BORDER REV: DATE: June 1, 2004

DRILL HOLES

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BY: Division:

PROJECT DESCRIPTION

I. GENERAL

THIS PROJECT INVOLVES THE RECONSTRUCTION OF AN EXISTING SIGNAL AT MD 146 AND MD 145 DUE TO GEOMETRIC IMPROVEMENTS AT THE INTERSECTION IN BALTIMORE COUNTY. NEW ACCESSIBLE PEDESTRIAN SIGNALS AND COUNTDOWN PEDESTRIAN SIGNAL HEADS WILL BE INSTALLED FOR ALL APPROACHES.

MD 146 IS ASSUMED TO OPERATE IN A NORTH - SOUTH DIRECTION.

II. INTERSECTION OPERATION

1. THE INTERSECTION IS TO OPERATE IN A NEMA EIGHT-PHASE, FULLY-ACTUATED MODE. MD 146 NORTHBOUND AND SOUTHBOUND WILL OPERATE CONCURRENTLY AND WILL HAVE PROTECTED EXCLUSIVE / PERMISSIVE LEFT TURN PHASING. MD 145 EASTBOUND AND WESTBOUND WILL OPERATE CONCURRENTLY AND WILL HAVE PROTECTED / PERMISSIVE LEFT TURN PHASING.

III. CONTROLLER REQUIREMENTS

1. A NEW EIGHT-PHASE FULLY ACTUATED CONTROLLER WITH AMPLIFIERS. CAMERA INTERFACE WITH ONE (1) 2-WIRE CENTRAL CONTROL UNIT HOUSED IN A BASE MOUNTED TYPE S CABINET WILL BE INSTALLED.

IV. APS OPERATION

TO CROSS JARRETTSVILLE PIKE FROM SWEET AIR RD.

A. WHEN PEDESTRIAN LOCATES AND PRESSES PUSHBUTTON FOR AN EXTENDED TIME, THE PUSHBUTTON UNIT MESSAGE WILL BE "WAIT TO CROSS JARRETTSVILLE AT SWEET AIR. CROSSWALK ANGLES TO LEFT WAIT".

B. WHEN PHASE WALK BEGINS. THE MESSAGE WILL BE A RAPID TICK WHICH WILL LAST FOR THE DURATION OF THE WALK PHASE.

TO CROSS JARRETSVILLE PIKE FROM PAPER MILL RD.

A. WHEN PEDESTRIAN LOCATES AND PRESSES PUSHBUTTON FOR AN EXTENDED TIME, THE PUSHBUTTON UNIT MESSAGE WILL BE "WAIT TO CROSS JARRETTSVILLE AT PAPER MILL. CROSSWALK ANGLES TO LEFT WAIT".

B. WHEN PHASE WALK BEGINS. THE MESSAGE WILL BE A RAPID TICK WHICH WILL LAST FOR THE DURATION OF THE WALK PHASE.

TO CROSS SWEET AIR RD FROM JARRETTSVILLE PIKE.

A. WHEN PEDESTRIAN LOCATES AND PRESSES PUSHBUTTON FOR AN EXTENDED TIME, THE PUSHBUTTON UNIT MESSAGE WILL BE "WAIT TO CROSS SWEET AIR AT JARRETTSVILLE. CROSSWALK ANGLES TO THE RIGHT WAIT".

B. WHEN PHASE WALK BEGINS. THE MESSAGE WILL BE A RAPID TICK WHICH WILL LAST FOR THE DURATION OF THE WALK PHASE.

TO CROSS PAPER MILL RD FROM JARRETTSVILLE PIKE.

A. WHEN PEDESTRIAN LOCATES AND PRESSES PUSHBUTTON FOR AN EXTENDED TIME, THE PUSHBUTTON UNIT MESSAGE WILL BE "WAIT TO CROSS PAPER MILL AT JARRETTSVILLE. CROSSWALK ANGLES TO THE RIGHT WAIT".

B. WHEN PHASE WALK BEGINS. THE MESSAGE WILL BE A RAPID TICK WHICH WILL LAST FOR THE DURATION OF THE WALK PHASE.

NOTES

1. FOR FINAL PAVEMENT MARKINGS, REFER TO THE PAVEMENT MARKING PLANS. AS APPLICABLE: OTHER THAN THOSE DETAILED ON THE PLAN. ALL PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH ADMINISTRATION STANDARDS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TERMINATING ALL SIGNAL CABLE TO THE APPROPRIATE TERMINALS AND PROPERLY LABEL EACH CABLE.
3. ALL TRAFFIC SIGNAL FOUNDATIONS SHALL BE INSTALLED AT THE FINAL SIDEWALK OR CURB GRADE FOR CLOSED SECTIONS. HIGHEST ROADWAY PROFILE GRADE FOR OPEN SECTIONS. TO MEET CLEARANCES AS SPECIFIED IN THE APPROPRIATE 800 SERIES STANDARD PLATES. THE CONTRACTOR SHALL VERIFY ULTIMATE GRADES PRIOR TO THE INSTALLATION OF ALL SIGNAL EQUIPMENT.
4. ALL UNDERGROUND AND OVERHEAD UTILITIES SHOWN ON THESE PLANS ARE SCHEMATIC ONLY AND MAY NOT BE COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING MISS UTILITY PRIOR TO CONSTRUCTION SO THAT ALL UTILITIES MAY BE LOCATED IN THE FIELD. IF THE CONTRACTOR PERCEIVES THAT A CONFLICT BETWEEN THE UTILITIES AND THE TRAFFIC SIGNAL WILL OCCUR. THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IMMEDIATELY SO THAT THE CONFLICT MAY BE RESOLVED.
5. THE CONTRACTOR SHALL MAINTAIN THE CONTINUOUS OPERATION OF ALL INTERCONNECT, VEHICULAR, PEDESTRIAN DETECTORS, AND LIGHTING DEVICES. IF ANY DEVICE IS DAMAGED BY THE CONTRACTOR, IT SHALL BE REPAIRED WITHIN 72 HOURS BY THE CONTRACTOR AT NO COST TO THE ADMINISTRATION AFTER NOTIFICATION BY THE ENGINEER.
6. UPON COMPLETION OF THIS PROJECT, THE CONTRACTOR SHALL NOTIFY MR. ROBERT SNYDER OF SHA AT (410) 787-7631 TO ARRANGE FOR THE PHONE LINE INSTALLATION. THE CONTRACTOR IS TO PROVIDE MR. SNYDER WITH THE NEAREST STREET ADDRESS, ZIP CODE AND PHONE NUMBER.
7. ALL PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH SHA STANDARDS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TERMINATING ALL SIGNAL CABLE TO THE APPROPRIATE TERMINALS AND PROPERLY LABEL EACH CABLE. THE SHA SIGNAL SHOP WILL BE RESPONSIBLE FOR ALL INTERNAL CABINET WIRING.
9. MAINTENANCE OF TRAFFIC WILL BE HANDLED BY THE CONTRACTOR UTILIZING THE MOT PLANS FOR TRAFFIC CONTROL.
10. ALL EXISTING TRAFFIC SIGNAL EQUIPMENT REMOVED SHALL BECOME THE PROPERTY OF THE SIGNAL CONTRACTOR UPON COMPLETION OF THE SIGNAL MODIFICATION.
11. THE CONTRACTOR SHALL CONTACT MISS UTILITY TO VERIFY ALL UNDERGROUND UTILITIES PRIOR TO THE INSTALLATION OF PROPOSED SIGNAL EQUIPMENT. IF ANY CONFLICTS ARISE THE CONTRACTOR SHALL CONTACT THE PROJECT ENGINEER.
12. WITHIN 36 IN. OF UNDERGROUND UTILITY LOCATIONS, THE CONTRACTOR SHALL BE REQUIRED TO EXCAVATE FOR FOUNDATION AND CONDUIT BY HAND.
13. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL ABANDONED ELECTRICAL CABLES.
14. THE CONTRACTOR SHALL ENSURE THE EXISTING TRAFFIC SIGNAL REMAINS OPERATIONAL THROUGHOUT THE CONSTRUCTION PROCESS UNTIL SUCH TIME THAT THE NEW CONSTRUCTION CAN BE UTILIZED.
15. ALL SIGNAL POLE FOUNDATIONS SHALL BE INSTALLED AT THE FINAL SIDEWALK OR CURB GRADE TO MEET CLEARANCES AS SPECIFIED IN MD 818.01, 818.03, 818.04. THE CONTRACTOR SHALL VERIFY ULTIMATE GRADES PRIOR TO THE INSTALLATION OF ALL SIGNAL EQUIPMENT.
16. THE CONTRACTOR SHALL VERIFY ALL RAMP AND PUSHBUTTON LOCATIONS PRIOR TO INSTALLATION.
17. PUSHBUTTONS ARE TO BE LOCATED SO THAT THEY CAN BE ACTIVATED BY A PERSON IN A WHEELCHAIR REACHING LESS THAN 18" FROM A 60" x 60" LEVEL LANDING AREA WITH A CROSS SLOPE OF LESS THAN OR EQUAL TO 2%.
18. THE 10' SEPARATION BETWEEN PUSHBUTTONS IS TO BE MEASURED FROM FACE OF PUSHBUTTON TO FACE OF PUSHBUTTON, NOT CENTER TO CENTER OF POLES.
19. PUSHBUTTON ARROWS ARE TO BE PARALLEL TO THE CROSSING FOR WHICH THEY ARE INTENDED.
20. THE CONTRACTOR SHALL INSTALL ALL CONDUIT PRIOR TO NEW SIDEWALK AND RAMP CONSTRUCTION.
21. LOCATION OF THE ACCESSIBLE PEDESTRIAN SIGNAL PUSHBUTTONS MUST MEET LOCATION REQUIREMENTS OF 817.01 AND MUTCD SEC. 4E.09 AND FIG 4E.03 AND NCHRP PUBLICATION "ACCESSIBLE PEDESTRIAN SIGNAL: GUIDE TO BEST PRACTICE." IF NOT MET, THE CONTRACTOR IS TO STOP WORK ON PUSHBUTTON LOCATIONS UNTIL A DESIGN WAIVER IS OBTAINED, AND APPROVED BY THE DIRECTOR, OFFICE OF OF TRAFFIC AND SAFETY.
22. VIDEO CAMERA LOCATION / ALIGNMENT SHALL BE COORDINATED WITH THE ENGINEER.
23. ALL PROPOSED LUMINARIES SHALL BE SUPPLIED WITH A PHOTO CELL.
24. PROVIDE SIDEWALK BACK CURB IF REQUIRED PER DETAIL ON SHEET DE-2.

EQUIPMENT LIST

A. EQUIPMENT TO BE FURNISHED BY STATE HIGHWAY ADMINISTRATION

CAT CODE	QUANTITY	DESCRIPTION
900000	1 EA	NEMA SIZE S EIGHT PHASE (FULLY ACTUATED CONTROLLER AND BASE MOUNTED CABINET) WITH VIDEO INTERFACE EQUIPMENT FOR 1 TO 8 CAMERAS WITH AN UNINTERUPTED POWER SUPPLY TO BE PROVIDED BY SHA.
963010	1 EA	4-CHANNEL RACK MOUNTED AMPLIFIER
973023	185 S.F.	SHEET ALUMINUM SIGNS
	4 EA	D-3(1) SIGN (96"x16") (DUAL FACED)
	8 EA	R10-3(1)SIGN (9"x15")
	2 EA	M1-5(6) 48"x72"
	2 EA	M1-5(6) 30"x48"
	1 EA	W9-2(4)L SIGN (30"x42")
	1 EA	M3-2 SIGN (30"x15")
	1 EA	M3-2 SIGN (24"x12")
	1 EA	M3-4 SIGN (30"x15")
	1 EA	M3-4 SIGN (24"x12")
	2 EA	M1-5(1) SIGN (48"x36")
	2 EA	M1-5(1) SIGN (30"x24")
	2 EA	M6-1 SIGN (30"x21")
	2 EA	M6-1 SIGN (21"x15")

B. EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY CONTRACTOR.

CAT CODE	QUANTITY	DESCRIPTION
203030	6 C.Y.	TEST PIT EXCAVATION
585621	635 L.F.	12 IN. WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINES
585625	120 L.F.	24 IN. WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE
800000	12 EA.	8 IN. L.E.D. VEHICULAR TRAFFIC SIGNAL HEAD SECTION
800000	2 EA.	LED LUMINAIRE
800000	4 EA.	VIDEO CAMERA WITH CABLE.
800000	8 EA.	16 IN. L.E.D. COUNTDOWN PEDESTRIAN SIGNAL HEAD
800000	8 EA.	AUDIBLE TACTILE/PEDESTRIAN PUSHBUTTON AND STATION
800000	1 EA.	2 - WIRE CENTRAL CONTROL UNIT
801004	25 C.Y.	CONCRETE FOR SIGNAL FOUNDATION
801106	76 L.F.	WOOD SIGN SUPPORTS 4" X 6"
801607	57 S.F.	INSTALL SHEET ALUMINUM SIGN
805105	75 L.F.	2 INCH SCHEDULE 80 RIGID PVC CONDUIT - BORED
805115	45 L.F.	3 INCH SCHEDULE 80 RIGID PVC CONDUIT - BORED
805118	350 L.F.	4 INCH SCHEDULE 80 RIGID PVC CONDUIT - BORED
805125	130 L.F.	2 INCH SCHEDULE 80 RIGID PVC CONDUIT - TRENCHED
805135	1,075 L.F.	3 INCH SCHEDULE 80 RIGID PVC CONDUIT - TRENCHED
805140	100 L.F.	4 INCH SCHEDULE 80 RIGID PVC CONDUIT - TRENCHED
802501	625 L.F.	NO. 6 AWG STRANDED BARE COPPER GROUND WIRE
807202	1 EA.	METERED SERVICE PEDESTAL
810022	50 L.F.	ELECTRICAL CABLE 1 CONDUCTOR NO. 8 AWG THHN/THWN
810601	3 EA.	NON INVASIVE DETECTOR, 500 FT LEAD- IN WIRE
810605	3 EA.	NON INVASIVE DETECTOR, 1000 FT LEAD- IN WIRE
811001	23 EA.	FURNISH AND INSTALL ELECTRICAL HANDHOLE
813015	128 S.F.	INSTALL OVERHEAD SIGN
818004	7 EA.	10 FT BREAKAWAY PEDESTAL POLE
818030	1 EA.	STEEL MAST ARM POLE WITH A SINGLE 38 FT MAST ARM
818036	1 EA.	STEEL POLE WITH A SINGLE 50 FT MAST ARM
818041	2 EA.	STEEL MAST ARM POLE WITH A SINGLE 60 FT MAST ARM
837001	10 EA.	GROUND ROD -3/4 IN. DIA. X 10 FT. LENGTH.
860284	40 EA.	12 IN. L.E.D. VEHICULAR TRAFFIC SIGNAL HEAD SECTION
866103	2 EA.	15 FT. LIGHTING ARM ON SIGNAL STRUCTURE
861105	1500 L.F.	ELECTRICAL CABLE - 2 CONDUCTOR (NO. 14 AWG)
861107	1600 L.F.	ELECTRICAL CABLE - 5 CONDUCTOR (NO. 14 AWG)
861108	2100 L.F.	ELECTRICAL CABLE - 7 CONDUCTOR (NO. 14 AWG)
861116	400 L.F.	ELECTRICAL CABLE - 2 CONDUCTOR (NO. 12 AWG)
871202	1 EA.	INSTALL CONTROLLER AND CABINET - BASE MOUNTED

C. IF THE CABINET IS TO BE REMOVED SHA FORCES SHALL REMOVE THE CONTROLLER AND ALL AUXILIARY EQUIPMENT FROM THE CONTROLLER CABINET. THE CABINET AND ALL OTHER MATERIALS TO BE REMOVED BY THE CONTRACTOR SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

CAT CODE	QUANTITY	DESCRIPTION
	1 EA.	POLE MOUNTED CONTROLLER

CONTACTS

DISTRICT

MR. DAVE PEAKE
DISTRICT ENGINEER
PHONE: (410) 229-2310

MS. ERIN KUHN
ASSISTANT DISTRICT ENGINEER - TRAFFIC
PHONE:(410 229-2381

MR. MIKE PASQUARIELLO
DISTRICT ENGINEER - UTILITIES
PHONE: (410) 229-2341

MR. JESSE FREE
ASSISTANT DISTRICT ENGINEER - CONSTRUCTION
PHONE: (410) 229-2421

MR. ANDRE FUTRELL
ASSISTANT DISTRICT ENGINEER - MAINTENANCE
PHONE: (410) 229-2361

OFFICE OF TRAFFIC AND SAFETY

MR. ROBERT SNYDER
ASSISTANT DIVISION CHIEF,
TRAFFIC OPERATIONS
410-787-7631

MR. ED RODENHIZER
TEAM LEADER SIGNAL OPERATIONS
410-787-7632

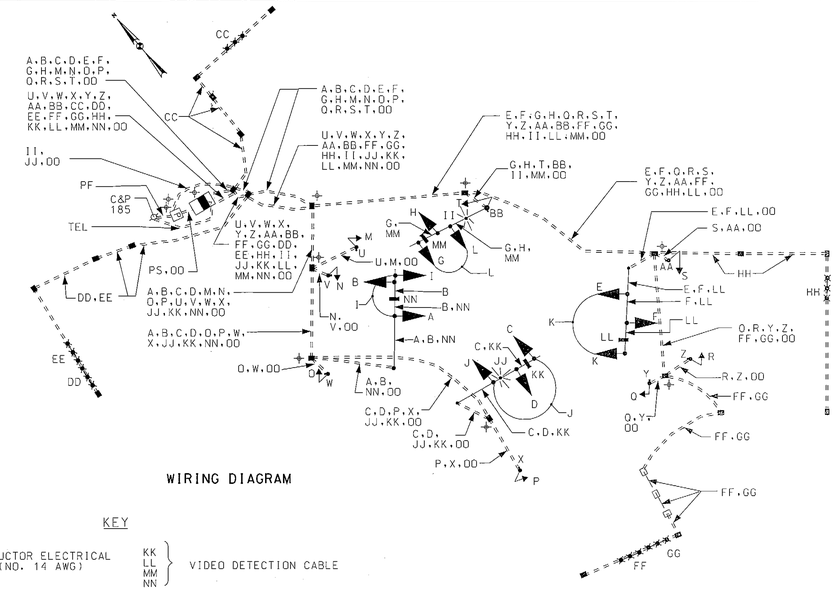
MR. EUGENE BAILEY
TEAM LEADER SIGN OPERATIONS
410-787-7670

MR. MIKE STOCKER
SUPPLY OFFICER IV (SIGNAL SHOP WAREHOUSE)
410-787-7668

MD 146 IS ASSUMED TO OPERATE IN A NORTH-SOUTH DIRECTION

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PHASE 1 & 5	R	R	R	R	R	R	◀G R	◀G R	R	◀G R	◀G R	R	DW	DW	DW	DW	DW	DW	DW	DW
1 & 5 CHANGE	R	R	R	R	R	R	◀Y R	◀Y R	R	◀Y R	◀Y R	R	DW	DW	DW	DW	DW	DW	DW	DW
PHASE 1 & 6	R	R	R	R	R	R	◀G G	◀G G	G	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
1 & 6 CHANGE	R	R	R	R	R	R	◀Y G	◀Y G	G	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
PHASE 2 & 5	R	R	R	R	R	R	R	R	R	◀G G	◀G G	G	DW	DW	DW	DW	DW	DW	DW	DW
2 & 5 CHANGE	R	R	R	R	R	R	R	R	R	◀Y G	◀Y G	G	DW	DW	DW	DW	DW	DW	DW	DW
PHASE 2 & 6	R	R	R	R	R	R	G	G	G	G	G	G	DW	DW	DW	DW	DW	DW	DW	DW
2 & 6 CHANGE	R	R	R	R	R	R	Y	Y	Y	Y	Y	Y	DW	DW	DW	DW	DW	DW	DW	DW
PHASE 2 & 6 ALT.	R	R	R	R	R	R	G	G	G	G	G	G	DW	DW	DW	DW	W	W	W	W
PED CLEARANCE	R	R	R	R	R	R	G	G	G	G	G	G	DW	DW	DW	DW	FDW	FDW	FDW	FDW
2 & 6 ALT. CHANGE	R	R	R	R	R	R	Y	Y	Y	Y	Y	Y	DW	DW	DW	DW	DW	DW	DW	DW
PHASE 3 & 7	◀G R	◀G R	R	◀G R	◀G R	R	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
3 & 7 CHANGE	◀Y R	◀Y R	R	◀Y R	◀Y R	R	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
PHASE 3 & 8	◀G G	◀G G	G	R	R	R	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
3 & 8 CHANGE	◀Y G	◀Y G	G	R	R	R	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
PHASE 4 & 7	R	R	R	◀G G	◀G G	G	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
4 & 7 CHANGE	R	R	R	◀Y G	◀Y G	G	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
PHASE 4 & 8	G	G	G	G	G	G	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
4 & 8 CHANGE	Y	Y	Y	Y	Y	Y	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
4 & 8 ALT.	G	G	G	G	G	G	R	R	R	R	R	R	W	W	W	W	DW	DW	DW	DW
PED. CLEARANCE	G	G	G	G	G	G	R	R	R	R	R	R	FDW	FDW	FDW	FDW	DW	DW	DW	DW
4 & 8 ALT. CHANGE	Y	Y	Y	Y	Y	Y	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW	DW	DW
FLASHING OPERATION	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/Y	FL/R	FL/R	FL/R	FL/R	FL/R	FL/R	DARK	DARK	DARK	DARK	DARK	DARK	DARK	DARK

WIRING DIAGRAM



KEY

A E, B F, C G, D H — 7 CONDUCTOR ELECTRICAL CABLE (NO. 14 AWG)	KK, LL, MM, NN — VIDEO DETECTION CABLE
I M O, J N R, K O S, L P T — 5 CONDUCTOR ELECTRICAL CABLE (NO. 14 AWG)	OO — 1 CONDUCTOR (NO. 6 AWG) STRANDED COPPER GROUND WIRE
U Y, V Z, W AA, X BB — 2 CONDUCTOR ELECTRICAL CABLE (NO. 14 AWG)	PS — POWER SERVICE UNDERGROUND 3 wire 1 CONDUCTOR (NO. 8 AWG)
	PF — POWER FEED BY OTHERS
	TEL — TELEPHONE DROP
CC, DD, EE, FF, GG, HH — NON - INVASIVE PROBE LEAD-IN CABLES	GROUND ROD
II, JJ — 2 CONDUCTOR ELECTRICAL CABLE (NO. 12 AWG) TRAY CABLE	

JOHNSON, MIRMIRAN & THOMPSON
Engineering A Brighter Future

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF TRAFFIC & SAFETY
TRAFFIC ENGINEERING DESIGN DIVISION

MD 146 JARRETTSVILLE PIKE AT
MD 145 PAPER MILL RD /SWEET AIR RD
JACKSONVILLE MD

GENERAL INFORMATION SHEET

SCALE NONE	DATE JAN. 2013	CONTRACT NO. BA7725187	
DESIGNED BY C.G.M.		COUNTY BALTIMORE	
DRAWN BY C.G.M.		LOGMILE 03014609.24	
CHECKED BY G.A.B.		T.I.M.S. NO. F454	
F.A.P. NO. SEE TITLE SHEET		TOD NO.	
TS NO 917F	SG -3	OF 3	SHEET NO. 36 OF 61

PLOTTED: $DATETIME$
FILE: M:\MD146_145\jimsGI02.dgn