

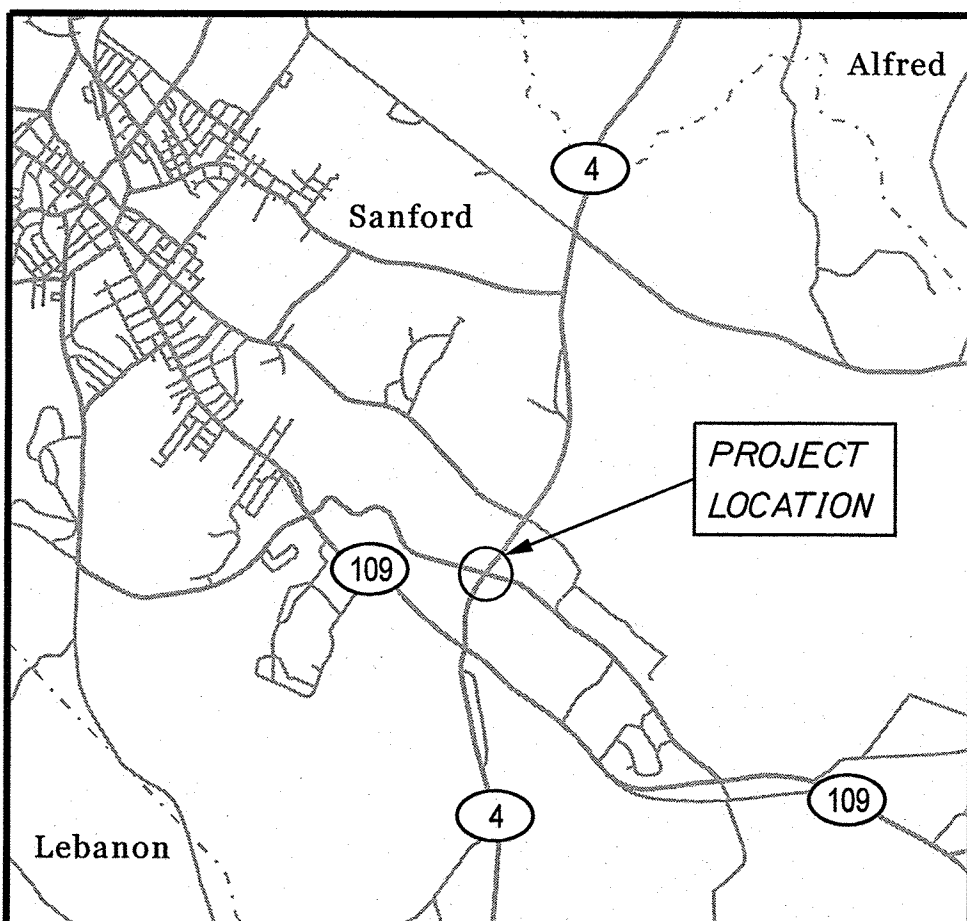
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION



SANFORD
YORK COUNTY
TRAFFIC SIGNALIZATION
FEDERAL PROJECT NO. 2703000
STATE WIN 027030.00

PLAN LEGEND

Town, County, State	Centerline-Existing	
Property Lines	Centerline-Proposed	
R/W Lines-Existing	Travelway-Existing	
R/W Lines-Proposed	Travelway-Proposed	
Culvert-Existing	Railroad	
Culvert Proposed	Catch Basins	Existing Proposed
Curbing	Manholes	Existing Proposed
Type 1	Proposed Underdrain	
Type 3	Proposed Ditch	
Type 5	Existing Ditch	
Outline of Bodies of Water	Utility Poles	Existing Proposed
Exposed Bedrock	Fire Hydrants	Existing Proposed
Buildings	Existing Water Line	
Trees	Existing San. Sewer	
Tree Line	Existing San. Sewer Manhole	
Clearing Limit Line	Guardrail-Existing	
Boring	Guardrail-Proposed	
	Guardrail-Cable, Other	
Signal Conduit	Existing	Proposed
Strain Pole w/ Guy		
Pedestal Post and Foundation		
Emergency Vehicle Preemption Receiver		
Signal Head (w/ Backplate)		
Emergency Preemption Confirmation Strobe		
Controller with Cabinet		
Video Detection Camera		
Advance Detection		
Dual Mode DSRC/C-V2X		
(Dedicated Short Range Communications)		
Detection Zone (& ID)		
Mast Arm, Post, or Span Wire		
Mounted Sign		



Scale in Miles
LOCATION MAP

TRAFFIC DATA	SR 4 (ALFRED RD) NE/O JAGGER MILL RD	JAGGER MILL RD SE/O SR 4 (ALFRED RD)	ALUMNI BLVD. NW/O SR 4 (ALFRED RD)
Current (2023) AADT	15,410	3,880	500
Future (2043) AADT	16,950	4,270	550
DHV - % of AADT	11%	15%	36%
Design Hour Volume	1864	650	180
% Heavy Trucks (AADT)	7%	5%	0%
Directional Distribution (DHV)	64%	61%	65%
Design Speed (mph)	45	45	Unposted
Corridor Priority	2	4	5
Functional Class:	Minor Arterial	Major Collector	Local

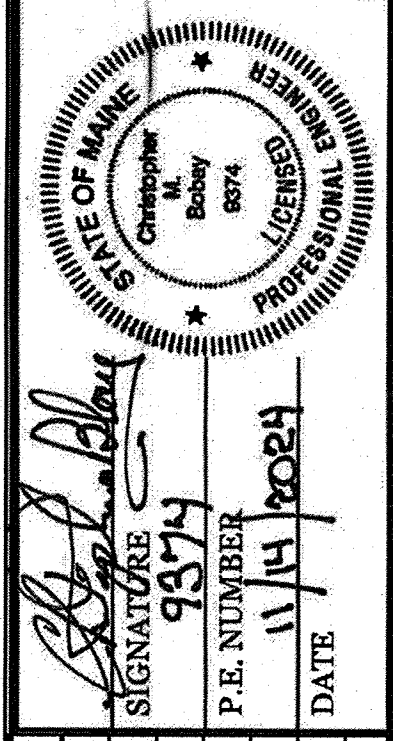
LAYOUT SCALE
Scale in Feet



INDEX OF SHEETS

Description	Sheet No.
Title Sheet	1
General Notes	2
Traffic Signal Plans	3-4
Interconnect Plan	5
System Network and Architecture	6

STATE OF MAINE DEPARTMENT OF TRANSPORTATION	APPROVED	DATE
COMMISSIONER		12-13-24
CHIEF ENGINEER		12-11-2024



PROJECT INFORMATION	PROGRAM	PROJECT MANAGER	DESIGNER	CONSULTANT	PROJECT RESIDENT	CONTRACTOR	PROJECT COMPLETION DATE
MULTIMODAL	J. DOSTIE	M. GRAHAM	VHB				

SANFORD
ROUTE 4 (ALFRED RD) AND
ALUMNI BLVD / JAGGER MILL RD
TITLE SHEET

SHEET NUMBER
1
OF 6

PROJECT LOCATION:	In the City of Sanford at Route 4 at Jagger Mill Road and Alumni Boulevard
PROGRAM AREA:	Multimodal
OUTLINE OF WORK:	Traffic Signal Design and Other Incidental Work

WIN025321.00

Date: 11/13/2024

Username: jrobort

Division: HIGHWAY

Filename: 001_Title.dgn

LIST OF WORK ITEMS

EQUIPMENT AND WORK ITEMS 643.80	QUANTITY
FURNISH AND INSTALL NEW ATCC MAINEDOT 32/48 SPEC GROUND MOUNT CABINET AND ATC CONTROLLER COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING FIELD MONITORING UNIT WITH INTEGRATION INTO EXISTING MAINEDOT CENTRACS MOBILITY MANAGEMENT SYSTEM	1
FURNISH AND INSTALL NEW ONE-WAY, 3-SECTION, 12-INCH TRAFFIC SIGNAL HEAD, WITH LED MODULES, TUNNEL VISORS, AND 5-INCH LOUVERED BACKPLATE WITH 3-INCH RETROREFLECTIVITY MOUNTED ON SPAN AND TETHER WIRE	5
FURNISH AND INSTALL NEW ONE-WAY, 4-SECTION, 12-INCH TRAFFIC SIGNAL HEAD, WITH LED MODULES, TUNNEL VISORS, AND 5-INCH LOUVERED BACKPLATE WITH 3-INCH RETROREFLECTIVITY MOUNTED ON SPAN AND TETHER WIRE	5
FURNISH AND INSTALL NEW ONE-WAY, 4-SECTION, 12-INCH TRAFFIC SIGNAL HEAD, WITH LED MODULES, TUNNEL VISORS, AND 5-INCH LOUVERED BACKPLATE WITH 3-INCH RETROREFLECTIVITY TOP MOUNTED ON TRAFFIC SIGNAL POST	1
FURNISH AND INSTALL 19-INCH / RU FIBER OPTIC 12-POSITION PATCH PANEL WITH PIGTAILS	1
FURNISH AND INSTALL ENVIRONMENTALLY HARDENED FIBER OPTIC ETHERNET SWITCH WITH FIBER OPTIC INTERFACES	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	1
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL SPAN WIRE MOUNTED SIGNS	7
FURNISH AND INSTALL POST AND W3-3 POST MOUNTED SIGNS	3
FURNISH AND INSTALL POLE RISERS	4
FURNISH AND INSTALL WOOD POLE MOUNTED OVERHEAD LIGHT ARM, WIRING AND LUMINAIRE, COMPLETE	3
FURISH AND INSTALL NEW SIGNAL CABLE	-
REMOVE AND SALVAGE EXISTING FLASHER SYSTEM	-
IMPLEMENT LOCAL AND SYSTEM SIGNAL TIMINGS	-
FURNISH AND INSTALL NON-INVASIVE STOP BAR VEHICLE DETECTION SYSTEM FOR 4 APPROACHES, COMPLETE (ITEM 643.21)	1 LS
FURNISH AND INSTALL NON-INVASIVE ADVANCE VEHICLE DETECTION SYSTEM FOR 3 APPROACHES, COMPLETE (ITEM 643.22)	1 LS

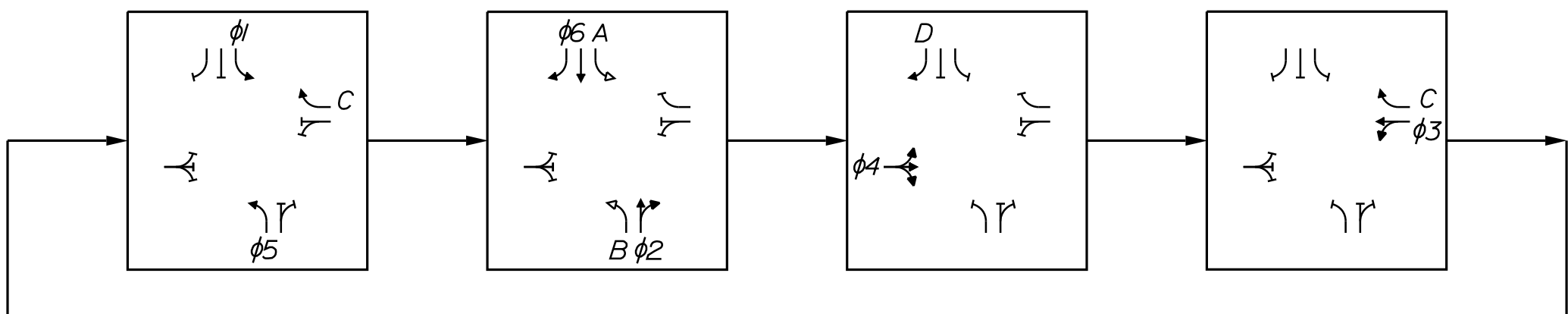
THE LISTED QUANTITIES ARE APPROXIMATE AND ARE FURNISHED FOR INFORMATION ONLY.

STRUCTURE LIST

STRUCTURE	DESCRIPTION	FOUNDATION
(A-C)	CONTROLLER CABINET	L48"xW36"xH48"
(B-PI)	15' PEDESTAL POLE	24" DIAMETER
(A-WPI)	EXISTING CMP9 WOOD POLE	N/A
(B-WPI)	WOOD POLE	N/A
(C-WPI)	WOOD POLE	N/A
(D-WPI)	WOOD POLE	N/A

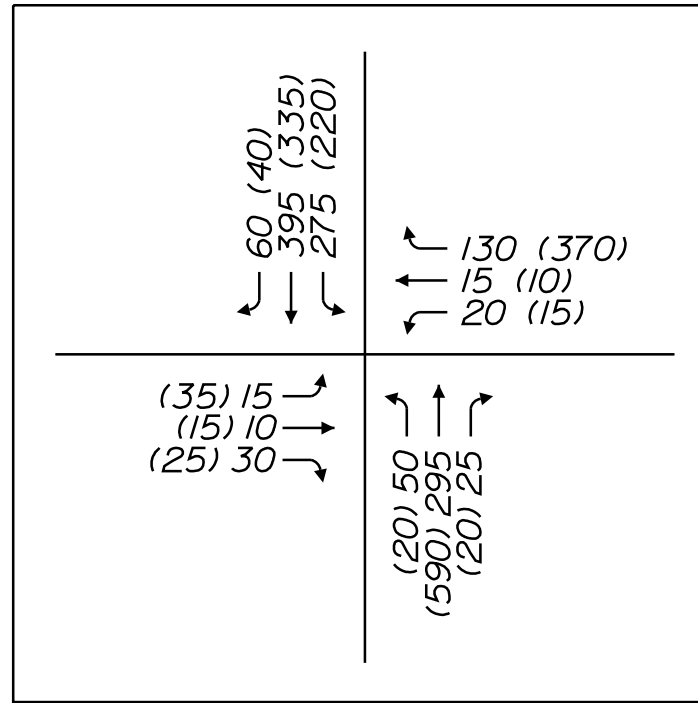
PREFERENTIAL PHASE SEQUENCE
NEMA RING AND BARRIER DIAGRAM

1 2 4 3
5 6

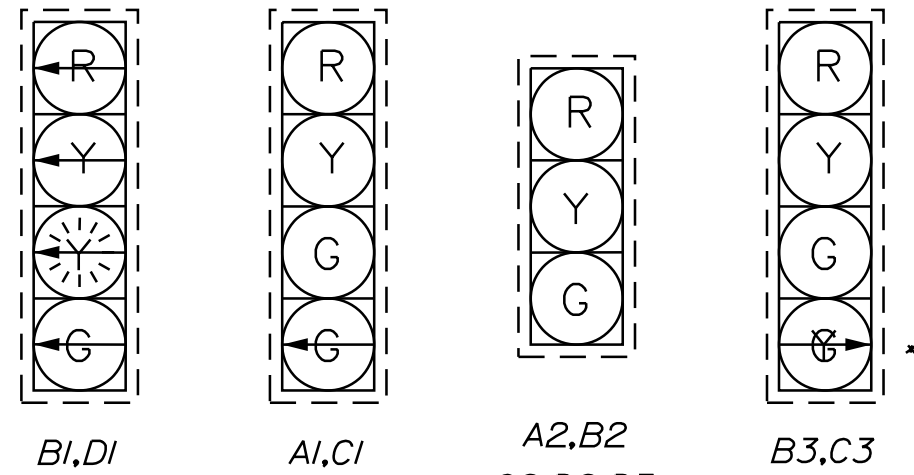


OVERLAP PHASING:
OVL A = 1 (PROT) + 2 (PERM) OVL C = 1 + 3
OVL B = 5 (PROT) + 6 (PERM) OVL D = 4

SYSTEM DESIGN
VOLUMES AM (PM)



PROPOSED INDICATIONS



NOTE:
ALL INDICATIONS SHALL BE 12" LIGHT EMITTING DIODES (LED'S)
WITH 5" LOUVERED RETROREFLECTIVE BACKPLATES
* - BI-MODAL 4TH SECTION LED

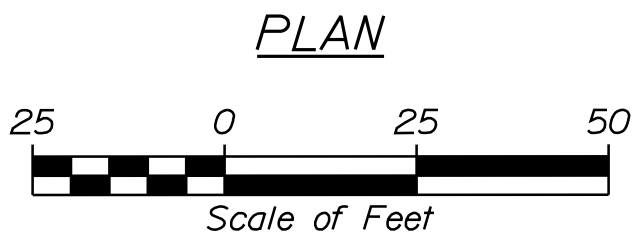
DETECTOR SCHEDULE

DETECTOR ZONE NO.	LOCATION	φ CALLED	φ EXT.	MODE A=ADVANCE B=STOPLINE	DELAY TIME	EXT. TIME
①	ALFRED RD SB LEFT	1	1	B	-	-
②	ALFRED RD SB THRU	6	6	B	-	-
③	ALFRED RD SB RIGHT	6	6	B	5	-
④	ALFRED RD NB LEFT	5	5	B	-	-
⑤	ALFRED RD NB THRU-RIGHT	2	2	B	-	-
⑥	JAGGER MILL RD WB LEFT-THRU	3	3	B	-	-
⑦	JAGGER MILL RD WB RIGHT	1	1	B	5	-
⑧	ALUMNI BLVD EB MOVEMENTS	4	4	B	-	-
49	ALFRED RD SB ADVANCE	6	6	A	-	-
52	ALFRED RD NB ADVANCE	2	2	A	-	-
55	JAGGER MILL RD WB ADVANCE	3	3	A	-	-

SIGNAL TIMING SCHEDULE

ITEM / PHASE	φ 1	φ 2	φ 3	φ 4	φ 5	φ 6	φ 7	φ 8
MOVEMENT	B (LT)	D	C	A	D (LT)	B	-	-
MINIMUM INITIAL	7	10	5	5	5	10	-	-
PASSAGE TIME	1.5	1.5	1.5	1.5	1.5	1.5	-	-
MAXIMUM 1	30	40	25	25	20	40	-	-
MAXIMUM 2	35	45	30	30	25	45	-	-
YELLOW	4.5	4.5	3.5	3.5	4.5	4.5	-	-
ALL RED	2.5	2.5	3.5	2.5	2.5	2.5	-	-
PED WALK	-	-	-	-	-	-	-	-
PED CLEAR	-	-	-	-	-	-	-	-
DYN MAX LIMIT	50	60	-	-	-	60	-	-
DYN MAX STEP	15	15	-	-	-	15	-	-
RECALL	OFF	SOFT	OFF	OFF	OFF	SOFT	-	-
DETECTOR	PR	PR	PR	PR	PR	PR	-	-
PRE-EMPT PRIORITY	3	4	5	6	4	3	-	-
FLASH	R	Y	R	R	R	Y	-	-
DUAL ENTRY	OFF	ON	OFF	OFF	OFF	ON	-	-

NOTES: S = SOFT RECALLY = YELLOW
O = RECALL OFF R = RED
PR = PRESENCE D = DARK
MAX 2 UNDER COORDINATION
IF APPLICABLE, COORDINATION PATTERNS AND TIME-OF-DAY PLANS SHALL BE PROVIDED AFTER CONTRACT AWARD.
PASSAGE TIMES SHALL BE CALIBRATED FOR A 3 SECOND MAXIMUM ALLOWABLE HEADWAY CONSIDERING DETECTOR ZONE LENGTH, APPROACHING VEHICLE SPEEDS, AND FIELD CONDITIONS
* - RIGHT-OF-WAY PROVIDED BY MAINEDOT, AUGUST 2023



LIST OF WORK ITEMS

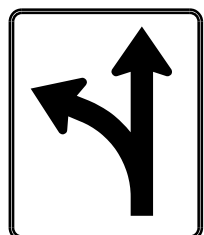
EQUIPMENT AND WORK ITEMS (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL 14-INCH PRECAST CONCRETE JUNCTION BOX (ITEM 626.11)	1 EA
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	50 LF
FURNISH AND INSTAL NON-METALLIC CONDUIT, CONCRETE ENCASED (ITEM 626.221)	25 LF
FURNISH AND INSTALL GROUND MOUNTED CABINET FOUNDATION (ITEM 626.38)	1 EA
FURNISH AND INSTALL 24-IN DIAMETER FOUNDATION (ITEM 626.421)	7 LF
FURNISH AND INSTALL 12-INCH SOLID WHITE PAVEMENT MARKING (ITEM 627.18)	60 LF
ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR) (ITEM 631.12)	24 HR
FURNISH AND INSTALL 15-FOOT PEDESTAL POLE (ITEM 643.92)	1 EA
FURNISH AND INSTALL WOOD POLE WITH GUYS (ITEM 643.97)	3 EA
FURNISH AND INSTALL DUAL MODE DSCR/V2X ROADSIDE UNIT (ITEM 654.351)	1 EA

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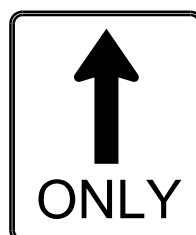
PROPOSED SIGNS



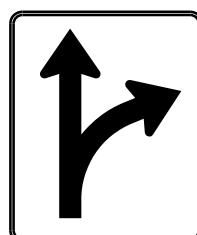
R3-5L
30'x36"
2-PROPOSED



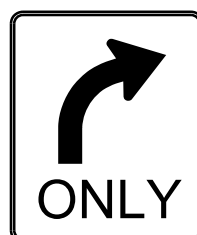
R3-6L
30'x36"
1-PROPOSED



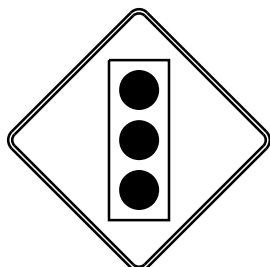
R3-5A
30'x36"
1-PROPOSED



R3-6R
30'x36"
1-PROPOSED



R3-5R
30'x36"
2-PROPOSED



W3-3
30'x30"
3-PROPOSED

EXISTING SIGNS



S4-3P
2-RETAINED



R2-1
2-RETAINED



S4-1P
2-RETAINED



S4-6P
2-RETAINED



W13-20
2-RETAINED

PLACE W3-3 30'X30' SIGNAL AHEAD WARNING SIGN APPROXIMATELY 450' IN ADVANCE OF STOP BAR AT 110+00 LT

FURNISH AND INSTALL ADVANCE VEHICLE DETECTION NB AND SB TETHERED ON SPAN WIRE AND ON NW POLE (TYP)

PLACE W3-3 30'X30' SIGNAL AHEAD SIGN 360' IN ADVANCE OF STOP BAR

FURNISH AND INSTALL HIGH INTENSITY LIGHT BASED EMERGENCY VEHICLE PREEMPTION SYSTEM, COMPLETE

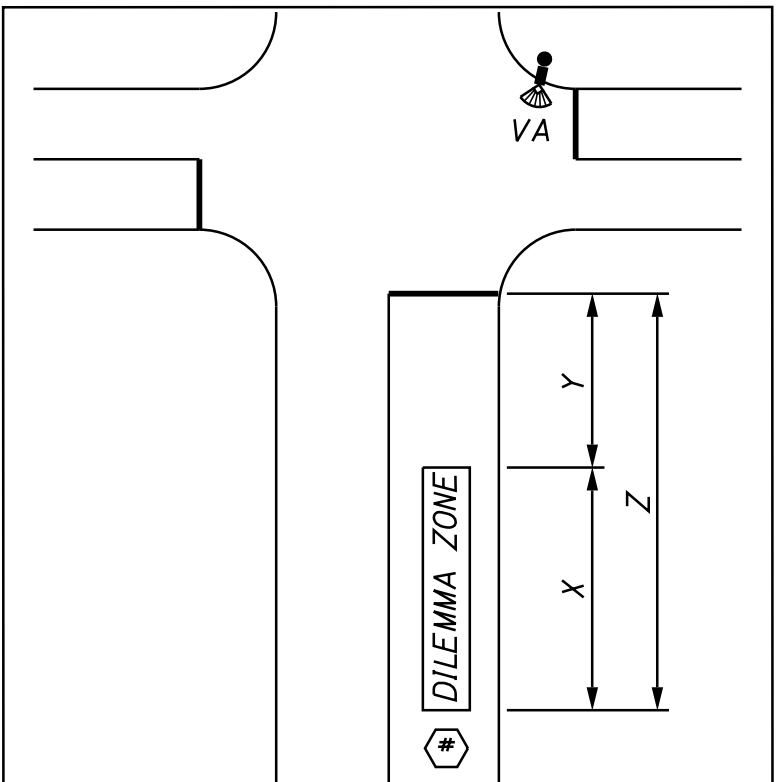
PLACE W3-3 30'X30' SIGNAL AHEAD WARNING SIGN APPROXIMATELY 450' IN ADVANCE OF STOP BAR AT 100+00 RT

EMERGENCY VEHICLE PREEMPTION OPERATION

ID	PREEMPT ASSIGNMENT	TSP ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1		NOT USED/RESERVED	
	2		NOT USED/RESERVED	
R1	3	7	1	Ø18-Ø6 (SB)
R2	4	8	2	Ø28-Ø5 (NB)
R3	5	9	3	Ø3 (WB)
R4	6	10	4	Ø4 (EB)

EMERGENCY VEHICLE PRE-EMPTION NOTES:

- PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 10 = LOWEST)
- IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY AN OPTICAL DETECTOR, THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD THE EMERGENCY ACTIVE PHASE GREEN FOR A MINIMUM OF 10 SECONDS OR UNTIL THE PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCE (4.5 SECONDS YELLOW AND 3.5 SECONDS ALL RED) AND SERVICE SUBSEQUENT EMERGENCY ACTIVE PHASES AS NECESSARY. AT THE COMPLETION OF THE PRE-EMPTION CYCLE, THE CONTROLLER SHALL TIME THE PRE-EMPTION CLEARANCE AND RESUME NORMAL SIGNAL OPERATION.
- MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
- CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.
- THE EXISTING ATMS SYSTEM IS TO BE CONFIGURED TO EMAIL PREEMPTION ALERTS TO TOWN STAFF (TO BE DESIGNATED DURING TRAINING) WHEN TRAFFIC SIGNAL PREEMPTION EXCEEDS A DURATION GREATER THAN ONE MINUTE.



SPEED MILES PER HOUR	X (DISTANCE)	Y (DISTANCE)	Z (DISTANCE)
35	152'	102'	254'
40	162'	122'	284'
45	175'	152'	327'
50	181'	172'	353'
55	152'	234'	386'

ADVANCE DILEMMA ZONE SETUP

SOURCE: TRAFFIC DETECTOR HANDBOOK:
THIRD EDITION - VOLUME 1

PLAN



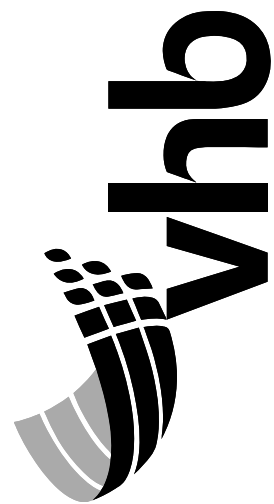
* - RIGHT-OF-WAY PROVIDED BY
MAINEDOT, AUGUST 2023

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

PROJECT NO. 2703000

WIN
027030.00

TRAFFIC PLANS



PROJ. MANAGER	J. DOSTIE	BY	DATE
DESIGN-DETAILED	M. GRAHAM	J. ROBERT	12/23
CHECKED-REVIEWED	C. BOBAY	C. BOBAY	04/24
DESIGN-DETAILED	C. BOBAY	J. BOBAY	10/24
DESIGN-DETAILED	J. ROBERT	C. BOBAY	11/24
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SANFORD
ROUTE 4 (ALFRED RD) AND
ALUMNI BLVD / JAGGER MILL RD

TRAFFIC SIGNAL PLAN

SHEET NUMBER








4

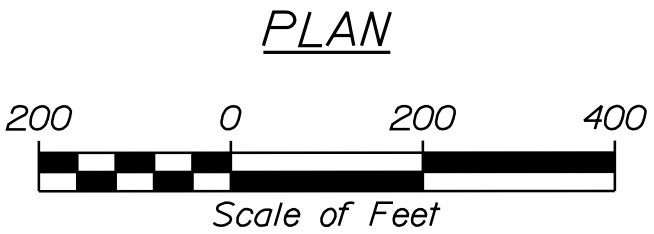
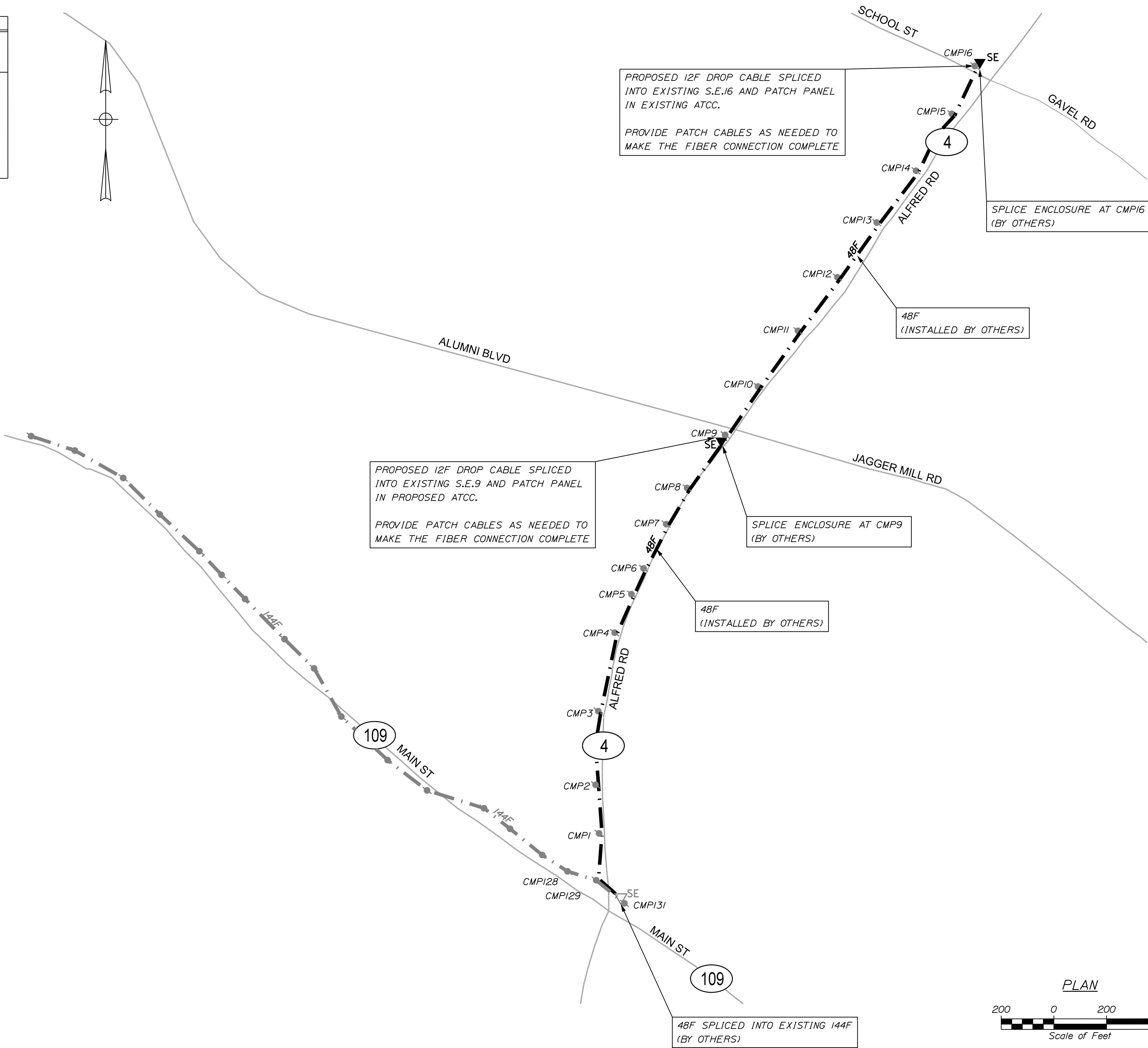
OF 6

LIST OF MAJOR ITEMS

EQUIPMENT AND WORK ITEMS (ITEM XXX.YYZ)	QUANTITY
FIBER OPTIC CABLE AND SPLICE ENCLOSURES (INSTALLATION BY OTHERS) (ITEM 626.744)	1 LS
FURNISH AND INSTALL 12-STRAND FIBER OPTIC DROP CABLE WITH AERIAL SPLICES INTO EXISTING SPLICE ENCLOSURES 9 AND 16 WITH PATCH PANEL SPLICES INTO CONTROL CABINETS THAT INCLUDES PROVIDING SUFFICIENT PATCH CABLES TO MAKE THE FIBER CONNECTION INTO THE EXISTING ADVANCED TRANSPORATION MANAGEMENT SYSTEM COMPLETE (ITEM 643.90)	1 LS

THE LISTED QUANTITIES ARE APPROXIMATE AND
ARE FURNISHED FOR INFORMATION ONLY.

MAP LEGEND	
	PROPOSED FIBER OPTIC CABLE
	EXISTING FIBER OPTIC CABLE
	EXISTING COPPER INTERCONNECT
	PROPOSED CONTROLLER CABINET
	EXISTING CONTROLLER CABINET
	PROPOSED AERIAL SPLICE ENCLOSURE
	EXISTING AERIAL SPLICE ENCLOSURE

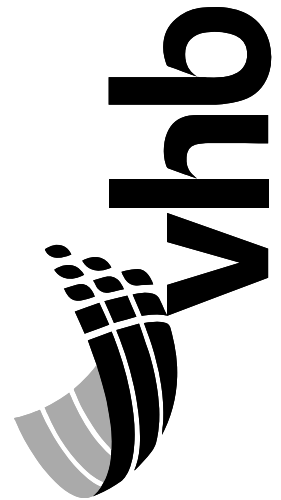


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TRAFFIC PLANS



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REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SANFORD
ROUTE 4 (ALFRED RD) AND
ALUMNI BLVD / JAGGER MILL RD

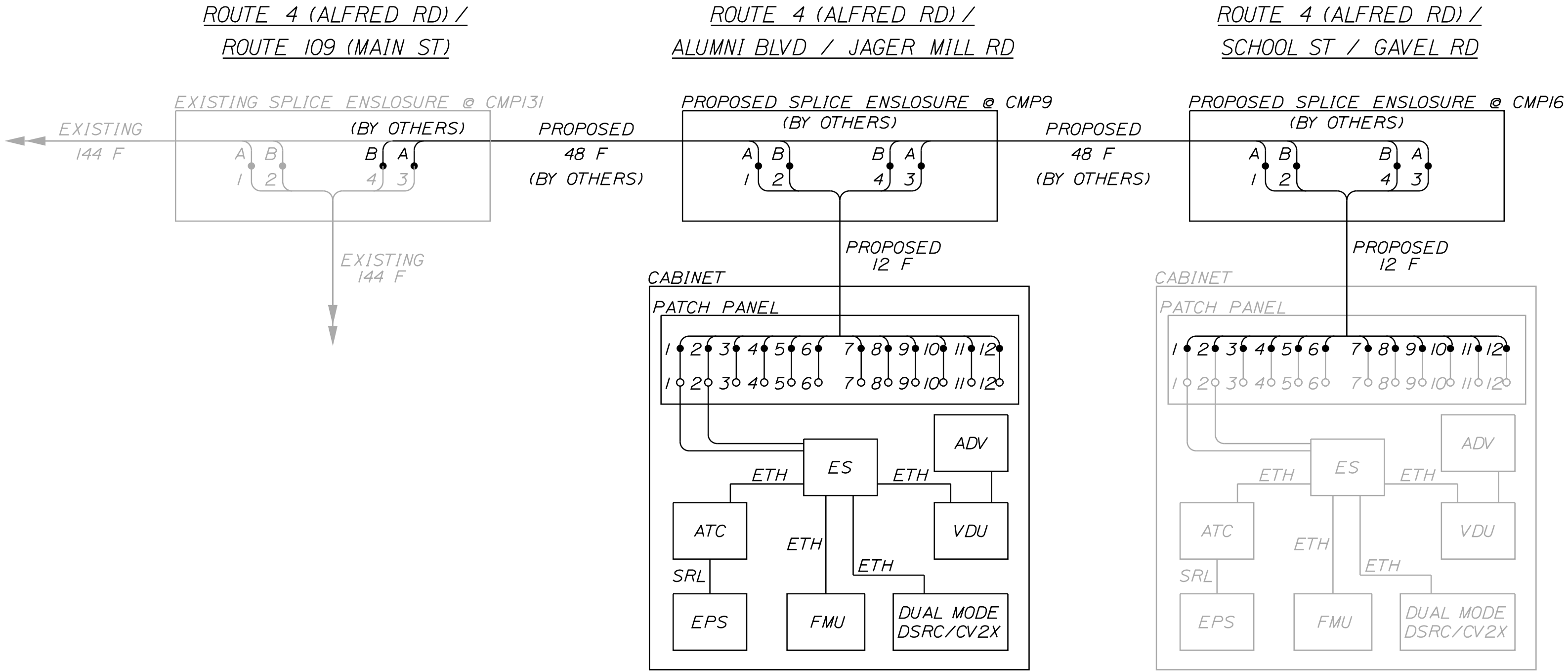
INTERCONNECT PLAN

SHEET NUMBER

5

OF 6

	CABLE	STRAND	CONNECTION TYPE	ROUTE 4 (ALFRED RD) / JAGGER MILL RD & ALUMNI BLVD		
				CABLE	STRAND	DESCRIPTION
PATCH PANEL AT CONTROLLER CABINET ROUTE 4 (ALFRED RD) / JAGGER MILL RD & ALUMNI BLVD	48F TO CMP131	I-A	UNTERMINATED	CONTINUOUS		
	48F TO CMP131	A	SPLICE	48F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	48F TO CMP131	B	SPLICE	48F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	12F TO SE CMP9	1	SPLICE	PIGTAIL	-	ES, PP POSITION 1
	12F TO SE CMP9	2	SPLICE	PIGTAIL	-	ES, PP POSITION 2
	12F TO SE CMP9	3	SPLICE	PIGTAIL	-	SPARE, PP POSITION 3
	12F TO SE CMP9	4	SPLICE	PIGTAIL	-	SPARE, PP POSITION 4
	12F TO SE CMP9	5	SPLICE	PIGTAIL	-	SPARE, PP POSITION 5
	12F TO SE CMP9	6	SPLICE	PIGTAIL	-	SPARE, PP POSITION 6
	12F TO SE CMP9	7	SPLICE	PIGTAIL	-	SPARE, PP POSITION 7
	12F TO SE CMP9	8	SPLICE	PIGTAIL	-	SPARE, PP POSITION 8
	12F TO SE CMP9	9	SPLICE	PIGTAIL	-	SPARE, PP POSITION 9
	12F TO SE CMP9	10	SPLICE	PIGTAIL	-	SPARE, PP POSITION 10
	12F TO SE CMP9	11	SPLICE	PIGTAIL	-	SPARE, PP POSITION 11
	12F TO SE CMP9	12	SPLICE	PIGTAIL	-	SPARE, PP POSITION 12



	CABLE	STRAND	CONNECTION TYPE	ROUTE 4 (ALFRED RD) / SCHOOL ST & GAVEL RD		
				CABLE	STRAND	DESCRIPTION
PATCH PANEL AT CONTROLLER CABINET ROUTE 4 (ALFRED RD) / SCHOOL ST & GAVEL RD	48F TO CMP131	I-A	UNTERMINATED	CONTINUOUS		
	48F TO CMP131	A	SPLICE	48F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	48F TO CMP131	B	SPLICE	48F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	12F TO SE CMP16	1	SPLICE	PIGTAIL	-	ES, PP POSITION 1
	12F TO SE CMP16	2	SPLICE	PIGTAIL	-	ES, PP POSITION 2
	12F TO SE CMP16	3	SPLICE	PIGTAIL	-	SPARE, PP POSITION 3
	12F TO SE CMP16	4	SPLICE	PIGTAIL	-	SPARE, PP POSITION 4
	12F TO SE CMP16	5	SPLICE	PIGTAIL	-	SPARE, PP POSITION 5
	12F TO SE CMP16	6	SPLICE	PIGTAIL	-	SPARE, PP POSITION 6
	12F TO SE CMP16	7	SPLICE	PIGTAIL	-	SPARE, PP POSITION 7
	12F TO SE CMP16	8	SPLICE	PIGTAIL	-	SPARE, PP POSITION 8
	12F TO SE CMP16	9	SPLICE	PIGTAIL	-	SPARE, PP POSITION 9
	12F TO SE CMP16	10	SPLICE	PIGTAIL	-	SPARE, PP POSITION 10
	12F TO SE CMP16	11	SPLICE	PIGTAIL	-	SPARE, PP POSITION 11
	12F TO SE CMP16	12	SPLICE	PIGTAIL	-	SPARE, PP POSITION 12

LEGEND

FIBER OPTIC PIGTAIL

FIBER OPTIC SPLICE

ATC - ADVANCED TRANSPORTATION CONTROLLER

ES - FIBER ETHERNET SWITCH

ETH - ETHERNET CABLE

SRL - SERIAL CONNECTION

EPS - EMERGENCY PREEMPTION SYSTEM

VID - VIDEO DETECTION CONTROL UNIT

EXISTING EQUIPMENT

SANFORD

ROUTE 4 (ALFRED RD) AND
ALUMNI BLVD / JAGGER MILL RD

SYSTEM NETWORK
AND ARCHITECTURE



PROJ. MANAGER	J. DOSTIE	BY	DATE
DESIGN-DETAILED	M. GRAHAM	J. ROBERT	12/23
CHECKED-REVIEWED	C. BOBAY	C. BOBAY	04/24
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