive device, including the fan, shall have a separate power surge protection.*

*Master cabinets shall have an additional duplex, three-prong, NEMA Type 5-15R grounding outlet. Master cabinets shall have a separate power interrupt switch controlling the master CU power supply.*

## **2. Load Switch and Flasher Requirements**

*The cabinet shall contain a jack mounted type 3 solid state non-repairable flasher in accordance with NEMA Standards TS2-6.3 electrical and physical dimensions.*

*The pedestrian load switch and the signal load switch shall be an approved unit meeting all electrical and physical dimension requirements in accordance with NEMA TS2-6. The load switch shall not use a printed circuit board to transmit the 115 volts AC line input or signal buss output. Each load switch shall offer three indicators, one for each circuit indicating the status of the input to the load switch.*

*The load switch signal outputs shall be brought to a separate terminal strip for hook-up of the signal displays. Load switches inputs shall be capable of being programmed for flash, overlap, vehicular, or pedestrian phases with the use of a standard slotted or phillips screwdriver via the cabinet terminal strip. The load switch input programming of the TS2 Type A1 CA shall be accomplished through front panel data entry of a TS2 Type A1 or a TS2 Type A2 CU.*

## **3. Terminal and Facilities Requirements**

### **a. General Requirements**

*The TF layout shall be in accordance with NEMA TS2-5.2.7. The cabinet shall contain a main TF panel complying with NEMA TS2 section 5 standards. The model number of the main panel shall be permanently applied to the front of the panel, where it is easily readable, without removing or disconnecting the panel. Each controller input and output circuit shall terminate on the main TF panel or on a supplementary panel. The phase arrangement of the controller shall coincide with the channel arrangement of the load switches and MMU. All outputs on channels 9 through 12 field connections shall have a 1-microfarad capacitor placed at each output terminal on the front of the TF panel. All TFs within the cabinet shall be readily accessible for field connection without removing the controller or associated equipment and for maintenance in the cabinet. All stranded wiring shall be tinned. A 24 volt relay shall be used on the TF to remove 24 volt DC from the common side of the load switches, effectively taking the mercury relay out of the circuit when the signal is put in mechanical flash. The TF panel shall be hinged at the bottom and capable of swinging down, to allow accessibility of the wiring and terminals at the rear of the panel. The backpanel shall be attached to the cabinet such that access to the backside of the backpanel, for maintenance purposes, shall be accomplished without the use of special tools or removal of auxiliary panels, shelving, or other cabinet appurtenances. A bracket extending at least half the length of the NEMA load switch shall support all load switches.*

*Terminals shall be consecutively numbered on both sides of the TF panel and shall be in compliance with the appropriate schematic diagrams. All positions for load switches, flasher, and mechanical relays shall have reference designators on both sides of the TF panel. All nomenclature shall be on or adjacent to the component or terminal. All nomenclature shall be machine produced and not handwritten. Cabinet prints shall identify the function of each terminal position.*

*CU and MMU harness cables shall be of sufficient length to allow units to be placed on either shelf or on top of the cabinet while remaining in operational mode. RS-485 Port -1 communications cable shall also be of sufficient length to allow any Port 1 cable to be utilized with any TS2 unit within the CA. The RS-485 harness shall be constructed of a high quality shielded communications cable. The TF panel shall contain a Resistor/Capacitor Network Circuit which will provide an external restart pulse to initiate the startup sequence upon initialization from flash.*

*Remote flashing shall be provided for all signal circuits. Unless otherwise indicated on the plans, phases 2 and 6 shall be wired to flash yellow. All other phases shall be wired to flash red. Flashing for signal circuits shall be activated on one circuit for odd numbered phases and on the other circuit for even numbered phases.*

#### ***b. Power Panel Requirements***

*A transparent plexiglass cover shall be provided over the CA power supply panel. The cover shall leave the switches on the breakers exposed as well as leave access to terminals at the bottom of the panel for wiring purposes. No terminals on the power panel shall have silicon protectant on them in lieu of the plexiglass cover. The panel shall contain a multi-breaker with one 10-ampere circuit breaker to provide overload protection to the CU, MMU, BIU, +12/24 VDC cabinet power supply, and detection devices. It shall also contain one main circuit breaker of 35 or 40 ampere, to provide over-load protection to the signal and flash buss load. All breakers shall have line and load terminals clearly labeled. The signal bus shall be connected to the incoming AC line through a mercury contact switch or a solid state control device functionally equivalent to the NEMA 5.4.2.3 specified contact switch. The terminals for AC + and - input to the cabinet shall be capable of accepting a No. 6 wire.*

*With the CA 10 ampere and Main 35-40 ampere circuit breakers off (tripped), all units inside the cabinet and the intersection display shall be off. With the 10-amp breaker on and main 35-40 ampere circuit breaker off, the signal output shall be off and the major units within the cabinet shall function. With the 10-amp breaker off and main 35-40 ampere circuit breaker on, the intersection shall be in flash mode and all units within the cabinet will be off.*

*The cabinet shall contain a surge suppressor. The surge suppressor shall be wired behind the multi-breaker, in parallel with the 35-40 amp main signal buss circuit breaker and in series with the 10-amp circuit breaker for the solid state equipment. The surge suppressor shall have a maximum clamp voltage of 350 volts at a peak current of 20,000 amps for a minimum of 20 occurrences. The surge suppressor shall operate between -30 to 165°F (-34 to 74°C). The dimensions of the unit shall not exceed 3.25 in. (80 mm) wide by 6 in. (150 mm) long by 2.5 in. (64 mm) deep.*

#### **4. MMU Requirements**

*The cabinet shall contain a MMU and shall be in accordance with the standards of NEMA TS2-Section 4. The MMU shall be wired to monitor each load switch output.*

#### **5. BIU Requirements**

*All BIU's shall be in accordance with NEMA TS2 1998, Section 8. Edge mounted printed circuit boards and rack cards shall not have jumper wire modifications unless the jumper wires are permanently bonded to the PCB over its entire length. BIU's shall be supplied with each cabinet to allow for maximum phase and function utilization for which the cabinet is designed.*

#### **6. Loop Amplifier Units and Rack Requirements**

*a. Loop amplifier units shall be in accordance with NEMA TS2-Section 6 and shall follow type C, 2 channel with delay and extend, as stated in NEMA TS2-6.5.2.2.1. In addition, loop amplifiers shall have an LCD display or a RS-232 serial data connection and software interface capable of displaying loop status including but not limited to operating frequency and  $-\Delta L/L$ , diagnostics, and all amplifier settings and operating parameters. All amplifiers designated for counting shall be two channel counting amplifiers and shall additionally transmit channel 1 & 2 count pulses on the edge connection assigned to channels 3 & 4 respectively. The status output of each active counting channel (3 and/or 4) shall be set to logic ground by software configuration within the amplifier or externally by use of jumper card in the adjacent slot. Also, counting amplifiers shall be configured with count outputs mapped to and recorded in the CU detector logs, and shall be approved by the Department for counting purposes. Edge mounted printed circuit boards and rack cards shall not have jumper wire modifications unless the jumper wires are permanently bonded to the PCB over its entire length.*

*b. All size 5 (M) & size 6 (P-1) cabinets shall incorporate a 16 channel detector rack, configuration #2, as per NEMA TS2-5.3.4 and shall allow operation of a two channel detector in each slot and the capability of operation of a four channel detector in each even-numbered slot. All size 3 (G) cabinets shall incorporate an 8 channel detector rack, configuration #1, as per NEMA TS2-5.3.4. The detector lead-ins, loop panel and detector rack shall be labeled according to the loop tagging procedure.*

#### **7. Cabinet Power Supply Requirements**

*The TS2 cabinet power supply shall adhere to the guidelines of NEMA TS2-5.3.5. The power supply shall be encased on all sides so that no circuitry is exposed to the user.*

#### **(g) Cabinets**

### **1. Size 3 (G) Cabinet**

*The size 3 (G) cabinet shall be pedestal-mounted or pole-mounted. As per NEMA TS2-5.3, the TS2 Type-1 G cabinet, at minimum, shall house an 8- load switch bay (configuration 2) terminal and facilities panel and shall have one adjustable shelf located 12 in. (305 mm) below the top of the cabinet. The bottom of the cabinet shall be reinforced to ensure a secure pedestal mounting. The G cabinet shall have dimensions of 25 in. (635 mm) wide, 38 in. (965 mm) high, 18 in. (460 mm) deep with a tolerance of + 4 in. (100 mm) in any or all dimensions.*

*A cabinet slipfitter shall be used to attach the cabinet to the pedestal. The slipfitter shall fit a 4 1/2 in. (114 mm) outside diameter pipe and shall have a minimum of three set screws equally spaced around the slipfitter.*

*A vent of adequate size shall be provided. The size of the vent and the filter requirements shall be in accordance with the manufacturer's recommendations.*

### **2. Size 5 (M) Cabinet**

*As per NEMA TS2-5.3, The TS2 type-1 size 5 (M) cabinet, as a minimum, shall house at minimum an 8- load switch bay (configuration 2) terminal and facilities panel and shall have two adjustable shelves with the first shelf located 15 in. (380 mm) below the top of the cabinet and the second located 7 in. (180 mm) below the first shelf.*

*The M cabinet shall be ground-mounted on a concrete foundation at locations and dimensions as shown on the plans.*

*The M cabinet shall have dimensions of 30 in. (760 mm) wide, 48 in. (1220 mm) high, and 16 in. (410 mm) deep with a tolerance of  $\pm 2$  in. ( $\pm 50$  mm) in any or all dimensions.*

*Anchor bolts shall be steel in accordance with ASTM A 36 (ASTM A 36M). Diameter of the bolt shall be 1/2 in. (13 mm) or 5/8 in. (16 mm) and the minimum length shall be 15 in. (380 mm) plus a 3 in. (75 mm) right angle hook on the unthreaded end. The top 6 in. (150 mm) of the bolt shall be threaded with 13 NC threads on 1/2 in. (13 mm) bolts and 11 NC threads on 5/8 in. (16 mm) bolts. The hexagon nut, the flat washer, and the threaded end of the bolt shall be galvanized in accordance with ASTM A 153 or be mechanically galvanized and in accordance with the coating thickness, adherence, and quality requirements of ASTM A 153, class C.*

### **3. Size 6 (P-1) Cabinet**

*The Size 6 (P-1) cabinet shall be ground mounted on a concrete foundation at locations and dimensions as shown on the plans with anchor bolts in accordance with 922.02(g)2. As per NEMA TS2-5.3, The TS2 type 1 P cabinet, at minimum, shall house a 12 load switch bay (configuration 3) terminal and facilities panel and shall have two adjustable shelves with the first shelf located 20 in. (510 mm) below the top of the cabinet and the second located 7 in. (180 mm) below the first shelf.*

*The cabinet shall be 44 in. (1120 mm) wide, 52 in. (1320 mm) high, and 24 in. (610 mm) deep with a tolerance of  $\pm 3$  in. ( $\pm 75$  mm) in any or all dimensions. Maximum exterior dimensions shall be 47 in. (1195 mm) wide, 63 in. (1600 mm) high, and 34 in. (860 mm) deep.*

**922.03 Signal Head Components**

*The components shall be in accordance with the Institute of Transportation Engineers for Adjustable Face Vehicular Traffic Control Signal Heads. All new traffic signal and flasher installations that include new indications shall be fitted with LED (Light Emitting Diode) modules. All LED indications shall be selected from the Department's list of approved Traffic Signal Control Equipment.*

**(a) General**

*The signal faces shall be sectional in construction, requiring one section for each lens and furnished in the nominal size of 12 in. (305 mm). Each section of a face shall have a rectangular silhouette when viewed from the front or the rear.*

**(b) Housing, Door, and Visor**

*The top and bottom of each housing shall have an integral locking ring with 72 serrations to permit rotation of the signal housing in 5 degree increments. Hub openings in the top and bottom of the signal housing shall accommodate standard 1 1/2 in. (38 mm) bracket arms. The thickness of the hub at the top and bottom of the housing shall be a maximum of 1 in. (25 mm) and a minimum of 3/8 in. (10 mm). The 12 in. (305 mm) door shall have two simple locking devices. The door on the hinged side shall be attached with hinge pins. Each lens shall have the standard cap type visor. All screws, latching bolts, locking devices, and hinge pins shall be stainless steel.*

**(c) LED Traffic Signal Indicator**

*All LED indications shall be selected from the Department's list of approved Traffic Signal Control Equipment.*

*All LED indications shall have a permanent indelible sticker affixed to the back of the module indicating month and year of initial installation.  
lens.*

**(d) Wiring**

*The field wiring leads shall be terminated with screw spade lug type connectors. The LED module wiring leads shall be terminated with 1/4 inch female type connectors for ease of connection to the terminal block.*

**(e) Section Coupling**

*Any method to connect two or more sections together may be used, if the following requirements are met:*

- 1. Two or more sections, when jointed together, shall maintain structural integrity when loaded to Institute of Transportation Engineers Standards.*

2. *The opening between joined sections shall accommodate two 1/2 in. (13 mm) cables.*
3. *The maximum length of bolts used to connect sections together shall be 4 in. (100 mm).*

*Nuts, bolts, and lock washers shall be galvanized in accordance with ASTM A 153 or be mechanically galvanized and be in accordance with the coating thickness, adherence, and quality requirements of ASTM A 153, class C.*

**(f) Terminal Block**

*The yellow section of the 3-section or 2-section signal head and each 1-section signal head shall be equipped with a 5 position terminal block for termination of field wiring. Each section shall have provisions for two 5 position terminal blocks. Each terminal screw shall have a 1/4 inch corresponding spade tab. The terminal block shall have a minimum spacing between screw connections of 1/2 in. (13 mm). The height of the insulating ridge between screw connections shall be a minimum of 19/32 in. (15 mm) from the base of the terminal blocks.*

**(g) Material Requirements**

**1. Polycarbonate Signal Head**

*The housing, door, and visor of the section shall be made of ultraviolet and heat stabilized polycarbonate. The color shall be permanently molded into the components except the inside surface of the visor shall be painted non-reflecting flat black. The color shall be yellow in accordance with 909.02(b)4.*

**2. Die-Cast Aluminum Signal Head**

*The housing, door, and visor of the section shall be made of a die-cast, corrosion resistant, copper free, non-ferrous metal which shall be in accordance with ASTM B 85. All surfaces of the housing, doors, and visor shall receive a prime coat of zinc chromate paint in accordance with 909.02(a) or shall be anodized with a chromate aluminum oxide coating process. The finish shall be highway yellow enamel, two coats, oven baked and in accordance with 909.02(b) except the inside surface of the visor shall be painted non-reflecting flat black.*

**(h) Certification**

*A material certification shall accompany each order certifying that a signal head from a normal production run within the past 12 months, passed the Institute of Transportation Engineers criteria for breaking strength and deflection. Deflection testing is not required in the certification for polycarbonate signal heads.*

**922.04 Pedestrian Signal Head**

*A pedestrian signal shall be one section and rectangular in shape. The dimensions of each side may vary from 18 to 19 in. (460 to 485 mm), including the visor and the hinges. The signal shall contain two figures with two different colored messages. The left figure shall transmit an upraised hand symbol message, and the right figure shall*

*transmit a walking person symbol message. All new installations including new pedestrian indications shall use Light Emitting Diodes. All pedestrian LED indications shall be selected from the Department's list of approved Traffic Signal Control Equipment. The pedestrian signal shall be in accordance with the standard of the Institute of Transportation Engineers for Pedestrian Traffic Control Signal Indications.*

**(a) Housing, Door, and Visor**

*The housing shall be equipped with mounting device hardware, such as clamshell, and round openings at top and bottom for mounting with brackets made of iron pipe standard, to fit the 1 1/2 in. (38 mm) pipe. The openings shall have a common vertical centerline through the housing to permit 360° rotation after it is mounted. The openings shall have a serrated ring which permits locking of the housing in 5° increments throughout the entire 360° of rotation. The brackets or the clamshell shall serve as the electrical conduit for the pedestrian signal. The housing shall be made of die-cast, corrosion resistant, copper free, non-ferrous metal which shall be in accordance with ASTM B 85.*

*The door on the front of the housing may be hinged from any side. The door shall be gasketed to maintain a weather-tight enclosure when secured to the housing. The door and the visor shall be made of the same material as the housing or of polycarbonate. All materials shall be clean, smooth, and free from flaws, cracks, blowholes, or other imperfections.*

*Each signal shall be provided with a visor.*

*The exterior of the housing shall be Federal yellow in color. The polycarbonate components shall be black in color, impregnated throughout. The metal components shall be painted with enamel in accordance with 909.02(c).*

**(b) Optical Unit**

*The optical unit shall consist of the redirecting lens, the lamp, a reflector, a filter, and other optical elements necessary for proper operation. The optical unit shall be designed to minimize the return of the outside light rays entering the unit, such as sun phantom. The optical unit shall be designed and assembled so that no light escapes from one message unit to the other.*

*The values of luminous transmission for pedestrian signal lenses and the limits of chromaticity for pedestrian signal colors shall be in accordance with the standard of the Institute of Transportation Engineers for Pedestrian Traffic Control Signal Indications.*

**(c) Lens**

*The lens shall be made of plastic. The lens shall be in accordance with ASTM D 788, grade 8; ASTM D 702, grade 3; or ASTM D 3935. However, the index of refraction shall be between 1.48 and 1.53. As required by the type of pedestrian signal, the lens shall be uniformly clear or colored throughout the body of the material, true to size and form, and free from any streaks, wrinkles, chips, or bubbles.*

**(d) Message**

*When illuminated, the upraised hand symbol shall be in Portland Orange on the left surface of the signal indications. The walking person symbol shall appear in white on the right surface of the signal indication when illuminated. The upraised hand and walking person symbols shall each be a minimum of 11 in. (280 mm) in height. The width of the upraised hand symbol shall be a minimum of 7 in. (178 mm). The width of the walking person symbol shall be a minimum of 6 in. (150 mm). Message configuration, color, and size shall be in accordance with the standard of the Institute of Traffic Engineers for Pedestrian Traffic Control Signal Indications.*

*Each pedestrian signal shall be completely wired internally, and ready for connection of the field wiring. A suitable terminal block for connection of the internal wiring and the incoming field wires to the pedestrian signal head shall be provided in the signal housing.*

*The light source shall be designed and constructed so that if an electrical or mechanical failure occurs, the upraised hand and walking person symbols shall also remain dark.*

**922.05 Signal Bulbs**

*All new traffic signal and flasher installations that include new indications shall be fitted with LEDs in accordance with 922.03. The minimum design requirements for replacement light bulbs to be used in a traffic signal face shall be in accordance with the Institute of Transportation Engineers standard for traffic signal bulbs and as follows:*

**(a) Incandescent Bulbs**

1. *Bulbs shall be 67 watt, 116 watt, or 150 watt for different kinds of indications, as specified below.*

<i>INDICATION</i>	<i>WATTAGE</i>
<i>9 in. (230 mm) pedestrian</i>	<i>67</i>
<i>12 in. (305 mm) and 18 in. (455 mm) pedestrian</i>	<i>116</i>
<i>8 in. (200 mm) red, yellow and green</i>	<i>67</i>
<i>12 in. (305 mm) red</i>	<i>150</i>
<i>12 in. (305 mm) yellow and green</i>	<i>116</i>
<i>12 in. (305 mm) yellow and green arrows</i>	<i>150</i>
<i>optically programmed heads</i>	<i>150</i>

*All bulbs shall have medium size, brass bases.*

2. *Bulbs shall be designed for use in a horizontal position or a base-down position.*
3. *The light center length shall be 2 7/16 in. (62 mm) for 67 watt bulbs and 3 in. (75 mm) for 116 watt and 150 watt bulbs.*



4. *The filament shall be C9 design with a minimum of seven supports. The 2 voltage supply leads may be counted as two of the seven supports.*
5. *The maximum, overall bulb length for 67 watt and 116 watt bulbs shall be 4 3/8 in. (110 mm) and for 150 watt bulbs shall be 4 3/4 in. (120 mm).*
6. *All bulbs shall be clear and shall be 130 volt.*
7. *The 150 watt bulb shall be P25 or A21 size and shape.*
8. *The 67 watt and 116 watt bulbs shall be A21 size and shape.*
9. *All bulbs shall have 6000 h minimum burning life.*

#### **922.06 Disconnect Hanger Junction Box**

*Traffic signal disconnect hanger junction boxes shall consist of a span hanger, a balance adjuster, a disconnect hanger clevis, and a housing with a hinged door with a positive latching device. The span hanger, balance adjuster, and all related hardware shall be galvanized in accordance with ASTM A 153 or be mechanically galvanized and conform to the coating thickness, adherence, and quality requirements of ASTM A 153. The housing shall be made of a die-cast, corrosion resistant, copper free, non-ferrous metal which shall be in accordance with ASTM B 85. The balance adjuster fitting shall be made of ferrous or non-ferrous metal. When made of ferrous metal it shall be galvanized in accordance with the requirements for the components and related hardware as set out above.*

*The disconnect hanger shall be designed so that the maximum allowable space or play between the span hanger and the eye-bolt of the balance adjuster and between the balance adjuster and the disconnect hanger clevis, at points where they are attached to each other by rivet pins or hex head bolts and nuts with lock washers, shall be 0.062 in. (1.6 mm). The span hanger bolt where the eye-bolt or the balance adjuster is attached shall be 5/8 in. (16 mm) diameter.*

*When serrated locking rings are not integrally cast in the components, the component and locking ring shall be designed so that when the locking ring is placed flush against the component, the component and locking ring shall not rotate or slide when torque is applied. The serrated components shall have 72 serrations to permit rotation of the disconnect hanger clevis, hub plate, or signal head in 5° increments. There shall be no thread in contact with a wearing surface. Locking rings shall have a minimum thickness of 3/16 in. (4.8 mm) and a maximum thickness of 1/4 in. (6.4 mm) from the base of the ring to the serration peaks. The inside diameter shall be 2 in. (50 mm) and the outside diameter shall be 2 7/8 in. (73 mm).*

*The terminal block shall have an 18 point terminal block permanently engraved or etched with sequential numbers indicating the circuits. The terminal block shall not have a method of connection which allows a screw point to damage wires when the wires are securely connected. Each point of connection shall accommodate a minimum of four No. 14 gauge (2.0 mm) wires.*

*The disconnect hanger shall have two side entrance holes on opposite sides capable of receiving a 1 1/2 in. (38 mm) plastic or rubber insert to reduce water infiltration. It shall be capable of supporting signal faces in the ambient temperature range of -35 to 120°F (-35 to 49°C) without failure.*

*The balance adjuster shall have hex head bolts, lock washers, and nuts for securing the main body of the balance adjuster firmly onto and around the eye-bolt to prevent any twisting or turning of the head suspended below it. The span hanger shall have two J-bolts, lock washers, and hex head nuts adequate in size to securely fasten the hanger to a messenger cable up to 1/2 in. (13 mm) in diameter.*

*A type C certification in accordance with 916 shall be provided.*

#### **922.07 Free Swinging Signal Support Assemblies**

*The maximum allowable space or play between the hanger assembly and the eyebolt of the balance adjuster and between the balance adjuster and the weatherhead clevis, at points where they are attached to each other by rivet pins or hex head bolts and nuts with lock washers, shall be 0.062 in. (1.6 mm). No bushings or shims will be allowed in this assembly.*

*The balance adjuster shall consist of a hex head bolt, a lock washer, and nuts for securing the main body of the balance adjuster onto and around the threads of the eye-bolt to prevent any twisting or turning of the adjuster.*

*The span hanger, balance adjuster, weatherhead, and all related hardware shall be made of a non-corrosive metal or shall be galvanized in accordance with ASTM A 153 or be mechanically galvanized and conform to the coating thickness, adherence, and quality requirements of ASTM A 153. The weatherhead shall have a minimum of 2 1/2 in. (64 mm) of exposed threads. The weatherhead shall have two set screws to fasten the nipple to the weatherhead. If the weatherhead and threaded pipe has a slipin connection, the locking device shall be a double nut assembly. If the weatherhead and threaded pipe has a screw-in connection, the locking device shall be a double set screw assembly.*

*The span hanger shall be furnished with two each of J-bolts, lock washers, and hex head nuts. The J-bolt shall be a minimum of 1/4 in. (6.4 mm) diameter and shall have sufficient threads to be able to secure the hanger to a 1/4 in. (6.4 mm) or a 1/2 in. (13 mm) messenger cable. The multiple pipe arm assembly shall consist of a span hanger assembly, a balance adjuster, a signal weatherhead, a 2, 3, or 4 way pipe arm, 1 1/2 in. (38 mm) pipe, a lower arm assembly, and all related hardware necessary for a complete assembly.*

The 2, 3, or 4 way pipe arms shall have a minimum of 2 in. (50 mm) of exposed thread. Each arm of the pipe arm shall be furnished with two 72 serration locking rings. One locking ring shall have a 3 in. (75 mm) outside diameter and one locking ring shall have a 2 3/8 in. (60 mm) outside diameter.

<i>ASSEMBLY</i>	<i>MAXIMUM ALLOWABLE WEIGHT</i>
<i>2 Way</i>	<i>19 lbs (8.6 kg)</i>
<i>3 Way</i>	<i>25 lbs (11.3 kg)</i>
<i>4 Way</i>	<i>28 lbs (12.7 kg)</i>

**922.08 Mid-Mast Arm Mount Signal Bracket**

The bracket shall permit the following 4 adjustments:

- (a) rotational adjustment about bracket axis;
- (b) vertical adjustment;
- (c) rotational adjustment about mast arm; and
- (d) rotational adjustment right and left from vertical plane

The bracket shall be fastened to the supporting arm or structure with stainless steel bands. The bracket shall adjust to fit all sizes of round, octagonal, elliptical, or other shape structure without special tools or equipment.

The bracket shall attach to the signal by clamping the signal head both top and bottom and shall be designed to accommodate the specified signal configuration. Each bracket shall be complete with all necessary hardware to attach the traffic signal to the bracket and the bracket to the support.

All electrical wiring shall be concealed within the bracket, except that which runs from the bracket to the mast arm.

Upper and lower arms shall be cast from aluminum in accordance with ASTM B 26 (ASTM B 26M), alloy 713.0-T5 or 356.0-T6. The vertical support tube shall be extruded from aluminum in accordance with to ASTM B 241 (ASTM B 241M), alloy 6063-T6 or 6061-T6, and the strapping to attach the bracket to the arm shall be stainless steel. All steel or malleable iron parts shall be galvanized in accordance with ASTM A 153 or be mechanically galvanized and conform to the coating thickness, adherence, and quality requirements of ASTM A 153, class C.

**922.09 Pedestal Poles and Cast Aluminum Pedestal Bases**

The pedestal base used for mounting pedestrian signal heads or control cabinets shall be in accordance with 922.09(a). The length of the pedestal pole shall be as shown in the plans.

**(a) Cast Aluminum Pedestal Base**

*A pedestal mounted G cabinet shall have a cast aluminum pedestal base. The cabinet and pedestal base shall be ground mounted on a concrete type A foundation at locations and dimensions as shown on the plans.*

*The cast aluminum base shall be made of aluminum in accordance with ASTM B 179, alloy ANSI 319.1 or 319.2, or in accordance with ASTM B 26 (ASTM B 26M), alloy ANSI 356.0-T6. The square base shall include an access door and anchor bolts with nuts and washers. The base shall be 13 3/8 in. (8630 mm) square and 15 in. (380 mm) in height  $\pm$  1/4 in. ( $\pm$  6 mm). The weight shall be 22 lbs  $\pm$  5% (10.0 kg  $\pm$  2.2 kg).*

*The base shall be designed to support a 150 lbs (68 kg) axial load and 11 ft<sup>2</sup> (1.0 m<sup>2</sup>) of signal head area rigidly mounted. For design purposes, the distance from the bottom of the base to the center of the signal head area is 18 ft (5.5 m). In addition to the dead load, the base shall be designed to withstand wind and ice loads on the specified signal head area and on all surfaces of the support, in accordance with the AASHTO Standard Specification for Structural Supports for Highway Signs, Luminaires and Traffic Signals. Wind speeds used for design shall be based on a 10 year mean recurrence interval and a wind drag coefficient of 1.2 or as shown in the plans. The base shall contain an access door, which is 8 in. by 8 1/4 in.  $\pm$  1/4 in. (200 mm by 210 mm  $\pm$  6 mm) with a stainless steel hex head bolt for attaching the door.*

*The base shall be attached to a foundation by four anchor bolts, with an anchor bolt circle of 12 3/4 in. (324 mm). Slotted lugs shall be integrally cast into the four corners of the base for attachment of the anchor bolts. The anchor bolts shall be steel in accordance to ASTM A 36 (ASTM A 36M). The diameter of the anchor bolt shall be 3/4 in. (19 mm) with a minimum length of 18 in.  $\pm$  1/2 in. (460 mm  $\pm$  13 mm), plus 2 1/2 to 3 in. (64 to 75 mm) right angle hook on the unthreaded end. The top 4 in. (100 mm) of the bolt shall be threaded with 10 NC threads. The threads, plus 3 in. (75 mm), shall be coated after fabrication in accordance with ASTM A 153 or be mechanically galvanized and in accordance with the coating thickness, adherence, and quality requirements of ASTM A 153, class C. Each anchor bolt shall be provided with two hex head nuts in accordance with ASTM A 325 (ASTM A 325M) and three washers. Two of the washers shall have a minimum 2 in. (50 mm) and maximum 2 1/8 in. (54 mm) outside diameter and be in accordance to ANSI B 27, Type B regular series and one shall be a nominal 3/4 in. (19 mm) series W washer, in accordance with ASTM F 436 (ASTM F 436M).*

*The cast aluminum pedestal base shall be in accordance with the dimensions and requirements shown in the plans. The casting shall be true to pattern in form and dimensions; free from pouring faults, sponginess, cracks, and blowholes; and free from other defects in positions affecting the strength and value of the intended use for the casting. The base shall not have sharp unfilleted angles or corners. The surface shall have a workmanlike finish.*

*The door and bolt for the door shall be interchangeable on cast bases from the same manufacturer.*

**(b) Pedestal Pole**

*The top of the base shall accommodate a pole having a 4 1/2 in. (114 mm) outside diameter. The threads inside the top of the base shall be 4 in. (100 mm) national standard pipe threads. The pole shall be either a steel pedestal pole or an aluminum pedestal pole.*

*A steel pedestal pole shall be a seamless schedule 40 carbon steel pipe in accordance with ASTM A 53, grade B. The pole shall have an outside diameter of 4 1/2 in. (114 mm). The pole shall weigh approximately 10.8 lbs/ft (16 kg/m). The length of the pole shall be as shown on the plans. The pole shall have full depth national standard pipe threads on one end of the pole. The length of threads shall be 2 1/2 in. (64 mm). The pole shall be galvanized, after threading, in accordance with ASTM A 123. The threads shall be cleaned of all excess galvanizing and protected by a suitable shield.*

*An aluminum pedestal pole shall be in accordance with ASTM B 241 (ASTM B 241M) for seamless aluminum alloy, schedule 40, 6061-T6. The outside diameter of the pole shall be 4 1/2 in. (114 mm). The length of the pole shall be as shown on the plans. The pole shall weigh approximately 3.7 lbs/ft (5.5 kg/m). The pole shall have full depth national standard pipe threads on one end of the pole. The length of threads shall be 2 1/2 in. (64 mm) and protected by a suitable shield. The pole shall have a spun finish.*

**(c) Pole Cap**

*A pole cap shall be supplied for the top of the pole if the pole is used for the mounting of pedestrian signal faces or side mounted signal control cabinets. The pole cap shall be either a cast pole cap of aluminum or a pole cap of spun aluminum.*

*A cast pole cap shall be made of aluminum, in accordance with ASTM B 179, alloy ANSI 319.1 or 319.2. The cap shall fit freely on the 4 1/2 in. (114 mm) outside diameter pole. A set screw using a 3/4 in. (19 mm) No. 12 hex head machine screw shall be supplied to hold the cap on the pole. A standard foundry draft will be allowed on the casting.*

*A pole cap made from spun aluminum shall be in accordance with ASTM B 209 (ASTM B 209M), alloy 1100-0. The cap shall fit tightly when placed on the end of the pole.*

**922.10 Signal Supports****(a) Steel Strain Pole**

*The steel strain pole shall be an anchor base type pole and shall include a handhole and a pole top or cap. The poles shall be furnished in lengths specified.*

*The pole shall have a reinforced handhole within 18 in. (460 mm) of the base. The handhole minimum size shall be 5 in. (130 mm) by 8 in. (200 mm) with a cover and latching device. The pole shall have a top or cap with a set screw that can be removed with small hand tools.*

*The pole material shall be in accordance with ASTM A 595 or A 572 with a minimum yield strength of 50,000 psi (345 kPa). The pole shall be galvanized after fabrication in accordance with ASTM A 123.*

*All hardware, handhole cover and latching device, band type steel polebands, steel bolts, nuts, and washers shall be galvanized in accordance with ASTM A 153 or be mechanically galvanized and conform to the coating thickness, adherence, and quality requirements of ASTM A 153, class C. All nuts and bolts, except anchor bolts, shall be in accordance with ASTM A 307. If a cast pole top or cap is used it shall be in accordance with ASTM A 126 and shall be galvanized with a minimum coating of 2 oz/ft<sup>2</sup> (0.610 kg/m<sup>2</sup>).*

*The polebands shall fit the pole as planned. The wire rope shall not be in contact with any 90 degree edges or with any threads on the band. The pole band material shall be in accordance with ASTM A 572, grade 50 (ASTM A 572M, grade 345); ASTM A 606; or ASTM A 36 (ASTM A 36M) with minimum yield of 50,000 psi (345 kPa). The minimum width of the bands shall be 3 in. (75 mm) and the bands shall be capable of supporting the pole design load. Each half of the band shall be stamped with the corresponding size number.*

*All welding shall be in accordance with 711.32. Welds shall generate the full strength of the shaft. Only longitudinal continuous welding shall be permitted on the pole shaft. Contacting joint surfaces shall be thoroughly cleaned before fabrication then completely sealed by means of welding. Shop drawings shall be submitted in accordance with 922.10(c)4j.*

*The pipe coupling for the weatherhead and base plate shall be installed prior to galvanizing. The threads shall be cleaned of all excess galvanizing. An internal J-hook shall be installed near the top of the pole for wire support.*

*The steel strain pole shall be capable of supporting a 8000 lb (35.6 kN) load applied horizontally 18 in. (460 mm) below the top of the pole with a maximum allowable deflection of 0.16 in. (4.1 mm) per 100 lb (445 N) of load. The pole shall be tapered 0.14 in. per foot (12 mm per meter) of length.*

*A one piece base plate shall be secured to the base of the pole and shall develop the full strength of the pole. The base plate material shall be in accordance with ASTM A 36 (ASTM A 36M), A 572 (A 572M), or A 588 (A 588M). The base plate shall have four holes of adequate size to accommodate 2 1/4 in. (57 mm) anchor bolts. The bolt circle shall have a 22 in. (560 mm) diameter and bolt square of 15 1/2 in. (394 mm).*

*Four high strength steel anchor bolts, 2 1/4 in. (57 mm) diameter and 96 in. (2,400 mm) long, including the hook, shall be furnished with each pole. Each bolt shall have two hex nuts and two washers in accordance with ASTM A 307, grade A. The anchor bolt material shall be in accordance with ASTM A 576 or ASTM A 675 (ASTM A 675 M) with a minimum yield strength of 55,000 psi (379 kPa) or ASTM A 36 (ASTM A 36M), special quality, modified to 55,000 psi (379 kPa) or approved equal. The*

*threaded end of the anchor bolt shall have 12 in. (305 mm) of 4 1/2 NC threads and shall be galvanized the length of the threads, plus 3 in. (75 mm). The threaded end shall be coated after fabrication in accordance with ASTM A 153 or be mechanically galvanized and be in accordance with the coating thickness, adherence, and quality requirements of ASTM A 153, class C. The unthreaded end of the anchor bolt shall have a standard L bend for a distance of 9 in. (230 mm) from the centerline of the anchor bolt to the end of the L. In lieu of the standard bend a steel plate 4 1/2 in.<sup>2</sup> (2900 mm<sup>2</sup>) and 1 1/4 in. (32 mm) thick may be welded to the embedded end of the anchor bolt.*

**(b) Wood Strain Pole**

*Wood strain poles shall be made from southern yellow pine and shall be in accordance with the current ANSI Specifications and Dimensions for Wood Poles No. 05.1. They shall be of the length and class specified.*

*All poles shall be full length pressure treated by the full cell process in accordance with current specifications as set forth in the AWWA Standards C1 and C4, using preservative as outlined in standard P5 and set forth in 911.02(h).*

*Treatment, handling, and storage methods shall be in accordance with the current AWWA Standards.*

**(c) Signal Cantilever Structures**

**1. General**

*A signal cantilever structure shall be designed in accordance with AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, except where modified herein.*

*Where the manufacturer has wind tunnel test data, they may use drag coefficients based on actual tests. Otherwise, the manufacturer shall use the drag coefficients in Table 1.2.5c.*

**2. Signal Support**

*The traffic signal pole and mast arm shall be designed to support the loads in accordance with the plans in a 80 mph (129 km/h) wind with gusts to 104 mph (167 km/h). Loading shall assume die-cast aluminum heads.*

*The traffic signal pole and mast arm shall be designed to provide a 17 ft (5.3 m) minimum clearance at all signals. Clearance shall be the vertical distance from the lowest point of the signal combination to a horizontal plane 3 in. (75 mm) below the base of the mast arm pole or from the lowest point of the signal combination to the pavement surface below the signal combination, whichever governs. Adjustment of the clearance at the installation site shall be by raising or lowering the mast arm along the upper length of the pole. After the pole is anchored to the foundation, the pole design shall permit the mast arm to be rotated 90 degrees in either direction and secured. The cable inlet shall not be obstructed when a field rotation or vertical adjustment of the mast arm is made.*

*There shall be no threads in the wearing surface plane at the point of connection between the clevis clamp and the signal face assembly. The clevis clamp shall have a 11/16 in. (18 mm) diameter bolt hole to receive the signal face assembly.*

### **3. Combination Signal-Luminaire Support**

*All requirements for a signal support shall apply to a combination signal-luminaire support.*

*The minimum design load of the luminaire shall be 53 lbs (24 kg) with a projected surface area subject to wind loading of 2.4 ft<sup>2</sup> (0.223 m<sup>2</sup>). If heavier or larger luminaires are used, their actual values shall be used. The required luminaire mounting height shall be in accordance with the plans. Mounting height shall be defined as the vertical distance from the lowest point of the luminaire to the horizontal plane that passes through the base of the pole.*

*The maximum percentage of allowable stress shall be 80% of the AASHTO Standard Specifications for Group I loads. Vibration dampers shall be furnished as recommended by the manufacturer.*

### **4. Pole Requirements**

#### **a. General**

*The pole shall be a round or multi-sided tapered tube, except the upper 4 to 6 ft (1.2 to 1.8 m) of a signal support pole may be non-tapered. The signal support pole shall have a reinforced handhole 4 in. (100 mm) by 6 in. (150 mm) minimum complete with cover and latching device located 18 in. (460 mm) above the base. A 1/2 in. (13 mm) 13 NC threaded grounding nut or approved equivalent shall be provided and be accessible through the handhole. The pole cap shall be secured in place with setscrews. The combination signal-luminaire pole shall have a reinforced handhole 4 in. (100 mm) by 8 in. (200 mm) minimum complete with cover and latching device, located 18 in. (460 mm) above the base. The combination signal-luminaire pole shall be provided with a removable pole cap and integral wire support hook for the luminaire electrical cable. The cable shall be attached to the hook by a service drop clamp. A wiring hole with a 1 in. (25 mm) to 1 1/2 in. (38 mm) inside diameter grommet shall be provided where the luminaire mast arm attaches to the pole.*

#### **b. Deflection**

*The maximum allowable horizontal deflection of the pole under maximum loading conditions shall not exceed a deflection angle of 1° 10' from the vertical axis of the pole for any 1 ft (305 mm) section of the pole along the entire length of the pole.*

#### **c. Materials**

*The signal pole and the combination signal-luminaire pole shall be steel or aluminum. Steel poles shall be in accordance with ASTM A 595 or A 572 with a minimum yield strength of 50,000 lbs (345 kPa) and shall be galvanized in accordance with ASTM A 123. Aluminum poles shall be in accordance with ASTM B 221 (ASTM B 221M) alloy 6063-T6 or 6005-T5, or ASTM B 241 (ASTM B 241M), alloy 6063-T6.*



**d. Hardware**

All hardware for steel poles except bolts for the mast arm clamps and anchor bolts shall be in accordance with ASTM A 307 and shall be galvanized in accordance with ASTM A 153 or be mechanically galvanized and conform to coating thickness, adherence, and quality requirements of ASTM A 153, class C. A cast pole cap shall be in accordance with ASTM A 126 and shall be galvanized with a minimum coating of 2 oz/ft<sup>2</sup> (0.610 kg/m<sup>2</sup>).

All hardware for aluminum poles shall be stainless steel in accordance with ASTM A 276, type 304 or type 305.

**e. Anchor Base**

A one piece anchor base shall be secured to the lower end of the pole and shall develop the full strength of the pole. The base shall be provided with 4 holes of adequate size to accommodate 1 1/4 in. (32 mm) anchor bolts equally spaced on a bolt circle of 15 in. (380 mm) diameter and shall have four tapped holes for attaching the bolt covers. Four removable bolt covers shall be provided with each base and each cover shall attach to the upright portion of the body of the base by means of one hex head cap screw. The steel for the anchor base shall be in accordance with ASTM A 36 (ASTM A 36M), A 572 (A 572 M), or A 588 (ASTM A 588 M). Aluminum for the anchor base shall be in accordance with ASTM B 26, alloy 356.0-T6 or 356.0-T7 or ASTM B 209, alloy 6061-T6.

**f. Arm Requirements**

**(1) Signal Cantilever Arm**

A signal cantilever arm shall be attached to the pole by circular clamps. One-half of the clamp shall be welded to the cantilever arm. The single member arm or the upper tapered member of the truss style arm shall have a cable inlet adjacent to the clamp complete with grommet. The cable inlet shall be a 1 3/4 in. (44 mm) diameter hole with a 1 1/2 in. (38 mm) inside diameter rubber grommet. The 20, 25, and 30 ft (6.1, 7.6 and 9.2 m) cantilever arms shall have one intermediate cable inlet with grommet located 12 ft (3.7 m) from the free end of the arm. The 35 and 40 ft (10.7 and 12.2 m) cantilever arm shall have two intermediate cable inlets with grommets located 12 ft (3.6 m) and 24 ft (7.3 m) respectively from the free end of the arm. The intermediate cable inlet shall be 1 in. (25 mm) diameter hole with 3/4 in. (19 mm) inside diameter rubber grommet.

The maximum rise of the single member arm shall be 1/2 in. (13 mm) per 1 ft (305 mm) of arm after loading. The maximum rise of the truss style arm shall be as set out in the table. The rise shall be measured vertically from the centerline of the free end of the truss to a plane through the centerline of the upper arm bracket after loading.

Mast Arm Length ft (m)	Total Rise ft - in. (m)	Tolerance in. (mm)
12 – 20 (3.7 - 6.1)	4-0 (1.2)	±1 (±25)
25 (7.6)	4-3 (1.3)	±1 (±25)
30 – 40 (9.2 - 12.2)	4-7 (1.4)	±1 (±25)

*The end signals on the truss style arms shall be suspended and the intermediate signals shall be rigidly attached. All signals on the single member arms shall be rigidly attached as shown on the plans. The cantilever arms shall be used as an enclosed raceway for wiring and shall be free of burrs and rough edges.*

*Both parts of the clamp for the single member arms shall be stamped with the arm length prior to galvanizing.*

**(2) Luminaire Mast Arm for Combination Support**

*The luminaire mast arm shall be in accordance with 922.01(a)1.*

**(3) Materials**

*The signal cantilever arm shall be of the same material as the pole. The luminaire mast arm shall be of the same material as the pole except that a truss type arm shall be in accordance with 922.01(a). Bolts for the mast arm clamp shall be stainless steel in accordance with ASTM A 276, type 304 or 305.*

**g. Anchor Bolts**

*Four steel anchor bolts, each fitted with two hex nuts and two flat washers, shall be furnished with each pole. The anchor bolt shall be 1 1/4 in. (32 mm) in diameter with a minimum of 10 in. (254 mm) of 7 NC threads on the upper end. The threads, nuts, and washers shall be galvanized in accordance with ASTM A 153 or be mechanically galvanized and conform to the coating thickness, adherence, and quality requirements of ASTM A 153, class C. The anchor bolt shall be 48 in. (1220 mm) long with a 4 in. (100 mm) right angle bend on the lower end or a square steel washer, 6 in. by 6 in. by 1/2 in. (150 mm by 150 mm by 13 mm), with a hex nut welded onto the lower end. The steel for the bolt shall be in accordance with ASTM A 576 or ASTM A 675 (ASTM A 675M), with a minimum yield strength of 55,000 psi (379 kPa), or ASTM A 36 (ASTM A 36M), special quality, modified to 55,000 psi (379 kPa) or approved equal.*

**h. Finish**

*All steel material shall be fully galvanized. Galvanizing shall take place after all welding is accomplished. Aluminum poles shall be provided with a satin finish accomplished by mechanical rotary grinding and aluminum mast arms shall be provided with a satin etched finish.*

**i. Certification**

*Unless otherwise specified, all materials covered herein shall be covered by a type C certification in accordance with 916.*

**j. Shop Drawings**

*Five sets of shop drawings and a set of design calculations shall be submitted to the Design Division for approval. A copy of the transmittal letter shall be sent to the Engineer. The approved drawings will be distributed by the Design Division.*

**k. Downguys, Anchors, Rods, and Guards**

Pole anchors shall be 8 way expanding with a minimum area of 135 in.<sup>2</sup> (87 100 mm<sup>2</sup>) when expanded or a 10 in. (250 mm) diameter screw anchor. They shall have a minimum holding strength of 10,000 lb (44.5 kN). They shall be painted and in accordance with ASTM A 569 (ASTM A 569M). Anchor rods for expanded anchors shall be 3/4 in. (19 mm) diameter steel and for screw anchors shall be 1 1/4 in. (32 mm) diameter steel, 8 ft (2.4 m) long, in accordance with ASTM A 659 (ASTM A 659M), and be galvanized in accordance with ASTM A 153.

Guy guards shall be made of 18 gauge galvanized steel, polyethylene, polyvinylchloride, or melamine phenolic, and shall be 7 ft (2.1 m) long. The steel guy guard shall have a tight gripping, non-scarring hook for quick attachment to the guy wire. The bottom shall have a clamp that fits over the anchor rod and securely grips by tightening the bolt. Steel guy guards shall be in accordance with ASTM A 659 (ASTM A 659M). The nonmetallic guy guard shall be a helical pigtail which shall resist upward movement, a lock strap to secure the lower end, and a guy guard sleeve. Non-metallic guy guards shall be gray or yellow.

**l. Messenger Cable**

Messenger cable shall be zinc-coated steel wire strand, contain seven wires, and have a nominal diameter of 3/8 in. (10 mm). The cable shall be in accordance with ASTM A 475, Siemens-Martin Grade.

**m. Span, Catenary, and Downguy Cable**

Span, catenary, and downguy cable, shall be aircraft cable for non-aircraft use, and shall be 3/8 in. (10 mm) nominal diameter, made of stainless steel wire, and consist of seven, 19 wire flexible steel strands. The 3/8 in. (10 mm) cable shall have a minimum breaking strength of 12,000 lb (53.4 kN). It shall be in accordance with Military Specifications MIL-W-83420D.

**n. Tether and Support Cable**

Tether and support cable shall be aircraft cable, for non-aircraft use, and shall be 3/16 in. (5 mm) nominal diameter, made of stainless steel wire, and consist of seven, 7-wire flexible steel strands. The 3/16 in. (5 mm) cable shall have a minimum breaking strength of 3700 lbs (16.5 kN). It shall be in accordance with Military Specifications MIL-83420D.

**o. Cable Hardware****(1) Messenger Hangers**

Messenger hangers shall be either a three bolt clamp or a 3/8 in. (10 mm) by 1 3/4 in. (44 mm) steel hanger with a 90 degree bend extending from the pole 3 3/4 in. (95 mm). The hanger shall have a curved groove and clamp capable of receiving a 5/16 in. to 1/2 in. (8 mm to 13 mm) cable.

*The messenger shall be clamped by two 1/2 in. (13 mm) high carbon steel bolts. The angle hanger shall be mounted with a 5/8 in. (16 mm) through bolt and a 1/2 in. (13 mm) lag screw. The three bolt clamp shall be mounted with a 5/8 in. (16 mm) through bolt. The angle hanger shall be in accordance with ASTM A 575. The bolts shall be in accordance with NEMA PH 23.*

**(2) Cable Ring**

*Cable rings shall be galvanized steel in accordance with IMSA 51-1.*

**(3) Clamps**

*Clamps shall be made of 3/8 in. (10 mm) steel and in accordance with ASTM A 575.*

*Two bolt clamps shall be a minimum of 3 3/4 in. (95 mm) long and 1 1/4 in. (32 mm) wide with two 1/2 in. (13 mm) bolts which shall clamp cable of 1/8 to 1/2 in. (3 to 13 mm) diameter.*

*Three bolt clamps shall be a minimum of 6 in. (150 mm) long and 1 5/8 in. (42 mm) wide with three 5/8 in. (16 mm) bolts which shall clamp cable of 5/16 to 1/2 in. (8 mm to 13 mm) diameter.*

*The bolt heads shall be large enough to provide maximum clamping area and shall have oval shoulders to prevent the bolts from turning while tightening. The bolts shall be in accordance with NEMA PH 23.*

**(4) Servi-Sleeves**

*Servi-sleeves shall be 1 1/4 to 2 1/4 in. (32 mm to 57 mm) in length and shall hold the size of the cable specified. The sleeves shall be in accordance with ASTM A 659 (ASTM A 659M).*

**(5) Straight Eye-Bolts**

*Straight eye-bolts shall be 19 mm (3/4 in.) diameter drop forged steel, a minimum of 14 in. (356 mm) long, and have 6 in. (150 mm) of thread. The steel washers shall be 2 1/4 in. (57 mm) by 2 1/4 in. (57 mm) by 3/16 in. (5 mm) in size with a 13/16 in. (21 mm) hole in the center. All parts shall be in accordance with ASTM A 575 and shall be galvanized in accordance with ASTM A 123.*

**(6) Hub-Eyes**

*Hub-eyes shall be made of drop forged steel and in accordance with ASTM A 575. They shall receive a 3/4 in. (19 mm) mounting bolt and have a full rounded thimble eye for protection of the guy cable.*

### **922.11 Signal Cable**

#### **(a) Hook-up Wire**

Signal hook-up wire shall be stranded one conductor wire, type THW 7 strand No. 14 AWG, with a thermoplastic sheath 3/64 in. (1.19 mm) thick and a 600 volt rating. Insulation shall be color coded, as required, and labeled with gauge, voltage rating, and insulation type.

#### **(b) Signal Control Cable**

Signal control cable shall be in accordance with IMSA 19-1 or 20-1 and shall be stranded No. 14 AWG wire.

#### **(c) Service Cable**

Traffic signal service cable shall be color coded, stranded copper No. 8 AWG wire, 3 conductor cable, type THWN.

### **922.12 Signal Interconnect**

#### **(a) Integral Messenger Interconnect Cable**

Integral aerial interconnect cable shall be figure "8" self-supporting type cable consisting of a messenger cable and 7 conductors No. 14 AWG signal cable in accordance with IMSA 20-3.

#### **(b) 6 Pair/19 Telemetry Cable**

6 pair telemetry cable shall contain six twisted pairs of 19 gauge conductors and shall be in accordance with IMSA 40-2 for underground application and IMSA 40-4, integral messenger, for aerial application.

#### **(c) Fiber Optic Interconnect Cable**

Fiber optic cable shall contain six stranded multimode, graded index, optic fibers with a minimum of one non-metallic central strength member. The cable shall be loose tube, all dielectric construction, suitable for outdoor use in conduit or on aerial supports. Each individual fiber shall be 62.5/125  $\mu\text{m}$  diameter, core/clad, and each fiber shall be individually encased in its own gel-filled color-coded buffer. The fiber optic cable shall be constructed with Kevlar braid and outer polyethylene jackets as a minimum. If an inner jacket is used it shall be PVC. Maximum attenuation of the cable shall be 4.0 dB/km nominal, measured at room temperature at 850 nm. The bandwidth shall not be less than 160 MHz/km, also at 850 nm. Each fiber shall be continuous with no factory splices except for joining standard length cables to form longer, continuous jacketed cable to fit installation requirements. The cable shall have standard nylon rip cords. Kevlar rip cords will not be accepted. The cable shall be in accordance with the generic requirements for optical fiber and optical fiber cable per Bellcore Technical Reference TR-TSY-000020.

*The exterior of the polyethylene outer cable jacket shall be stenciled so that every fifth meter on each reel is marked with a number. The fifth meter of each reel shall be marked with a 5, the tenth meter marked with a 10, and so on until the end of the reel. The stencil shall be applied to the outer jacket using permanent ink and shall be permanently engraved into the jacket to provide long lasting readability.*

***(d) Radio Interconnect Using Spread Spectrum Radio Modems***

*Spread spectrum radio modems for communications between local controllers and the system master controller shall be on the Department's list of approved Traffic Signal Control Equipment and shall be in accordance with ASTM E 2158, and as set out herein.*

*The spread spectrum radio modems shall provide all the needed features to communicate with NEMA TS-2 type 1 and type 2 traffic signal controllers in a coordinated closed loop system. The radio modems shall be software configurable to be either a master, repeater, repeater/slave, or slave radio. The radio modem shall require no user license from the FCC; operate in the 900 MHz range, and be of FHSS (frequency hopping spread spectrum) technology; support data rates from 1.2 kbps to 115.2 kbps asynchronous; have a receiver sensitivity of at least -110 dBm; have a minimum RF output level of 1 watt; have a minimum of 50 user-selectable hopping patterns and a minimum of 50 RF non-overlapping channels allowing multiple systems to operate in the same line-of-sight path; operate as a transparent RS-232, or RS422/RS485, or FSK 1200 Baud types of links for use in a point-to-multipoint system; have an external SMA female type or N-female RP-TNC female antenna connector; and be supplied with power supply for 120v AC operation. The modems shall be rack or shelf mounted in standard NEMA TS-2 type 1 or type 2 cabinets. The modems shall have an operation temperature of -40 to +176°F (-40 to 80°C), have a maximum current draw of 500 mA for the transmission of 1 watt of RF output power, while operating on 12v DC. Lighting and transient protection on all data lines and antenna connector, and AC/DC power distribution, shall be provided with the system.*

*The spread spectrum radio modems must include a Windows based, configuration software package, which will include a GUI, graphical user interface, allowing for ease of programming, through pre-written drivers for all Department approved traffic controllers and have the ability to automatically determine, and connect, at their radios baud, stop and parity settings. The configuration software must allow for signal level, RSSI, data integrity, message polling, and spectral analysis testing. The software must also permit all the radios within a system to be configured from a single location. All radio equipment and cables shall be delivered preconfigured and ready for field operation.*

*The manufacturer, or vendor, shall supply with each modem, the operational manual(s) containing procedures for all features incorporated in the modem.*

### **1. Transient Protection**

*Transient protection shall be installed between the radio modem and the field antenna. The transient protection shall be flange mounted in the cabinet and have an insertion loss or  $\leq 0.1$  dB, have an operating frequency in the 900 MHz range, allow throughput energy to be  $\leq 220 \mu\text{J}$  for 3 kA @ 8/20  $\mu\text{s}$  waveform, have throughput voltage  $\leq 144$  Vpk, and turn-on voltage shall be  $\pm 600$  volts. The unit impedance shall be 50  $\Omega$ .*

### **2. Antennas**

*The antenna for the radio modem at the system master/local controllers shall be capable of providing a transmission range adequate for communication with all radio modems or repeaters in the system and must be configured as a single omni, single-yagi, or dual-yagi (two single-yagi antennas on differing alignments) for each radio as described below.*

#### **a. Omni Antennas**

*All omni antennas shall be capable of producing between 6 dBd and 10 dBd (8.15 dBi and 12.15 dBi) of gain while operating in, and covering the entire 902-930 MHz frequency range. The Voltage Standing Wave Ratio (VSWR) of the omni antenna shall be 1.5: 1 or less when the antenna coax feed impedance is 50 ohms. Omni antennas shall be fabricated of fiberglass, brass, copper, and/or aluminum and shall be rated for wind velocities of at least 100 mph. The minimum length of the omni antenna shall be 60" and it shall be designed and fabricated with a fiberglass radome with a minimum diameter of 2 inches to prevent ice from collecting directly on the driven element. All omni antennas shall have a cableless N-female connector directly affixed and sealed to the antenna body. All hardware and fastenings devices shall be fabricated from stainless steel.*

#### **b. Yagi / Dual-Yagi Antennas**

*All yagi antennas shall be capable of producing between 10 dBd and 13 dBd (12.15 dBi and 15.15 dBi) of gain while operating in, and covering the entire 902-930 MHz frequency range. The Voltage Standing Wave Ratio (VSWR) of the omni antenna shall be 1.5: 1 or less when the antenna coax feed impedance is 50 ohms. The front to back ratio must be at least 20 dB for each yagi antenna. Yagi-directional antennas shall be fabricated of either anodized or powder coated 6061/T6 aluminum rod and seamless drawn pipe and shall be rated for wind velocities of at least 100 mph. All yagi antennas shall have a cableless N-female connector directly affixed and sealed to the antenna body. The yagi antenna shall be designed and fabricated so that polarization changes (vertical to horizontal) can be made on the antenna mount without adjusting the mast. Single yagis shall be connected by a low loss N-female "T" splitter/coupler and LMR-400 cable to form dual-yagi systems. All hardware and fastenings devices shall be fabricated from stainless steel.*

### **3. Antennas Cable and Hardware**

*The coaxial cable used as the transient protection to antenna lead shall have no greater than 3.8 dB loss per 100 ft of length and shall be LMR-400.*

*All LMR-400 connections are to be stripped, deburred, and crimped using the ST-400-EZ LMR-400 stripping tool, DBT-01 LMR-400 deburring tool, and a 0.429 in. hex crimp die for solderless LMR-400 connections respectively. All connections shall be completely sealed by heat shrinking double walled, adhesive lined shrink tubing for weather proofing and strain relief.*

*Cables shall be included to interface the radio equipment to the transient protection. The antenna mounting hardware shall securely attach the antenna to the strain pole/cantilever arm. The coaxial cable fitting on the antenna shall not support the weight of the coaxial cable run to the base of the strain pole/cantilever arm.*

#### **4. Data Cables**

*Cables shall be included to interface the radio equipment to the system master, co-located secondary controller, remote secondary controllers and any communication interface panels as needed. Cables shall include strain relief back shells designed to mate and lock with the telemetry connector on the system master and local controllers. All radio equipment and cables shall be delivered preconfigured and ready for field operation.*

*All miscellaneous equipment necessary to complete the installation shall be as specified by the radio modem manufacturer.*

#### **922.13 Detection Wire and Sealant**

##### **(a) Loop Detector Lead-in Cable**

*Runs 700 ft (213 m) and less of loop detector lead-in cable shall be in accordance with IMSA 50-2 and shall be stranded 2 conductor No. 16 AWG, 19 strands of No. 29 wire. Runs greater than 700 ft (213 m) shall use 14 AWG wire.*

*The nominal capacitance between conductors shall be 57 pF/ft (187 pF/m) and 98 pF/ft (322 pF/m) between one conductor and the other conductor connected to the shield.*

##### **(b) Roadway Loop Wire**

*Roadway loop wire shall be 14 AWG gauge IMSA 51-7 duct-loop wire with polyvinyl chloride or polyethylene outer jacket of 1/4 in. (6.3 mm) diameter.*

##### **(c) Sealant**

*Prior to installing roadway loop wire in the roadway saw cuts, the saw cuts shall be cleaned in accordance with the requirements for the joint sealant to be used. After proper cleaning and installation of the loop wire, the saw cut shall be sealed with a joint sealant material in accordance with 906.02(a)1 or 906.02(a)2. The joint sealant material to be used shall be compatible with the roadway materials. If polyethylene duct loop wire is used, only sealant in accordance with 906.02(a)1 shall be used. The joint sealant material shall be installed in accordance with the applicable sealant specification. However, the joint configuration shall not apply. A copy of the sealant manufacturer's written application instructions shall be submitted to the Engineer prior to any sealant*



operations. If the Contractor elects to use a sealant complying with 906.02(a)2, the sealant material shall be heated in a kettle or melter constructed as a double boiler with the space between the inner and outer shells filled with oil or other heat-transfer medium. This melter shall have a positive temperature control and a mechanical agitator. A backer rod shall be used for both cold applied sealants and hot poured sealants. The sealant material shall fill the saw cut as shown on the plans. All significant or objectionable surplus joint sealant on the pavement surfaces shall be promptly removed.

**922.14 Ground Wire**

The ground wire shall be copper wire No. 6, AWG soft-drawn, solid copper in accordance with ASTM B 3.

**922.15 Splicing Kit**

Splicing kits shall contain a two piece, transparent snap-together mold body and include an epoxy and sealing compound contained in a unipak. It shall be capable of insulating and splicing nonshielded cables rated up to 5 kilovolts and multi-conductor cables rated up to 600 volts.

**922.16 Ground Rod and Connections**

Ground rods shall be 1/2 in. (13 mm) in diameter by 8 ft (2.4 m) long with a machined point and chamfered top. They shall be made of steel with a molecularly bonded outer layer of electrolytically applied copper. A single electrode shall have a maximum resistance to ground of 25 ohms. Single electrodes that do not have resistance to ground of 25 ohm or less shall be augmented by additional electrodes, grids, or plates until resistance to ground of 25 ohms or less is achieved. Resistance shall be measured using a 3-point ground tester using the fall of potential method. Data, graphs, resistance in ohms, date of test, make and model of ground tester, and the individual's initials performing the test shall be recorded and submitted to the District Office. Resistance in ohms shall be tagged at the ground connection.

The finished rod shall be cold-drawn and shall have the following minimum physical properties:

<i>PHYSICAL PROPERTY</i>	<i>MINIMUM</i>
<i>Tensile strength</i>	<i>97,000 psi (668 MPa)</i>
<i>Yield strength, 0.2% offset</i>	<i>85,000 psi (58.61 MPa)</i>
<i>% of elongation</i>	<i>13 psi (90 kPa)</i>

The ground rod and wire connection shall be made by a thermo weld process or approved equal. The welding material shall cover and secure the conductor to the rod and shall be porous free.

An acceptable alternate shall be a ground grid connection properly sized and shall consist of a shear head bolt, a "C" shaped body, nest, and wedge. The connector components shall be fabricated from an aluminum-bronze alloy, silicone-bronze alloy, and copper.

**922.17 Castings for Handholes**

*The ring and cover for handholes shall be in accordance with 910.05(b).*

**922.18 Entrance Switch**

*The entrance switch shall be a double pole, 50 amp, 120 volt circuit breaker in a NEMA type 3R enclosure. The minimum dimensions of the enclosure shall be: 5 in. (127 mm) wide, 3 3/4 in. (95 mm) deep and 9 1/4 in. (235 mm) height. A 1 in. (25 mm) rain-tight detachable hub shall be supplied in the top of the enclosure. The enclosure shall have knockouts on the sides, bottom and back with diameters of 7/8 in. (22 mm) to 1 3/4 in. (44 mm). The enclosure shall contain the circuit breaker, an insulated solid bar for connection of AC Neutral, a separate lug for attachment of earthground, have provisions for a padlock, and shall be surface mounted.*

*The enclosure shall be made of galvanized steel with a rust inhibiting treatment and finished in the manufacturer's standard color of baked enamel.*

*All wire terminations and breaker to buss-bar contact points inside the enclosure shall be coated with an anti-oxidant to prevent oxidizing and corrosion of components.*

**922.19 Conduit and Fittings**

**(a) Steel Conduit**

*Steel conduit, couplings, and elbows shall be galvanized rigid steel conduit in accordance with UL 6. The conduit shall be galvanized by the hot dip method on the interior and exterior surfaces. Conduit threads shall be cut after galvanizing. The conduit shall be supplied with a threaded coupling attached to one end and the other threaded end protected by a suitable shield.*

*The various conduit fittings such as bands, bodies, straps, lock nuts, and threadless connectors, shall be in accordance with Federal Specifications A-A-50553 and shall be galvanized if not stainless steel. Conduit straps shall be two hole straps with a minimum thickness of 1/8 in. (3 mm). Conduit lock nuts 3/8 in. to 1 1/2 in. (10 mm to 38 mm) in size shall be made of steel. Other sizes shall be made of either steel or malleable iron. All conduit lock nuts shall be galvanized. Other nuts shall be either stainless steel or galvanized steel.*

**(b) Polyvinyl Chloride Conduit**

*PVC conduit shall be schedule 40 in accordance with ASTM D 1785. The PVC conduit fittings shall be in accordance with ASTM D 2466. Each length of pipe shall include a coupling.*

**922.20 Detector Housing**

*The entire housing casting shall be made from aluminum alloy in accordance with ANSI 320.*

**922.21 Certification**

*Unless otherwise specified, all materials covered herein shall have a type C certification in accordance with 916.*

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MONUMENTS

Regarding Survey Monuments and Section Corners  
contact Mr. Jeff Harvey, Miami County  
Surveyor's Office, 25N.Broadway, Peru, IN 46970  
Phone # 765-472-3901 before construction.

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DOCUMENTATION, REMOVAL, AND REINSTALLATION OF EXISTING PAVEMENT  
MARKINGS AND TRAFFIC SIGNAL LOOPS

Prior to any pavement surface removal, overlay, or other disturbance to existing pavement markings and/or traffic signal loops, the Contractor shall prepare and submit to District Traffic and Engineer a strip map plan showing all existing pavement markings including the contract station location and length of no passing zones, lane lines, stop bars, gore areas, "onlys", "arrows", crosswalks, parking stalls, etc., and locations of all visible traffic signal loops by station and offset to the satisfaction of District Traffic.

District Traffic will review the satisfactory submittal upon receipt and will grant permission to start potential pavement markings and/or signal loop disturbance work within seven (7) calendar days. This type of work shall not start until this permission has been received.

The Contractor shall notify District Traffic and the Engineer at least seven (7) calendar days prior to the installation of permanent pavement markings and/or signal loops. District Traffic will return either the previously Contractor submitted pavement marking and/or signal loop plan or a revised pavement marking and/or signal loop plan to the Contractor and the Engineer within seven (7) calendar days. The contractor shall be responsible for layout of the new pavement markings and/or signal loops.

Documentation of existing pavement markings and traffic signal loops shall not be measured for payment. The cost of the work shall be included in the cost of the pavement marking items or signal loop items.

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TREATMENT OF SIGNAL DETECTOR HOUSINGS

The existing aluminum detector housing shall be removed, and the concrete housing the detector shall be removed one foot below original grade. A new aluminum housing shall be installed to the existing conduit and adjusted to meet the new roadway surface elevation. New concrete will then be placed around the new aluminum housing to meet the original detector housing dimensions on standard sheet 805-SGDH-01.

Removal of the existing detector housing and the surrounding concrete will be paid for at the contract unit price per each for detector housing, remove. Detector signal housings, including the concrete, will be paid for at the contract unit price per each, complete in place.

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#### DOCUMENTATION OF DRAINAGE STRUCTURES

The contractor shall provide digital photographic documentation of each opening of the drainage structures showing before and after conditions of the slip lining procedure. Cost shall be included in the "Pipe Liner" pay items

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#### SLIP LINING

Existing pipe dimensions shall be verified before ordering material.

An undistributed quantity of 200 Sys., Mulched seeding, R is provided for seeding that may be required at disturbed areas within right of way during the Slip Lining Process.

For additional information see Section 725.

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#### REDUCER

Reducer will be replaced if required at Station 71+00. The cost of excavating, backfilling with suitable excavated material, disposal, planking, removal of existing Reducer, and necessary incidentals shall be included in the cost of Reducer item.

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#### CURED-IN-PLACE PIPE LINERS

##### **Description**

This work shall consist of the fabrication, installation, and curing of a cured-in-place pipe, CIPP, liner into existing circular or deformed pipe structures in accordance with 105.03.

##### **Materials**

The CIPP liner shall be in accordance with ASTM D 5813, Type III and shall be UV and abrasion resistant. The liners shall be designed in accordance with ASTM D 1216 for a fully deteriorated condition.

##### **Construction Requirements**

Right-of-Entry Areas. If the right-of-way does not provide sufficient room for completion of the work, rights-of-entry shall be obtained from all appropriate adjacent property owners prior to beginning work in accordance with 107.14. Work areas on private property shall be protected and restored in accordance with 725.03(a).

Traffic Maintenance. Maintenance of traffic shall be in accordance with 104.04 and 801.

Maintenance of Drainage. Drainage shall be maintained during the installation and curing operations in a manner that does not damage adjacent property.

Pre-installation Requirements. Before beginning the liner installation operation, three copies of design calculations shall be submitted to the Engineer. The design calculations shall be sealed by a Professional Engineer and shall certify:

- (a) that the proposed liner thickness was determined in accordance with ASTM F 1216,
- (b) the required curing pressure, and
- (c) that the proposed waterway opening is in accordance with 725.03(c).

Prior to installing the CIPP liner, a video inspection of the structure shall be performed. This inspection is to identify cavities in the structure that need to be repaired, identify connecting structures that shall be perpetuated, etc. The video shall become the property of the Department.

Prior to installing the CIPP liner, all cavities adjacent to the existing structure shall be filled and existing jagged edges or other deformities that impact the liner operation shall be repaired in accordance with 725.03(c). All foreign material shall be removed from the existing structure in accordance with 725.03(c) and the applicable sections of the ASTM specifications for the installation method and disposed of in accordance with 203.10.

Installation Requirements. The CIPP liner shall be installed by the inversion method or the pulled-in-place method. Inversion installation of the CIPP liner shall be in accordance with ASTM F 1216. Pulled-in-place installation of the CIPP liner shall be in accordance with ASTM F 1743. The cured CIPP liner shall be inspected and video taped for workmanship. Defects in workmanship as defined in ASTM D 5813 section 6.2 shall be repaired or the CIPP liner shall be replaced so it meets the requirements of these specifications. The repaired or replaced CIPP liner shall be re-video taped. The video tape shall become the property of the Department. The installed CIPP liner shall be tested for delamination in accordance with the appropriate ASTM specification. The cured CIPP liner shall be cut within 50 mm (2 in.) of the ends of the existing structure. Existing connections, including underdrains or another pipe structure, to the structure to be lined shall be perpetuated through the liner.

The liner shall be permanently marked with a stainless steel label with a minimum thickness of 2.0 mm (0.080 in.) located above the structure low water elevation and within 150 mm (6 in.) of the structure end. The information shown on the label shall be at least 13 mm (1/2 in.) tall and include the month and year of installation, the liner source, and the ASTM material specifications.

QC/QA Procedure:

- (a) For each existing structure lined, a type A certification in accordance with 916 and a test report in accordance with ASTM D 5813, section 7.3 shall be submitted.

(b) An independent laboratory shall test field-cured samples from each CIPP liner installation. Appropriate documentation for the independent laboratory shall be provided prior to installation of the CIPP liner. Testing results shall be provided to the Engineer within 7 days of receipt.

(c) At each structure to be lined, two flat plate samples shall be field cured and submitted for testing. The samples shall be taken directly from the wet out tube, clamped between flat plates and cured in the downstream end of the tube. As an alternative, two restrained end samples may be used for liners installed in pipes between 200 and 460 mm (8 and 18 in.) in diameter, or equivalent. The field-cured samples shall be submitted to the laboratory within 3 days of the completion of the installation.

(d) the field-cured samples shall be conditioned, prepared, and tested in accordance with ASTM D 5813. The wall thickness, and flexural tests need only be performed on the structural portion of the CIPP liner only.

Warranty. The Contractor shall warrant, for a period of five years, all defects which will adversely affect the integrity or strength of the liner. The Contractor shall repair or replace, at Contractor's expense, such defects in a manner mutually agreed upon by the Department and the Contractor.

**Method of Measurement**

CIPP liners will be measured by the meter (linear foot), complete in place. An allowance of 1.5 m (5 ft) will be made for the perpetuation of an existing structure or underdrain through the liner.

**Basis of Payment**

The accepted quantities of CIPP liner, cured-in-place, will be paid for at the contract unit price per meter (linear foot) for the size of the existing structure in which the liner is installed, complete in place. Perpetuating the direct connection of an existing structure or underdrain through the liner will be paid for by means of an allowance of 1.5 m (5 ft) of CIPP liner for each such connection.

Payment will be made under.

Pay Item	Pay Item Symbol
Pipe Liner, Cured-In-Place, _____ mm (in.)..... m (LFT) dia.	

The cost of repairing jagged edges or deformities to existing pipe, filling cavities around the existing pipe with flowable backfill or grout, acquisition and restoration of required right-of-entry areas, erection, maintenance, and removal of temporary fence, removing foreign material from the existing pipe, maintaining existing water flow, maintaining traffic, perpetuation of connections to the structure to be lined, warranties and all other incidentals shall be included in the cost of the pay items in this section.

There will be no payment for the installation or removal of any liner that cannot be successfully installed due to the condition of the existing pipe.

If the existing pipe or other objects not designated for removal are damaged while performing this work, it shall be considered unauthorized work and repaired or replaced in accordance with 105.11.

PREFORMED PLASTIC PAVEMENT MARKINGS

The Standard Specifications are revised as follows:

SECTION 808, BEGIN LINE, DELETE AND INSERT AS FOLLOWS:

~~Preformed Plastic.....913.14(b)2~~

*Preformed Plastic.....3M Stamark High Performance Tape (380 Series) or equivalent. The tape shall be highly durable retro-reflective pliant polymer material designed for longitudinal markings subject to high traffic volumes and severe weather conditions such as shear action from crossover on typical longitudinal configurations of lane lines. The tape will be installed prior to the last pass of the pavement roller over the surface course of the pavement.*

SECTION 808, DELETE LINES 217 THROUGH 219.

SECTION 808, AFTER LINE 216, INSERT AS FOLLOWS:

*A trained technical representative shall be on the project site throughout the installation of the material to assure that it is placed and installed in accordance with the manufacturer's recommended procedures. The technician shall also be responsible to see that the layout and location of markings placed is in accordance with location placement provided by the Engineer.*

SECTION 808, AFTER LINE 233, INSERT AS FOLLOWS:

*c. **Warranty.** The manufacturer shall warranty the material for 4 years against failure to meet the minimum reflectance as shown below in table 1 or for loss of adhesion or wear through.*

Table 1  
Minimum Retained Reflectance

	White	Yellow
Entrance Angle	86.5	86.5
Observation Angle	1.0	1.0
Specific Luminance*	100	100

\*millicandelas per foot squared per foot-candle

EPOXY DURABLE PAVEMENT MARKINGS

The epoxy pavement marking on this contract shall be applied with double drop reflective glass beads. Fast set or slow set formulation material can be used. The material shall be a two component material. Component A shall consist of pigment and epoxy resins formulated as set out by the manufacturer. The mixing ratio for the two components of the material shall be as recommended by the material manufacturer. Slow Set material is suitable for all applications of pavement marking. It shall be used on all new pavements not open to traffic and on pavements open to traffic where adequate traffic control can be provided. The contractor will be responsible for the protection of all liquid pavement marking until the pavement marking has reached a no-track state as determined by the engineer. Fast set material is suitable for longitudinal line applications. Fast set epoxy shall be used on bituminous pavement open to traffic where adequate traffic control cannot be provided. Fast set epoxy pavement marking material shall not be used on concrete pavement.

The large glass beads shall be silane coated and shall comply with the Standard Specification for Construction of Roads and Bridges on Federal Projects FP-96, Section 718.19 with the following gradation:

Sieve No.	% Retained	% Passing
10	0	100
12	0-5	95-100
14	5-20	80-95
16	40-80	10-40
18	10-40	0-5
20	0-5	0-2
Pan	0-2	

The small beads for the second drop small beads shall be a minimum of 80% round and shall comply with the gradation and coating requirements of the AASHTO M247, Type I. specification for glass beads.

The application equipment shall have a system capable of spraying epoxy pavement marking material in the proportions recommended by the manufacturer. The application equipment shall include the following features:

- (a) Individual material reservoirs, or space, for storage of Part A and Part B of the epoxy material.
- (b) Heating equipment of sufficient capacity to maintain the individual components at the manufacturer's recommended temperature. The equipment shall be capable of producing amount of heat at the mixing head and gun tip to maintain the recommended temperatures within the tolerances recommended by the manufacturer.
- (c) 2 Tanks for the separate storage and dispensing of glass beads (small & large).
- (d) Drop-on glass beads shall be mechanically applied to the wet epoxy paint directly behind the spray guns at a rate required to meeting minimum retro-reflectivity values of 300 Millicandelas/m<sup>2</sup>/lux for white and 200 Millicandelas/m<sup>2</sup>/lux for yellow. Stop lines, arrows, words and symbols, glass beads may be applied by hand application equipment. Glass beads shall be applied evenly and shall completely cover the painted area. Beads must be embedding properly in the epoxy to meet the satisfaction of the Engineer.



(e) Each proportioning unit shall have individual metering devices or pressure gauges and stroke counters to monitor gallon (L) usage. All such devices shall be visible to the engineer.

(f) Stop lines, arrows, words and symbols, glass beads may be applied by hand application equipment. Glass beads shall be applied evenly and shall completely cover the painted area. Beads must be embedding properly in the epoxy to meet the satisfaction of the Engineer.

The pavement surface on which the epoxy marking is placed shall be free of all debris, laitance and any other contaminants that may hinder the adhesion of the system to the surface. The surface shall be prepared in accordance with the requirements stated in this paragraph. All existing pavement markings, except epoxy pavement markings, shall be removed to the extent that 95 to 100 percent of the existing marking is removed. Existing epoxy pavement markings that are well adhered to the pavement are in good condition and will not interfere with or otherwise conflict with newly applied markings, as determined by the engineer, may be allowed to remain. On new concrete pavements, cleaning operations shall not begin until the concrete has attained the minimum design compressive strength. All curing compound shall be removed from the surface using grinding or equivalent methods approved by the engineer before the epoxy material is applied. On new bituminous pavement cleaning operations shall not begin until after the asphalt mat has reached ambient temperature. On asphalts containing polymer modified asphalts, such as and not limited to: SBS, SBR latex or SMA latex, the contractor shall lightly abrade or grind the surface, without scarring the area between the broken lines, such that 75 percent of the stone substrate is exposed. Whenever grinding, scarifying, sandblasting, shot blasting or other operations are performed, the debris generated must be contained through vacuum type equipment or equivalent. Care shall be taken on bituminous and Portland cement concrete surface when performing removal and cleaning work to prevent damage to transverse and longitudinal joints. After all cleaning operations are completed, the pavement surface shall be power broomed and then blown with compressed air to remove residue and debris resulting from the cleaning work. Surface preparation work includes cleaning for lines, letters and symbols. The area of preparation shall be the width of the new pavement marking, or existing line, plus one inch (25 mm) on each side of the line. For letters and symbols, the area of preparation will be sufficiently large to accommodate the new marking or to remove existing markings.

The epoxy pavement marking material shall be applied to the properly prepared road surface at 25 mils (0.625 mm). Epoxy applied over existing epoxy shall be applied at 20 mils. Under controlled traffic conditions, slow set epoxy material may be used provided that coning and flagging are provided as directed by the engineer to protect the markings from tracking.

The pavement marking shall only be applied during dry weather and on dry pavement surfaces. At the time of installation, the pavement surface temperature and ambient temperature shall be above 45 F (7 C). Both components of the epoxy material shall be brought to the temperature recommended by the manufacturer, prior to mixing and spraying and shall remain at that temperature throughout the operation.

The engineer can check the application rates at convenient intervals by comparing the amount of material used to the lengths of pavement marking placed. For initial application and occasionally during the course of the work, the engineer may also check application rates by use of a wet film thickness gauge. Glass beads shall not be applied for testing application rates when using a wet film thickness gauge. The application rates for the glass beads shall be verified by means approved by the glass bead manufacturer or material vendor of the epoxy.

Visual inspection requirements shall be as follows:

(a) Lateral deviation shall not exceed one inch in 100 feet (25 mm in 30 m).

(b) Width of markings shall not deviate more than shown in the following table:

Marking Width Tolerance	
Marking Width	Requirement
4 inch (100 mm)	+ 1/4 inch (6 mm)
6 and 8 inches (150 mm to 200 mm)	± 1/4 inch (6 mm)
10 inches (250 mm) and above	± 1/2 inch (12 mm)

(c) Length of markings shall not deviate more than 3 inches (75 mm) in 10 feet (3 m).

Final acceptance will be based on compliance with this specification to the satisfaction of the engineer. If the markings are not in accordance with these specifications for any reason, the engineer may require complete removal or correction at the contractor's expense.

## UTILITY COORDINATION CERTIFICATION

Contract No. RS- 29837 Des No. 0600345

**Project Description:**

Resurface US 31 From SR18 to 0.47 Mile S of Business US 31

The undersigned certifies they have made a diligent effort, consistent with INDOT guidelines, to identify and show all known utilities within the limits of this contract. All known utility companies have been provided with plans or other information that clearly identifies the scope of this contract. Utility relocation plans and schedules, where provided, for all utilities expected to be in the way of construction in this contract have been reviewed, coordinated, and approved or forwarded to the Owner for approval. The "Existing Conditions of Utilities" statements included in this contract include utility names, contact persons' names and telephone numbers, and relocation descriptions and schedules, where provided, for all utilities found to be within the limits of this right-of-way.

The Utility Coordinator is not responsible for utility companies who have failed to cooperate, respond, and/or provide information needed. Further, the Utility Coordinator does not guarantee or warrant in any way the accuracy of information supplied by utility companies.

UTILITY COORDINATOR

  
\_\_\_\_\_ Date: 10/10/2007  
Signed

VASU RAMIAH  
Printed