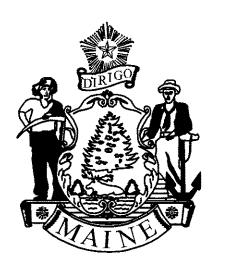
PROPOSED CONTROLLER WITH CABINET EXISTING CONTROLLER WITH CABINET PROPOSED VIDEO DETECTION ZONE PROPOSED PEDESTRIAN SIGNAL HEAD WITH PUSH BUTTON AND INFORMATIONAL SIGN EXISTING PEDESTAL POST AND FOUNDATION EXISTING SPAN WIRE OR MAST ARM MOUNTED SIGN EXISTING UNDERGROUND COPPER INTERCONNECT CABLE PROPOSED WIRELESS INTERCONNECT DEVICE

TRAFFIC SIGNAL LEGEND

STATE OF MAINE DEPARTMENT OF TRANSPORTATION

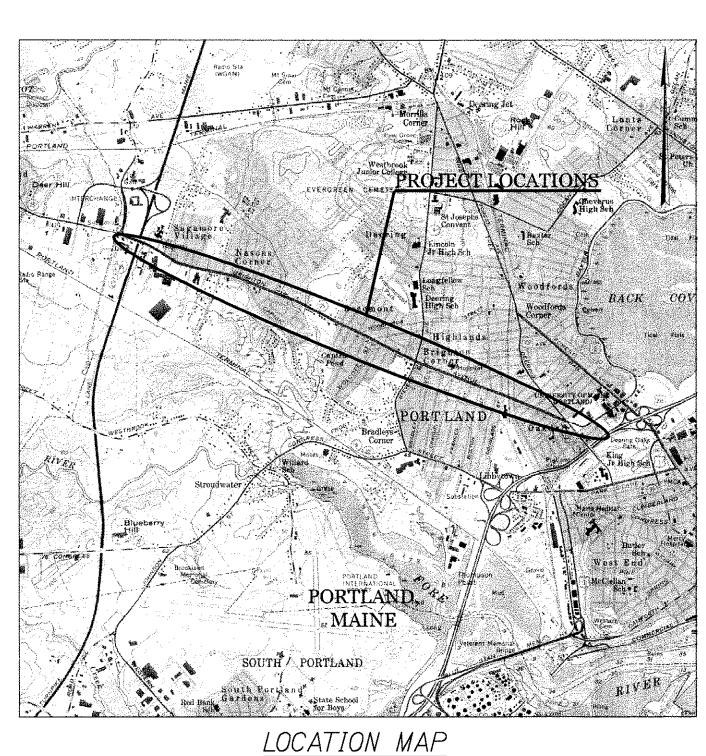


PORTLAND

CUMBERLAND COUNTY

STATE PROJECT NUMBER: 17730.00

ENERGY CONSERVATION AND PACTS RTMS TIER IMPROVEMENTS TO HTRAFFIC SIGNALS ALONG BRIGHTON WITH SIGNAL TIMING ADJUSTMENTS AT MAIN STREET LARRABEE ROAD



Scale in Miles

LAYOUT SCALE $\stackrel{\widehat{X}}{\boxtimes}$ Project Intersection Number Sheet Number

Scale in Feet

INDEX OF SHEETS

Description	Sheet No.
Title Sheet	1
General Notes	
Quantities	
Overall Map	
Traffic Signal Plans	
Communications Network Diagram	16
Time Space Diagrams	17-18
Bid Alternate No. 1	19
Bid Alternate No. 2	20
Bid Alternate No. 3	21 ⁻

SHEET NUMBER

- 1. The Contractor shall meet all utility requirements for new service connections.
- 2. All splices will be made in the cabinets meeting MaineDOT specifications.
- 3. For pole mounted signal heads, the bottom of the housing shall be mounted at least 8 feet but not more than 19 feet above the sidewalk, or if there is no sidewalk, above the pavement grade at the high point of the road
- 4. Two copies of as-built plans, shall be left in each of the controller cabinets.
- 5. The Contractor is responsible for finding exact locations of existing utilities prior to construction. The Contractor shall contact Dig-Safe and appropriate authorities prior to any subsurface activities.
- 6. Traffic signal work shall be completed in a manner and order that will cause the minimum disruption to traffic.
- 7. The Engineer and MaineDOT shall have the right and authority to determine the acceptability of work and materials in progress or completed and shall have the right to reject any work or materials which do not conform, in its sole opinion, to the plans or specifications.
- 8. All signing, signal and striping materials and placement shall conform to the MaineDOT standard specifications, supplemental specifications and standard details and with the Federal Highway Administration "Manual on Uniform Traffic Control Devices" (MUTCD) dated 2003, as amended.
- 9. Any relocations or adjustments of existing utility facilities will be made by the respective utilities in coordination with the work of the Contractor.
- 10. Contractor shall be responsible for obtaining any necessary street/sidewalk occupancy or opening permits.
- 11. All existing driveway accesses shall be maintained at all times.
- 12. The Contractor shall provide the Engineer, MaineDOT, and the City of Portland with a schedule of work and work zone control plans in accordance with the City Code of Ordinance Chapter 25 Article VII for constructing the traffic improvements at least two weeks prior to the commencement of work.
- 13. All material schedules shown on the plans are for general information only. The Contractor shall prepare his own material schedules based upon his plan review. All schedules shall be verified in the field by the Contractor prior to ordering materials or performing work.
- 14. All non-paved areas disturbed during construction shall be loamed and seeded, unless otherwise directed by the owner. All paved areas disturbed during construction shall be repaired by the Contractor in accordance with the City Technical Manual. Costs for repair of disturbed areas shall be incidental to other contract items.
- 15. Equipment

Contractor Furnished Equipment - The traffic signal controllers and various other equipment items shown on the plans shall be furnished and installed by the Contractor. Per the specifications listed in the City of Portland Technical Manual dated 4/21/10, the traffic signal controllers supplied under this contract shall be Naztec NEMA TS-2, Type 2 and shall have the capability of supporting NTCIP protocols. Traffic signal controllers shall support direct Ethernet communications from the proposed in-cabinet DSL modem to the controller's Ethernet port. Traffic signal controllers for Locations 19, 20, 28, and 29 shall support a wireless (radio) communication system. The wireless communication system shall be capable of integration with the Ethernet over copper communications system at Locations 20 and 28 and back to the central system control computer. The equipment supplied and installed shall be capable of supporting all of the system functionality currently in place between recently supplied and installed Naztec traffic signal controllers operating as on-street closed loop systems and shown as being retained for reprogramming and reuse in this project.

The system shall employ an IP-based communications network to and from the central system control computer. The equipment supplied and installed shall be capable of upload to and download from each of the system's traffic signal controller databases, remotely access local intersection reports, remotely access processed vehicle detector data, and provide real time intersection status to support graphical local and system maps.

The Contractor shall be solely responsible for providing the project with working and fully configured controllers for each intersection, delivery and complete set-up of the central system, installation of the central and local intersection communications interface, and coordination with the information technology (IT) personnel at the City of Portland or other location as directed by the City. The Contractor is further responsible for any local wiring at the City of Portland's system computer location, system Start-up and System Loading, Acceptance Testing, Training and System Maintenance.

The Contractor shall be solely responsible for furnishing and installing all other equipment to include pedestrian signals, pedestrian pushbuttons and signs, wireless communications systems, copper interconnect and connections, video detection cameras, video-based presence detection sensors, field wiring, and all other equipment necessary to provide complete and operational traffic signal systems. The Contractor shall be aware of and conform to all details for the material specifications in Special Provision 718.

16. Foundations

When applicable the Contractor may at his discretion and upon approval by the Engineer form and pour a new controller cabinet foundation suitable to accommodate a P-type cabinet around any existing controller foundation in lieu of installing new controller cabinet foundations with new, extended or modified conduit connections to the existing signal system. If this option is chosen, the Contractor must meet the following conditions:

- 1. Minimum 6-inches on the vertical faces and 4-inches of new concrete on top above the old concrete.

 This may mean chipping down a few of inches of old concrete.
- 2. Existing anchor bolts must be cut below the new finished top surface.
- 3. New anchor bolts shall be drilled into the new concrete foundation.
- 4. Strengthen the new concrete jacket with adequate reinforcement, following standard details for new concrete installation.
- 5. Meet American with Disabilaties Act (ADA) requirements.

17. Start-Up and System Loading

The system supplier shall initiate complete system operation from the controller and system timing schedules shown on the plans or data supplied by the Engineer and shall initiate stopline detectors. logging operation at the direction of the Engineer. After the supplier has initiated system operation and detector logging, the system shall be run for a continuous 7-day initial operational testing period. If any major functions of the system fail to operate during this testing period, as determined by the Engineer, the supplier shall correct or repair the system and the continuous 7-day testing period shall be restarted. At the completion of a successful 7-day testing period, the supplier shall advise the Engineer that the system is ready for the Start-up Phase. Within 7 days of completion of the initial testing period, and notification to the Design Engineer (Vanasse Hangen Brustlin, Inc.) with on-site assistance from the supplier's engineer, will begin loading the system for full coordinated operations. After coordination has been initiated and run for approximately two weeks, the Engineer shall evaluate system operation and make adjustments as necessary. The Supplier's engineer does not need to be on-site during this period, but must be available by telephone or by demand on-site as needed. Any major system malfunctions encountered during this testing period shall be corrected by the supplier, and the test restarted. During this period the Engineer may make modifications to the system timing parameters, but this will not cause restarting of the testing period. At the completion of the coordination testing period the system will be deemed ready for final Acceptance Testing as described below. Testing of controllers per section 718.07 is not required.

18. Acceptance Testing

Upon completion of the 14-day coordination testing period, the Engineer shall evaluate system operation. It is expected that the complete system shall operate fully functional at the City of Portland and the remote locations for a period of 30 consecutive days without malfunction. Minor malfunctions of inoperability not the fault of the Contractor, as judged by the Engineer, are not included in the 30-day period. If the system fails to operate as intended or the supplier's claims, the malfunction shall be corrected by the Contractor at its cost and a new 30-day testing period shall begin. This process shall continue until a completely operable system is demonstrated for a consecutive 30-day period.

Acceptance testing must demonstrate to the Engineer's reasonable satisfaction that the hardware and licensed software function in accordance with the specifications, requirements, through-puts, functionalities, performance criteria or other benefits stated in documentation, promotional materials, proposals, and/or demonstrations given to MaineDOT and the City of Portland.

19. Training

The Contractor shall provide 3-days (24 hours) of hands-on system training classes, which shall cover the general operations and maintenance of the traffic signal system. The training shall be designed for the primary local jurisdiction personnel (City of Portland) and supplemental personnel who will use and monitor the system. The Contractor should budget for up to 8 attendees.

Training documentation shall include operating manuals for all system equipment and components.

Documentation shall also be provided, explaining the operation of all system features. Hard copies of all handouts used during training shall be distributed. The Contractor is expected to present clear and organized instruction. The initial training shall consist minimally of the following:

- System operation, system performance analysis, and revision of system operating parameters based on the analysis.
- Familiarity with construction details of central office equipment (disconnect locations, cable routing etc.).
- How to enter system related commands.
- Operation of alldevices.
- Generation and editing of intersection controllers.
- Uploading/downloading of intersection controller databases.
- Procedure for enabling dynamic displays.
- Explanation of the communication system.Basic troubleshooting procedures to isolate malfunctions.
- The Contractor shall supply a course syllabus for each proposed training day for approval by the Engineer at least 7 business days prior to the scheduled course. Each syllabus shall include a description of the topics covered, the level of detail to be covered in the class, and the number of teaching hours included in the class. The Contractor shall also supply a list of equipment, software, and manuals to be provided for the training at least 5 business days prior to the scheduled course. All training classes shall make use of the system data collected during the Start-up Phase of the project.
- 20. System Maintenance

The system must come with a minimum five (5) year software maintenance agreement to become effective when the proposed system has been accepted, in writing, by MaineDOT and the City of Portland.

Software updates shall be provided free of charge for five (5) years from date of system acceptance. Software corrections or required modifications for proper system operation per these specifications shall be furnished to MaineDOT and the City of Portland at no additional cost during the warranty period.

Hardware equipment shall be warranted for three (3) years, effective when the installed and functional system has been accepted, in writing, by MaineDOT, the City of Portland.

Third party hardware and software licenses and warranties shall be passed to MaineDOT and the City of Portland.

- 21. The Contractor shall replace any existing local intersection wire loop detectors that are not functioning at any signalized intersection in the project prior to System Start-up and Loading. The Contractor shall also re-inspect each signalized intersection during the Acceptance Testing period and replace each non-functioning loop detector and certify that all loop detectors are functioning properly before final acceptance is granted. The Contractor shall notify and receive authorization from the Engineer before replacing any malfunctioning loop detector.
- 22. Video Detection Installation If applicable, at locations where video detection cameras are proposed to be installed on mast arms an initial six-foot vertical pipe extension shall be installed on the mast arm with the video detector mounted on the top of the extension pipe. The Engineer reserves the right to direct the Contractor to field adjust the video detector mounting height for local conditions identified during or after installation. No additional cost will be allowed for field adjusting the pipe extensions or rewiring as necessary. This work will be incidental to the Video Detection System items.
- 23. As payment for work on this project, the Contractor shall submit a lump sum bid per intersection and in addition a lump sum bid for wireless interconnection. Any modifications to existing copper interconnect cable (e.g. T-Taps) shall be subsidiary to ITEM 643.81. See Special Provision 643 for additional information.

24. Salvage Rights: The City of Portland shall have first rights to all equipment removed or replaced by the project (contact Kevin Thomas 207:756:8291). The Contractor shall carefully remove and store all equipment claimed by the City of Fortland at a central location on site for retrieval by the City. The storage area shall be secure and all control equipment removed that has computer chip technology shall be stored in an interior heated environment.

Any equipment not claimed by the City of Portland for salvage shall be removed from the site by the Contractor and disposed of in a manner acceptable to the Engineer.

- 25. The Contractor shall be responsible for submitting RED-LINE AS-BUILT drawings of the final work to the Engineer.

 Those drawings shall be on a clean set of plans showing all changes or modifications to the Bid Plans.
- 26. The Contractor vill be responsible for the relocation of power meters if required. This work will be incidental to item 643.71 is applicable to the location of the work.
- 27. The Contractor shall perform the work in a manner that will require the least amount of downtime to the traffic signal operations. Any police detail required (as deemed necessary by the Resident Engineer) will be paid for by the Contractor.
- 28. The Contractor shall remain alert for any evidence of contaminated soils. The Contractor shall employ appropriate health and safety measures to protect its workers against hazards associated with excavating and working neal contaminated soils. If the Contractor encounters evidence of soil or groundwater contamination, the Contractor shall secure the excavation, stop work in the contaminated area, and immediately notify the Engineer. The Engineer shall contact the Hydrogeologist in MaineDOT's Environmental Office at 207-624-3100 and the Maine Department of Environmental Protection at 800-482-0777. Work may only continue with authorization from the Engineer.
- 29. The Contractor's directed to project Special Provision 718 for additional information related to the following:
 - 718.12 Trafic signal control system
 - 718.13 Wire ss interconnect system
 - 718.14 Pedestrian crossing system

Special provision 718 expands upon the information found in these general notes. As such, the more restrictive language between these general notes and special provision 718 shall govern the work to be performed under this project.

30. The intersection base plans shown on Sheets 5-15 were digitized by VHB based on aerial photography provided by the City of Fortland. Supplemental information was obtained by VHB from field reviews and inventory conducted November 12, 2008 and April 6-9, 2009.

DAILY AND WEEKLY COORDINATION SCHEDULE

 WEEK
 DAY OF WEEK

 PROG
 SUN
 MON
 TUE
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 SAT

 JAN-DEC
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		TIME			
EVENT	HR	WIN	SEC	ACTION	
,		DAY PLAN 1	·		
1	00	00	00	54	
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3	06	45	00	4	
4	08	45	00	2	
5	10	30	00	٠ 3	
6	11	45	00	5	
7	13	30	00	3	
8	14 45 (5	
9	18	00	3		
10	19	00	00	2	
11	20	00	00	54	
		DAY PLAN 2		Carlotter of the state of the s	
1	00	00	00	54	
2	10	00	00	3	
3	11	15	00	3	
4	15	30	00	3	
5	18	00	00	2	
6	19	00	00	54	
•		DAY PLAN 3	i		
1	00	00	00	54	
2	10 00 00		2		
3	3 11	15	00	3	
4	15	30	00	2	
5	18	30	00	54	

SHEET NUMBER

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STATE OF MAINE DEPARTMENT OF TRANSPORTATION

PORTLAND

2

	SECTION 0001 PROJECT ITEMS - BASIS OF AWARD		
ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
626.22	NON-METALLIC CONDUIT	LF	75
626.31	450 MM [18 IN] FOUNDATION	EA	2
643.71	TRAFFIC SIGNAL MODIFICATION: BRIGHTON AVE / DEERING AVE / FALMOUTH ST	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: BRIGHTON AVE / DEVONSHIRE ST / ST JOHN ST / DARTMOUTH ST	LUMP	11
643.71	TRAFFIC SIGNAL MODIFICATION: BRIGHTON AVE / STEVENS AVE	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: BRIGHTON AVE / WOODFORD ST / COLUMBIA RD / COLONIAL RD	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: BRIGHTON AVE AT KENT ST AND CAPISIC ST	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: BRIGHTON AVE / ROWE AVE / WARWICK ST	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: BRIGHTON AVE / RAND RD / CABOT ST	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: BRIGHTON AVE / TAFT AVE	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: BRIGHTON AVE / BARRON CENTER	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: BRIGHTON AVE / RIVERSIDE ST	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: MAIN STREET / LARRABEE ST	LUMP	1
643.81	TRAFFIC SIGNAL CONTROL SYSTEM	LUMP	1
643.86	TRAFFIC SIGNAL LOOP DETECTOR	EACH	4*
643.90	INTERCONNECT: WIRELESS (BRIGHTON AVE - DARTMOUTH ST TO DEERING/FALMOUTH ST)	LUMP	1
643.90	INTERCONNECT: WIRELESS (BRIGHTON AVE - BARRON CENTER TO RIVERSIDE ST)	LUMP	1
643.92	PEDESTAL POLE	EA	2
652.33	DRUM	EA	15
652.34	CONES	EΑ	50
652.35	CONSTRUCTION SIGNS	SF	200
652,361	MAINTENANCE OF TRAFFIC CONTROL DEVICES	LUMP	1
652.38	FLAGGERS	HR	96
652.381	UNIFORM TRAFFIC CONTROL OFFICERS	HR	72
659.10	MOBILIZATION	LUMP	1

SECTION 0001 NOTES:

- 1. SEE LIST OF MAJOR EQUIPMENT ON SIGNAL PLAN SHEETS FOR ITEMIZATION OF WORK ITEMS 643.71.
- 2. THE TRAFFIC SIGNAL CONTROL SYSTEM (ITEM 643.81) INCLUDES A FREE UPGRADE OF STREETWISE LIGHT TO STREETWISE ATMS UNDER THE PACTS REGIONAL AGREEMENT, SYSTEM SETUP, AND TRAINING (SEE SPECIAL PROVISION 718.12 AND GENERAL NOTE 19).
- 3. ANY MODIFICATIONS TO THE EXISTING COPPER INTERCONNECT CABLE SHALL BE SUBSIDIARY TO ITEM 643.81.
 - * = FOUR UNDETERMINED LOCATIONS (SEE GENERAL NOTE 21).

	SECTION 0002 PROJECTITEMS - BID ALTERNATE NO. 1										
ITEM NO.	ITEM DESCRIPTION		UNIT	QUANTITY							
626.35	CONTROLLER CABINET FOUNDATION		EΑ	1							
643.71	TRAFFIC SIGNAL MODIFICATION: BRIGHTON AVE	RIVERSIDE ST	LUMP	11							

SECTION 0002 NOTES:

- 1. SEE LIST OF MAJOR EQUIPMENT ON SIGNAL PLAN SHEET 9 FOR ITEMIZATION OF WORK ITEMS.
- 2. ANY ADDITIONAL EQUIPMENT OR WORK THAT IS NOT SHOWN ON THE PLANS BUT FOUND TO BE NECESSARY TO PROVIDE A COMPLETE AND FULLY OPERATIONAL TRAFFIC CONTROL SYSTEM SHALL BE SUBSIDIARY TO ITEM 643.71.
- 3. MOBILIZATION, TRAFFIC CONTROL PLAN, FLAGGERS, UNIFORM OFFICERS, AND ALL MAINTENANCE OF TRAFFIC CONTROL DEVICE ITEMS SHALL BE SUBSIDIARY TO 643.71.

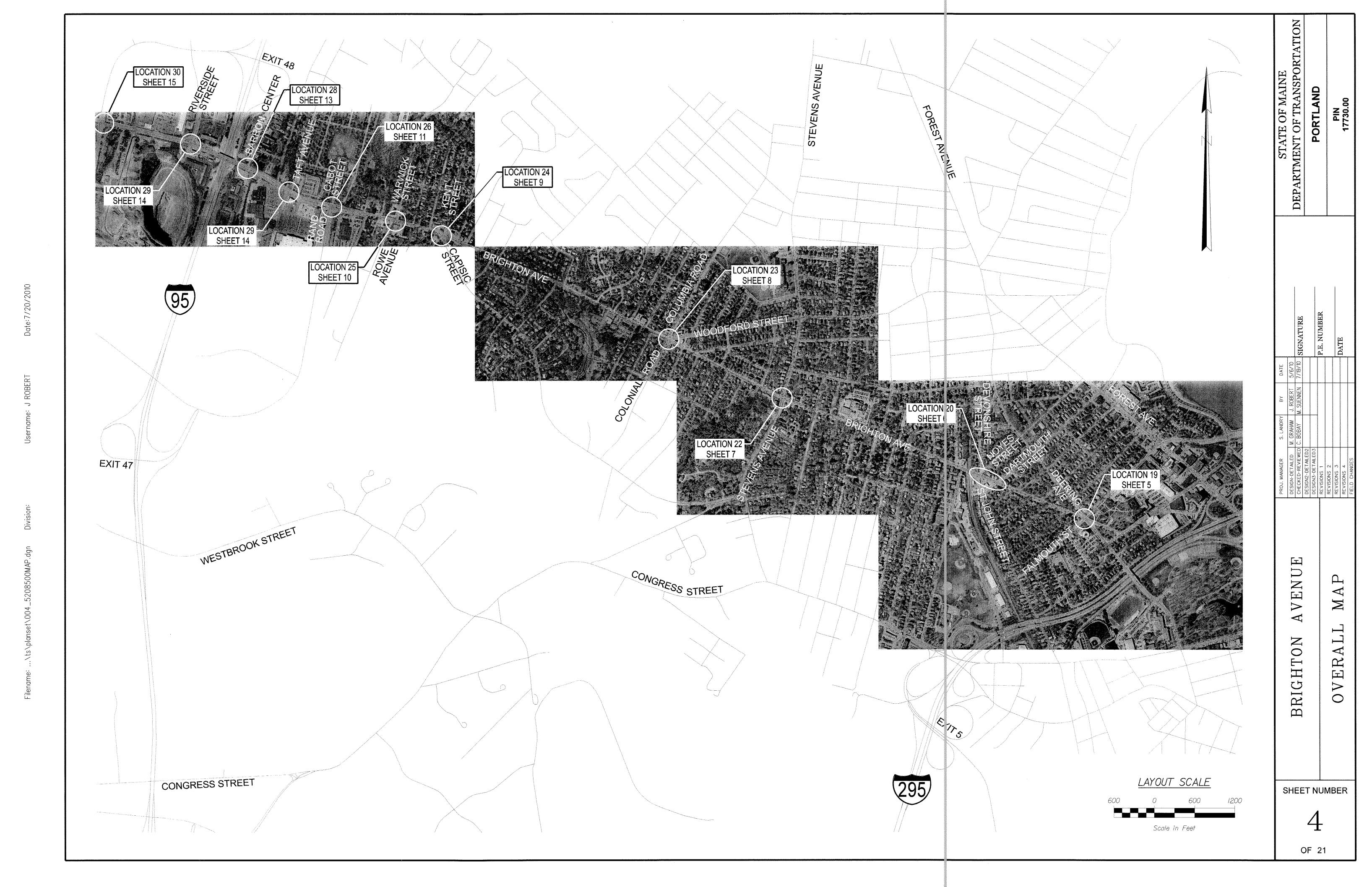
	SECTION 0003 PROJEC TITEMS - BID ALTERNA	TE NO. 2	
ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
643.83	VIDEO DETECTION SYSTEM: BRIGHTON AVE / RIV ERSIDE ST	LUMP	1

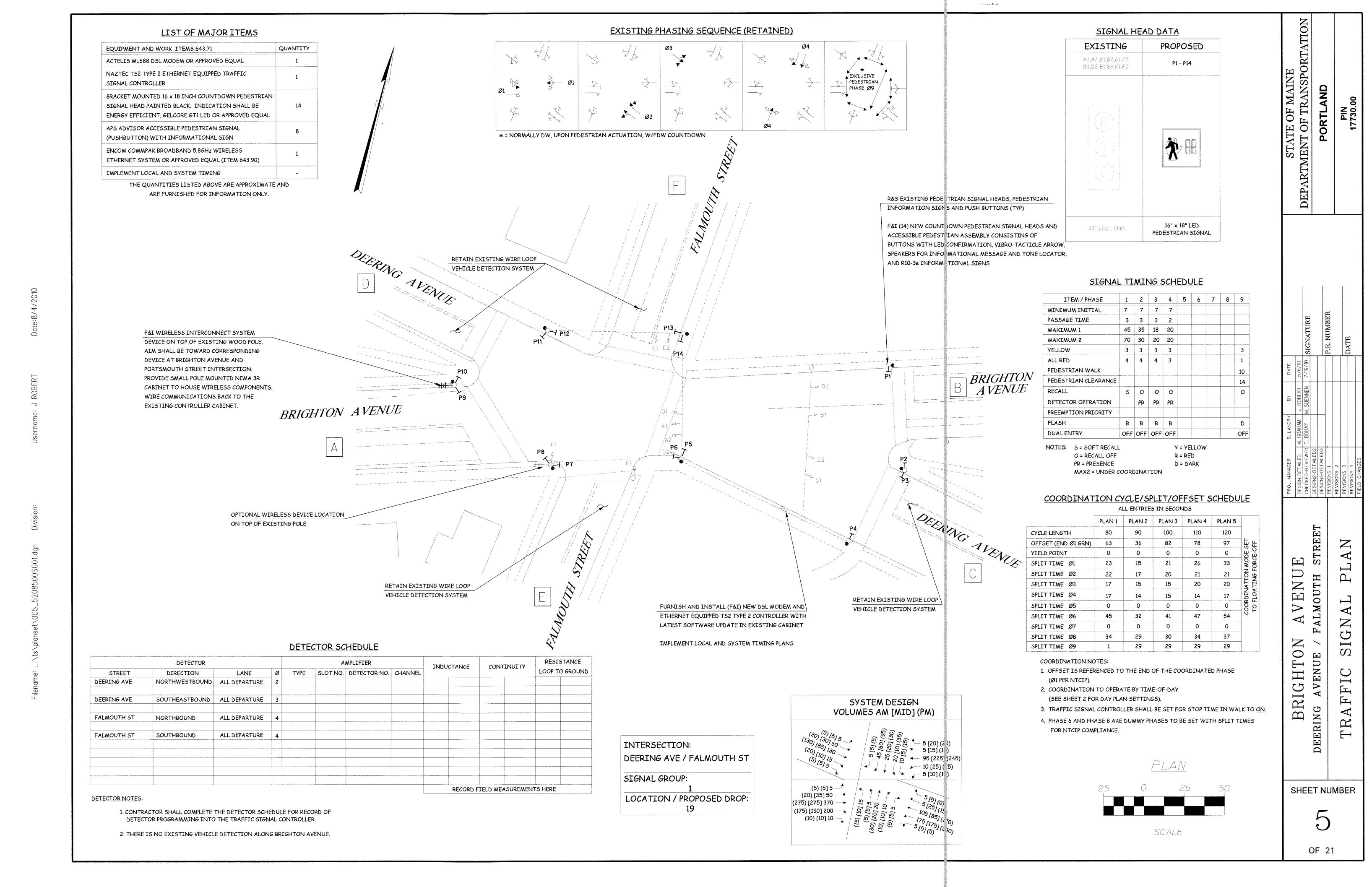
	SECTION 0004 PROJECT ITEMS - BID ALTERNATE NO. 3								
ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY						
643.83	VIDEO DETECTION SYSTEM: BRIGHTON AVE / WOODFORD ST / COLUMBIA RD / COLONIAL RD	LUMP	1						

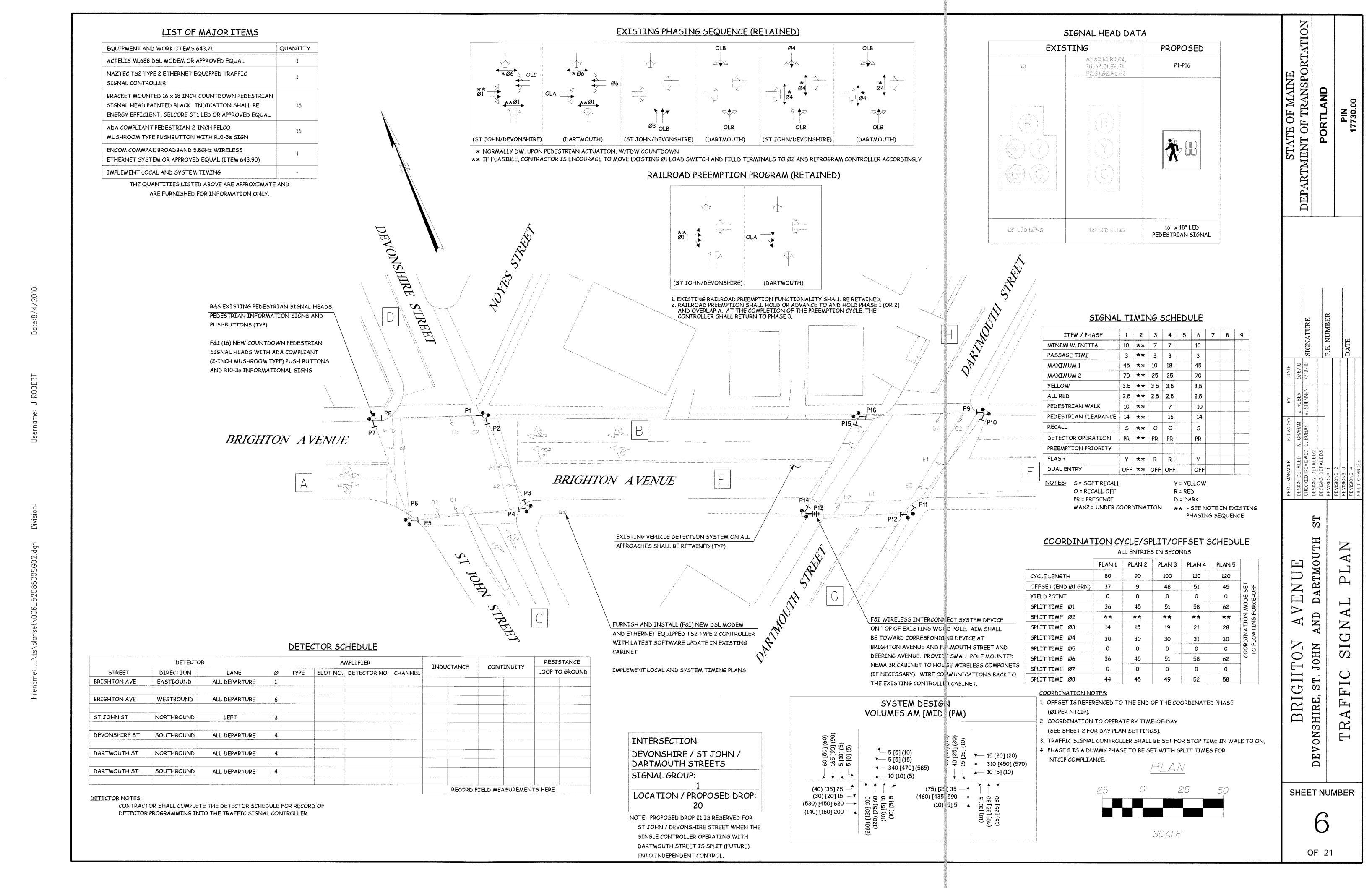
SECTION 0003 AND 0004 NOTES:

- 1. SEE LIST OF MAJOR EQUIPMENT ON SIGNAL PLAN SHEET \$ 20 AND 21 FOR ITEMIZATION OF WORK ITEMS, RESPECTIVELY.
- 2. ANY ADDITIONAL EQUIPMENT OR WORK THAT IS NOT SHOWN ON THE PLANS BUT FOUND TO BE NECESSARY TO PROVIDE A COMPLETE AND FULLY OPERATIONAL TRAFFIC CONTROL SYSTEM SHALL BE SUBSIDIARY TO ITEM 643.83.
- 3. MOBILIZATION, TRAFFIC CONTROL PLAN, FLAGGERS, UNIFORM OFFICERS, AND ALL MAINTENANCE OF TRAFFIC CONTROL DEVICE ITEMS SHALL BE SUBSIDIARY TO 643.83.

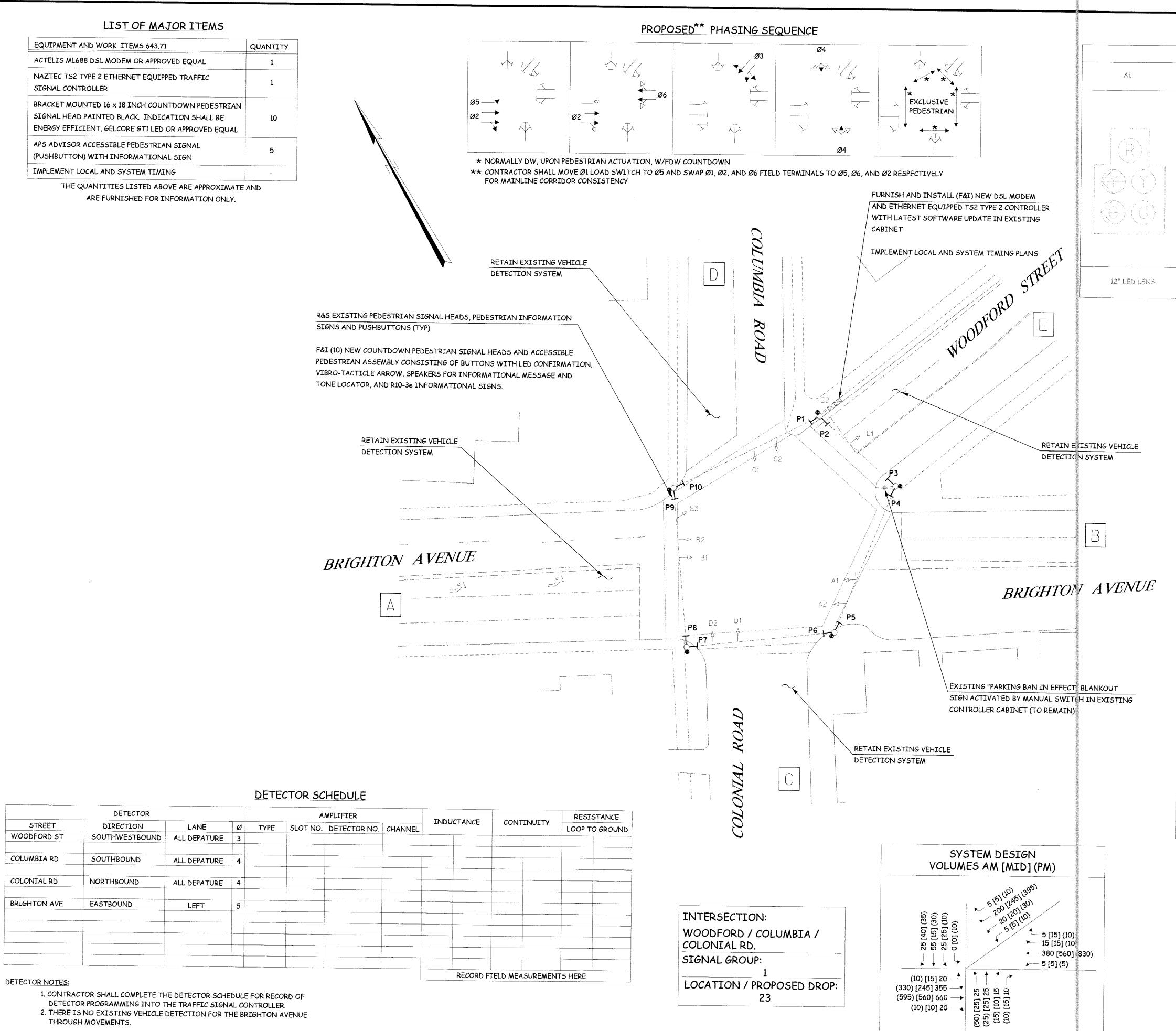
	STATE OF MAINE	DEPARTMENT OF TRANSPORTA		PORTLAND				17730.00	
	PROJ. MANAGER S. LANDRY BY DATE	DESIGN-DETAILED M. GRAHAM J. ROBERT 5/6/10 CHECKED-REVIEWED C. BOBAY M. SLIFINNEN 7/19/10 ST.C.NATITRE			REVISIONS 1 P.E. NUMBER	REVISIONS 2	REVISIONS 3	REVISIONS 4	FIELD CHANGES
ES		DDICHUON AVENIIF	A VILINO				A H H H H H H H H H H H H H H H H H H H		
		SHE	ĒĒ	T 1	3	JN	IB	EF	-







THROUGH MOVEMENTS.



SIGNAL HEAD DATA

EXISTING PROPOSED A2,81,82,C1,C2,E1,E3 D1,D2,E2 P1-P10

12" LED LENS

SIGNAL TIMING SCHEDULE

12" LED LENS/

8" LED LENS (2)

ITEM / PHASE	1	2	3	4	5	6	7	8	9
MINIMUM INITIAL		18	7	7	5	10		7.7.7.	
PASSAGE TIME	,	3	2	2	1.5	3			
MAXIMUM 1		45	25	18	15	45			
MAXIMUM 2		60	30	20	25	60			
YELLOW		3	3	3,5	3.5	3		7	3
ALL RED	-,00	3	3	2.5	2.5	3			1
PEDESTRIAN WALK						1			6
PEDESTRIAN CLEARANCE								-	18
RECALL	70.	S	0	0	0	5			0
DETECTOR OPERATION	*		PR	PR	PR				
PREEMPTION PRIORITY									
FLASH		У	R	R	R	У			D
DUAL ENTRY		OFF	OFF	OFF	OFF	OFF			OF

NOTES: S = SOFT RECALL O = RECALL OFF

Y = YELLOW R = RED

D = DARK

16" x 18" LED

PEDESTRIAN SIGNAL

PR = PRESENCE MAX2 = UNDER COORDINATION

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

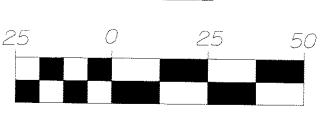
Al	L ENTRIES	IN SECON	1DS
AN 1	PLAN 2	PLAN 3	PL

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	İ
CYCLE LENGTH	80	90	100	110	120	
OFFSET (END Ø2 GRN)	72	13	41	15	19	늅
YIELD POINT	0	0	0	0	0	DE S
SPLIT TIME Ø1	0	0	0	0	0	₩ WOL
SPLIT TIME Ø2	33	27	43	43	50	COORDINATION MODE
SPLIT TIME Ø3	26	18	13	22	21	L
SPLIT TIME Ø4	20	16	15	16	20	LINATI
SPLIT TIME Ø5	13	11	16	22	18	S S
SPLIT TIME Ø6	20	16	27	21	32	ខ
SPLIT TIME Ø7	0	0	0	0	0	1
SPLIT TIME Ø8	46	34	28	38	41	İ
SPLIT TIME Ø9	1	29	29	29	29	-

COORDINATION NOTES:

- 1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE
- (Ø2 PER NTCIP).
- 2. COORDINATION TO OPERATE BY TIME-OF-DAY
- (SEE SHEET 2 FOR DAY PLAN SETTINGS).
- 3. TRAFFIC SIGNAL CONTROLLER SHALL BE SET FOR STOP TIME IN WALK TO ON.
- 4. PHASE 8 IS A DUMMY PHASE TO BE SET WITH SPLIT TIMES FOR

NTCIP COMPLIANCE.



SCALE

SHEET NUMBER

FORD

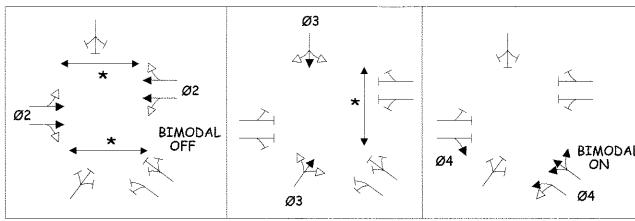
田

LIST OF MAJOR ITEMS

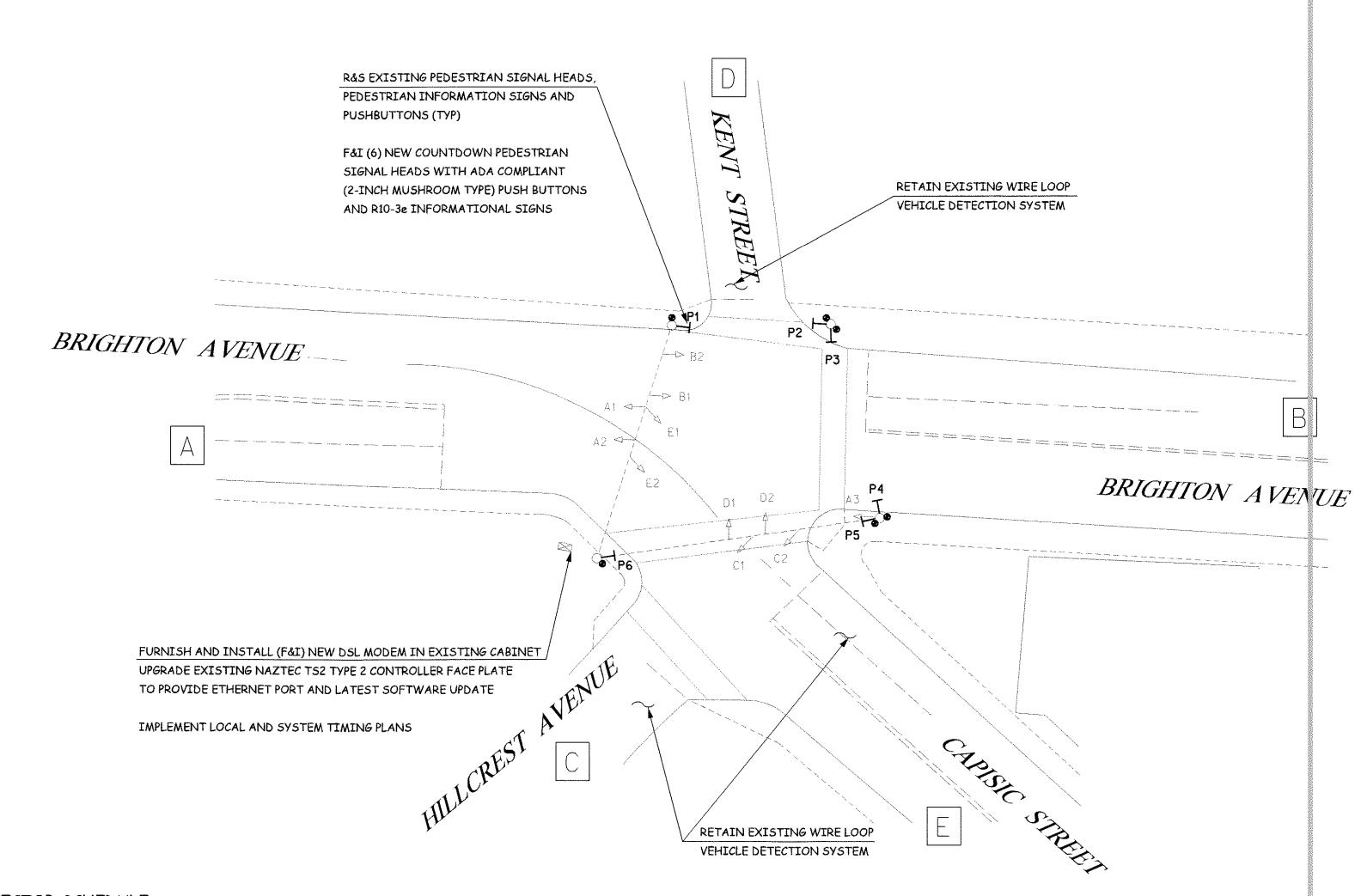
EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
ACTELIS ML688 DSL MODEM OR APPROVED EQUAL	1
NAZTEC TS2 TYPE 2 ETHERNET EQUIPPED TRAFFIC SIGNAL CONTROLLER FACEPLATE AND SOFTWARE UPDATE	1
BRACKET MOUNTED 16 × 18 INCH COUNTDOWN PEDESTRIAN SIGNAL HEAD PAINTED BLACK. INDICATION SHALL BE ENERGY EFFICIENT, GELCORE GT1 LED OR APPROVED EQUAL	6
ADA COMPLIANT PEDESTRIAN 2-INCH PELCO MUSHROOM TYPE PUSHBUTTON WITH R10-3¢ SIGN	6
IMPLEMENT LOCAL AND SYSTEM TIMING	-

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

EXISTING PHASING SEQUENCE (RETAINED)



* NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN



DETECTOR SCHEDULE

DETECTOR			Α	MPLIFIER		INDUCTANCE	CONTINUITY	RESISTANCE		
STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO.	DETECTOR NO.	CHANNEL	INDUCTANCE	DOCTANCE CONTINUITY	
KENT ST	SOUTHBOUND	ALL DEPARTURE	3							
HILLCREST AVE	NORTHEASTBOUND	ALL DEPARTURE	3							
CAPISIC ST	NORTH WESTBOUND	ALL DEPARTURE	4		****			V-1-0-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-		
								DECORN E	IELD MEASUREMEN	ITS UEDE

DETECTOR NOTES:

- 1. CONTRACTOR SHALL COMPLETE THE DETECTOR SCHEDULE FOR RECORD OF
- DETECTOR PROGRAMMING INTO THE TRAFFIC SIGNAL CONTROLLER. 2. THERE IS NO EXISTING VEHICLE DETECTION ALONG BRIGHTON AVENUE.

VOLUMES AM [MID] (PM)

INTERSECTION: CAPISIC / HILLCREST / KENT STREET SIGNAL GROUP:

LOCATION / PROPOSED DROP:

EXISTING STREETWISE LIGHT REFERENCE NO. 1060

5 [10] (10) - 5 [5] (5) - 10 [5] (5)	5 [5] (5) 	www.winoriinoriinoriinoriinoriinoriinoriinor
(5) [5] 1 → (915) [795] 980 → (395) [255] 365 → (5) [5] 5	(3) [15] 5 (5) [5] 5 (5) [5] 5 (5) [5] 5 (5) [6] (5) 5 (6) [6] 5 (7) [6] (8) 5 (7) [6] (8) 5 (8) [6] (8) 5 (9) [7] (8) 5 (9) [7] (8) 5 (9) [8] (9) 5 (9) 5 ('(10) ⁽³⁹ 5)

SYSTEM DESIGN

SIGNAL HEAD DATA

EXIS	STING	PROPOSED
A3	A3 A1,A2,B1,B2,C1, C2,D1,D2,E1,E2	
(BIMODAL)		
12" LED LENS	12" LED LENS	16" × 18" LED PEDESTRIAN SIGNAL

SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8	9
MINIMUM INITIAL		18	5	7		18			
PASSAGE TIME		3	2	2		3			
MAXIMUM 1		45	10	18		45			
MAXIMUM 2		75	10	35		75			
YELLOW		3.5	3.5	3.5		3.5			
ALL RED		3.5	3.5	2.5		3.5			
PEDESTRIAN WALK		6	6		-	6			
PEDESTRIAN CLEARANCE		13	13			13			
RECALL		5	0	0		5			
DETECTOR OPERATION			PR	PR					<u> </u>
PREEMPTION PRIORITY			2	1				**************************************	<u> </u>
FLASH	***************************************	У	R	R		У			
DUAL ENTRY		OFF	OFF	OFF		OFF			

NOTES: S = SOFT RECALL

y = yellow R = RED D = DARK

PR = PRESENCE MAX2 = UNDER COORDINATION

O = RECALL OFF

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	
CYCLE LENGTH	80	90	100	110	120	
OFFSET (END Ø2 GRN)	4	5	22	86	89	SET
YIELD POINT	0	0	0	0	0	
SPLIT TIME Ø1	0	0	0	0	0	ON MODE FORCE-OF
SPLIT TIME Ø2	31	37	49	61	56	N A
SPLIT TIME Ø3	27	27	26	26	27	INATI
SPLIT TIME Ø4	22	26	25	23	37	
SPLIT TIME Ø5	0	0	0	0	0	2 SR 5
SPLIT TIME Ø6	31	37	49	61	56	ິວ
SPLIT TIME Ø7	0	0	0	0	0	1
SPLIT TIME Ø8	49	53	51	49	64	

COORDINATION NOTES:

- 1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE (Ø2 PER NTCIP).
- 2. COORDINATION TO OPERATE BY TIME-OF-DAY
- (SEE SHEET 2 FOR DAY PLAN SETTINGS). 3. TRAFFIC SIGNAL CONTROLLER SHALL BE SET FOR STOP TIME IN WALK TO ON.
- 4. PHASE 6 AND PHASE 8 ARE DUMMY PHASES TO BE SET WITH SPLIT TIMES FOR NTCIP COMPLIANCE.



SCALE

SHEET NUMBER

EN

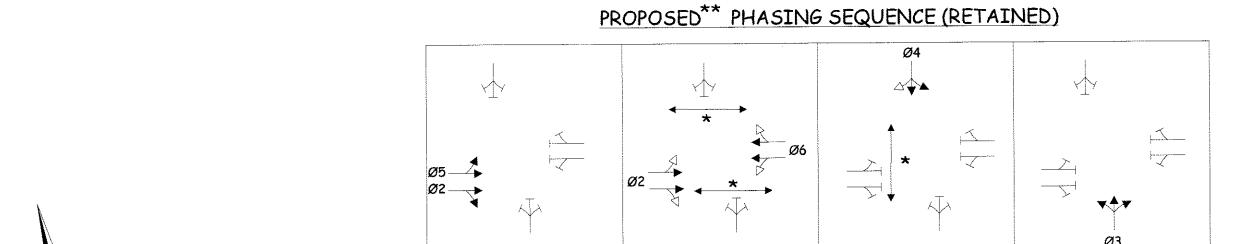
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PORTLAND

LIST OF MAJOR ITEMS

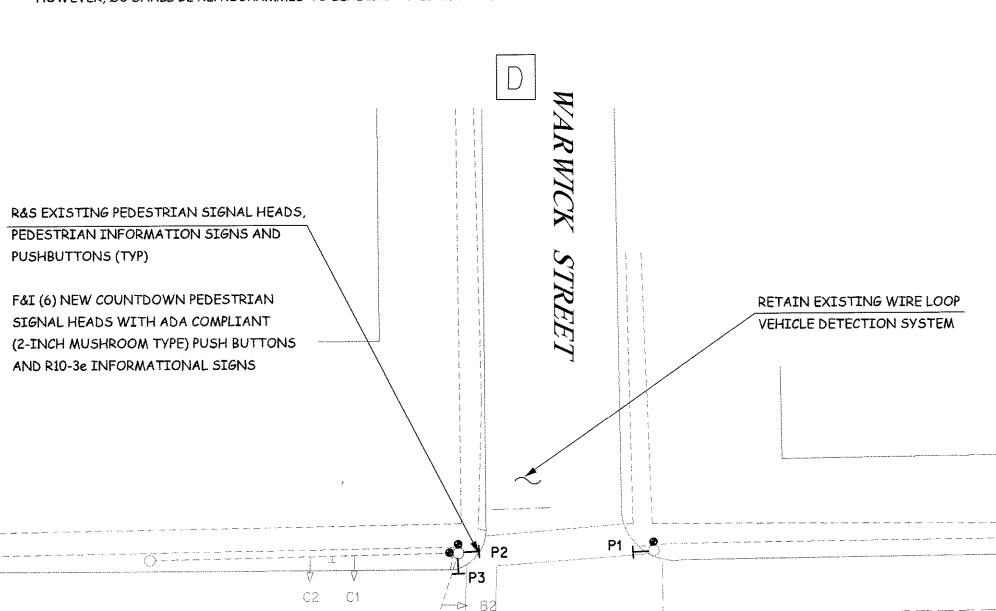
EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
ACTELIS ML688 DSL MODEM OR APPROVED EQUAL	1
NAZTEC TS2 TYPE 1 ETHERNET EQUIPPED TRAFFIC SIGNAL CONTROLLER FACEPLATE AND SOFTWARE UPDATE	1
BRACKET MOUNTED 16 x 18 INCH COUNTDOWN PEDESTRIAN SIGNAL HEAD PAINTED BLACK. INDICATION SHALL BE ENERGY EFFICIENT, GELCORE GT1 LED OR APPROVED EQUAL	6
ADA COMPLIANT PEDESTRIAN 2-INCH PELCO MUSHROOM TYPE PUSHBUTTON WITH R10-3¢ SIGN	6
IMPLEMENT LOCAL AND SYSTEM TIMING	-

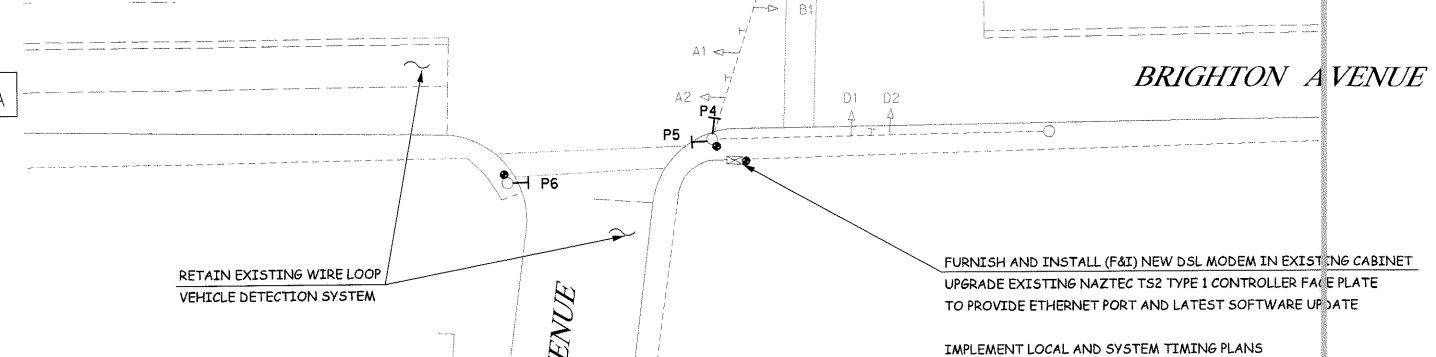
THE QUANTITIES LISTED ABOVE ARE APPROXIMATE AND ARE FURNISHED FOR INFORMATION ONLY.



* NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN

** EXISTING SIGNAL PHASING SHALL BE RETAINED SO Ø4 (WARWICK ST) LEADS AND Ø3 (ROWE AVE) LAGS. HOWEVER, Ø5 SHALL BE REPROGRAMMED TO LEADING TO ELIMINATE EXISTING "YELLOW TRAP."





EXISTING STREETWISE LIGHT REFERENCE NO. 1130

DETECTOR SCHEDULE

	DETECTOR	.	A Victorial and a Victorial an	AMPLIFIER			***************************************	INDUCTANCE CONTINUITY		RESISTANCE	
STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO.	DETECTOR NO.	CHANNEL	114000774402	30,17,2,102.7	LOOP TO GROUND	
ROWE AVE	NORTHBOUND	ALL DEPARTURE	3								
WARWICK ST	SOUTHBOUND	ALL DEPARTURE	4								
BRIGHTON AVE	EASTBOUND	LEFT	5								
4/4/19	111111111111111111111111111111111111111										
									TIELD MEASUREMEN		

DETECTOR NOTES:

- 1. CONTRACTOR SHALL COMPLETE THE DETECTOR SCHEDULE FOR RECORD OF
- DETECTOR PROGRAMMING INTO THE TRAFFIC SIGNAL CONTROLLER. 2. THERE IS NO EXISTING VEHICLE DETECTION FOR THE BRIGHTON AVENUE THROUGH MOVEMENTS.

INTERSECTION: ROWE AVENUE / 40 [25] (40) 9 9 ← 740 [1050] (1650) WARWICK STREET **20** [15] (20) SIGNAL GROUP: (60) [30] 50 — LOCATION / PROPOSED DROP: (1260) [1025] 1295 ---(20) [15] 30 🛶

SYSTEM DESIGN

VOLUMES AM [MID] (PM)

SIGNAL HEAD DATA

EXIS	TING	PROPOSED
A1	A2,81,82,C1,C2,D1,D2	P1-P6
12° LED LENS	12" LED LEVS	16" × 18" LED PEDESTRIAN SIGNA

SIGNAL TIMING SCHEDULE

ITEM/PHASE	1	2	3	4	5	6	7	8	9
MINIMUM INITIAL		18	5	7	7	18			
PASSAGE TIME		3	1.5	2.5	3	3			
MAXIMUM 1		45	10	25	10	45			
MAXIMUM 2		75	15	20	10	75			<u> </u>
YELLOW		3.5	3.5	3.5	3.5	3.5			
ALL RED		3.5	2.5	2.5	3.5	3.5			
PEDESTRIAN WALK		6		6		6			
PEDESTRIAN CLEARANCE		10		12		10			
RECALL		5	0	0	0	5			
DETECTOR OPERATION			PR	PR	PR				
PREEMPTION PRIORITY									
FLASH		У	R	R	R	У			
DUAL ENTRY		OFF	OFF	OFF	OFF	OFF			

NOTES: S = SOFT RECALL

O = RECALL OFF PR = PRESENCE

MAX2 = UNDER COORDINATION

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

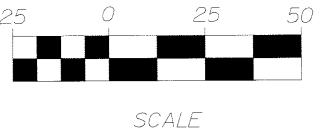
y = yellow R = RED

D = DARK

	A	LL ENTRIES	S IN SECON	NDS		
Lyppyropenmen	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	
CYCLE LENGTH	80	90	100	110	120	
OFFSET (END Ø2 GRN)	4	11	19	46	27	SET
YIELD POINT	0	0	0	0	0	
SPLIT TIME Ø1	0	0	0	0	0	ON MODE FORCE-OF
SPLIT TIME Ø2	40	48	63	70	83	\ <u>\</u> \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \
SPLIT TIME Ø3	15	16	13	16	13	FIXED
SPLIT TIME Ø4	25	26	24	24	24	
SPLIT TIME Ø5	14	14	14	14	16	20R 10 0T
SPLIT TIME Ø6	26	34	49	56	67	ŭ
SPLIT TIME Ø7	0	0	0	0	0	
SPLIT TIME Ø8	40	42	37	40	37	

COORDINATION NOTES:

- 1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE (Ø2 PER NTCIP).
- 2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 2 FOR DAY PLAN SETTINGS).
- 3. TRAFFIC SIGNAL CONTROLLER SHALL BE SET FOR STOP TIME IN WALK TO ON.
- 4. PHASE 8 IS A DUMMY PHASE TO BE SET WITH SPLIT TIMES FOR NTCIP COMPLIANCE.

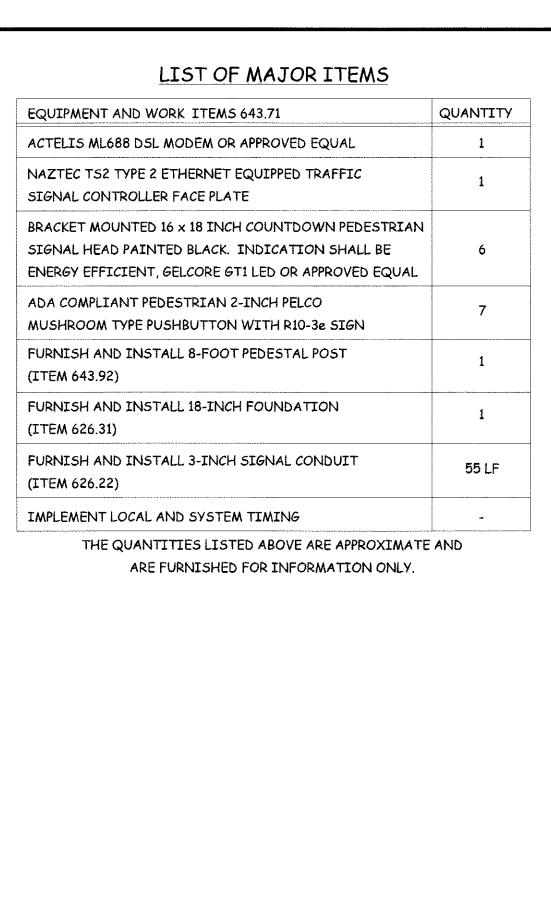


SHEET NUMBER

ARWICK

VENUE

BRI



DETECTOR

LANE ALL DEPARTURE

ALL DEPARTURE

DETECTOR PROGRAMMING INTO THE TRAFFIC SIGNAL CONTROLLER.

DIRECTION

SOUTHBOUND

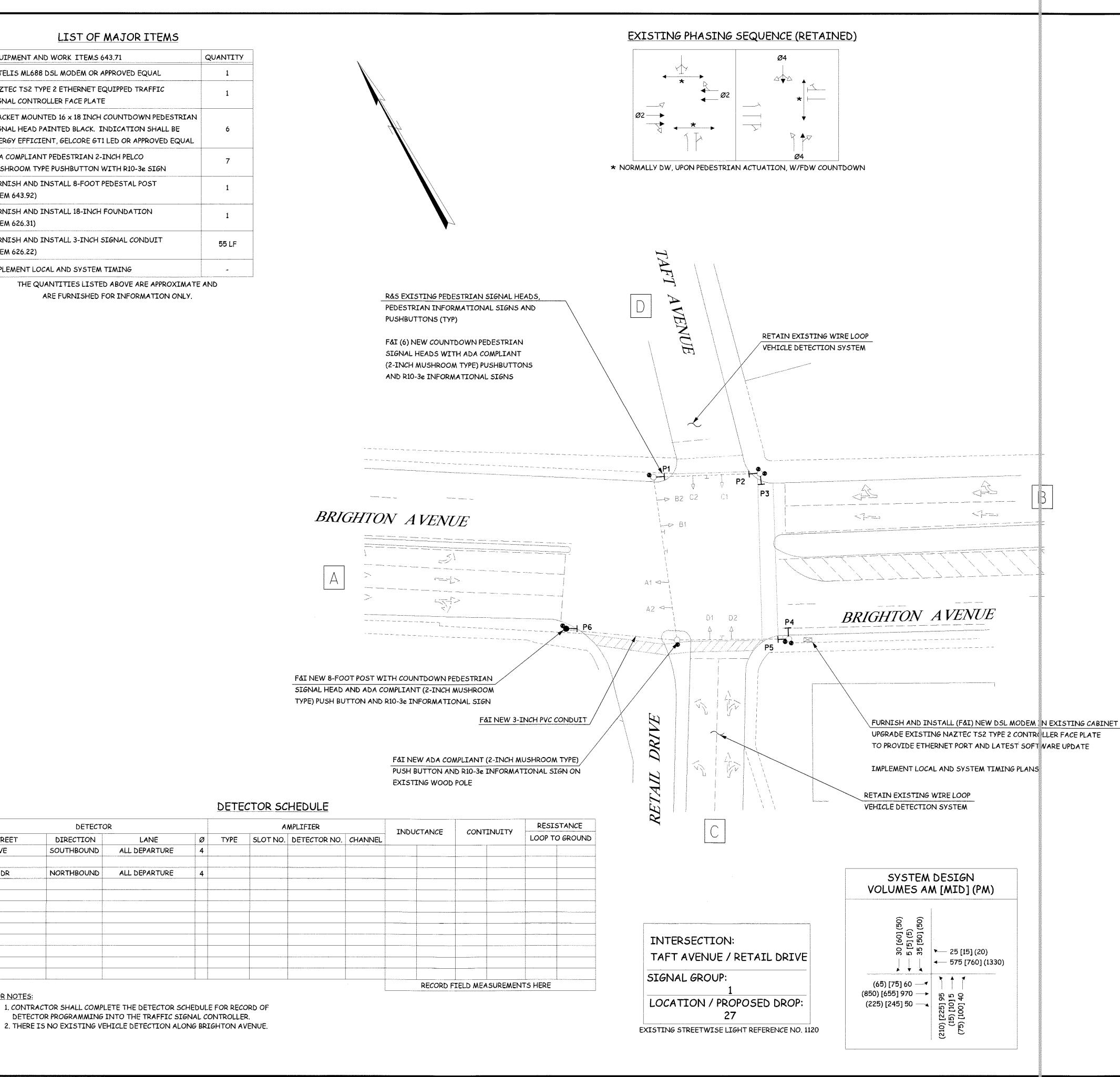
NORTHBOUND

STREET

TAFT AVE

RETAIL DR

DETECTOR NOTES:



SIGNAL HEAD DATA

EXIST	TING	PROPOSED
A1,A2,B2,C1,C2,D1,D2	CCC CCCC Second:	P1-P6
12" LED LENS	12" LED LENS	16" × 18" LED PEDESTRIAN SIGNA

SIGNAL TIMING SCHEDULE

ITEM/PHASE	1	2	3	4	5	6	7	8	9
MINIMUM INITIAL		10		5		10		5	
PASSAGE TIME		3		2		3		2	
MAXIMUM 1		45		25		45		25	
MAXIMUM 2		70		30		70		30	
YELLOW		3.5		3.5		3.5		3,5	
ALL RED		2.5	***************************************	2.5		2.5		2.5	
PEDESTRIAN WALK		7		7		18			
PEDESTRIAN CLEARANCE		21		19		10			
RECALL		5		0		5	***************************************	0	
DETECTOR OPERATION				PR			•	PR	
PREEMPTION PRIORITY									
FLASH		У		R		У		R	
DUAL ENTRY		OFF	70.0	ON		OFF		ON	

NOTES: S = SOFT RECALL O = RECALL OFF

Y = YELLOW R = RED

D = DARK

PR = PRESENCE

MAX2 = UNDER COORDINATION

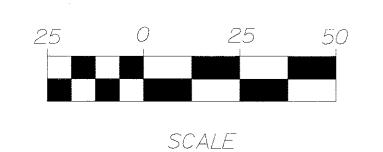
COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	
CYCLE LENGTH	80	90	100	110	120	
OFFSET (END Ø2 GRN)	50	55	70	41	49	SET
YIELD POINT	0	0	0	0	0	DE S
SPLIT TIME Ø1	0	0	0	0	0	MODE SE
SPLIT TIME Ø2	45	49	54	72	80	
SPLIT TIME Ø3	0	0	0	0	0	ATIO
SPLIT TIME Ø4	35	41	46	38	40	COORDINATION
SPLIT TIME Ø5	0	0	0	0	0	OOR
SPLIT TIME Ø6	45	49	54	72	80	ੂ ਨੂੰ '
SPLIT TIME Ø7	0	0	0	0	0	
SPLIT TIME Ø8	35	41	46	38	40	

COORDINATION NOTES:

- 1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE (Ø2 PER NTCIP).
- 2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 2 FOR DAY PLAN SETTINGS).
- 3. TRAFFIC SIGNAL CONTROLLER SHALL BE SET FOR STOP TIME IN WALK TO ON.
- 4. PHASE 8 IS A DUMMY PHASE TO BE SET WITH SPLIT TIMES FOR NTCIP COMPLIANCE.



SHEET NUMBER

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PORTLAND

PORTLAND

RI

OFF

y = yELLOW

R = RED

D = DARK

45

3.5

2.5

PROPOSED

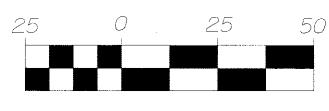
P1-P4

16" x 18" LED

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	
CYCLE LENGTH	80	90	100	110	120	
OFFSET (END Ø6 GRN)	30	32	43	10	24	SET
YIELD POINT	0	0	0	0	0	
SPLIT TIME Ø1	13	13	13	13	13	A MODE SE FORCE-OFF
SPLIT TIME Ø2	17	25	39	49	59	0 0 N
SPLIT TIME Ø3	35	35	35	35	35	INATIO
SPLIT TIME Ø4	15	17	13	13	13	COORDINATION TO FLOATING F
SPLIT TIME Ø5	0	0	0	0	0	COORD TO FL
SPLIT TIME Ø6	30	38	52	62	72	8 -
SPLIT TIME Ø7	0	Ö	0	0	0	-
SPLIT TIME Ø8	50	52	48	48	48	

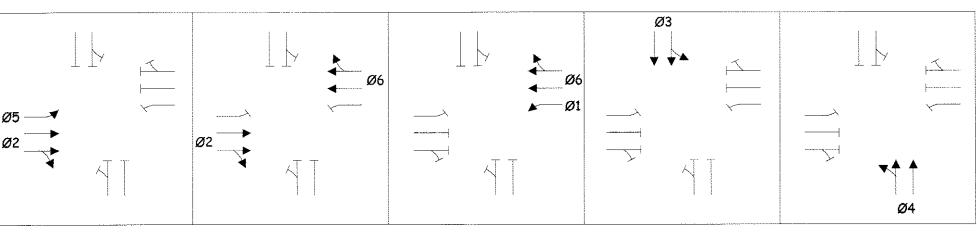
- 1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE
- 3. TRAFFIC SIGNAL CONTROLLER SHALL BE SET FOR STOP TIME IN WALK TO ON.



SHEET NUMBER

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PROPOSED** PHASING SEQUENCE



** EXISTING SIGNAL PHASING SHALL BE MODIFIED SO Ø5 LEFT-TURN LEADS AND Ø1 LEFT-TURN LAGS

SYSTEM DESIGN VOLUMES AM [MID] (PM)

(200) [175] 350 (200) (4205) [400] 410 (200) [175] 572 (4205) [400] (100) (122) [42] 572 (122) (123) (

250 [250] (372) - 150 [250] (325) - 25 [25] (30) - 25 [25] (30) - 25 [25] (30)

▶ 175 [150] (190)

LIST OF MAJOR ITEMS

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY	
IMPLEMENT LOCAL AND SYSTEM TIMING	-	
FURNISH AND INSTALL GPS RECEIVER WIRED TO EXISTING	4	
CONTROLLER TO UPDATE TIME CLOCK ON A DAILY BASIS	1	

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

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5		
CYCLE LENGTH	80	90	100	110	120		
OFFSET (END Ø6 GRN)	69	78	93	59	73	SET	
YIELD POINT	0	0	0	0	0	DE 8	
SPLIT TIME Ø1	16	20	23	22	26	MODE SE ORCE-OFF	
SPLIT TIME Ø2	28	31	37	37	46	NO PA	
SPLIT TIME Ø3	18	20	21	21	24	T E	
SPLIT TIME Ø4	18	19	19	30	24	COORDINATION TO FLOATING F	
SPLIT TIME Ø5	16	20	26	39	31	100R	
SPLIT TIME Ø6	28	31	34	20	41	ט ר	
SPLIT TIME Ø7	0	0	0	0	0		
SPLIT TIME Ø8	36	39	40	51	48		

COORDINATION NOTES:

- 1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE (Ø6 PER NTCIP).
- 2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 2 FOR DAY PLAN SETTINGS).
- 3. PHASE 8 IS A DUMMY PHASE TO BE SET WITH SPLIT TIMES FOR NTCIP COMPLIANCE.

SIGNAL TIMING SCHEDULE

ITEM/PHASE	1	2	3	4	5	6	7	8	9
MINIMUM INITIAL	5	10	10	5	5	10			
PASSAGE TIME	3	4.5	3	2	2	4.5			
MAXIMUM 1	25	45	25	25	25	45			
MAXIMUM 2	25	60	30	25	35	60			
YELLOW	3.5	3.5	3.5	3.5	3.5	3.5			
ALL RED	2.5	2.5	2.5	2.5	2.5	2.5			
PEDESTRIAN WALK									
PEDESTRIAN CLEARANCE									
RECALL	0	5	0	0	0	5			
DETECTOR OPERATION	PR	PR	PR	PR	PR	PR			
PREEMPTION PRIORITY									
FLASH	R	У	R	R	R	У			1
DUAL ENTRY	OFF	OFF	OFF	OFF	OFF	OFF			<u> </u>

MAX2 = UNDER COORDINATION

NOTES: S = SOFT RECALL O = RECALL OFF PR = PRESENCE

y = yellow R = RED D = DARK

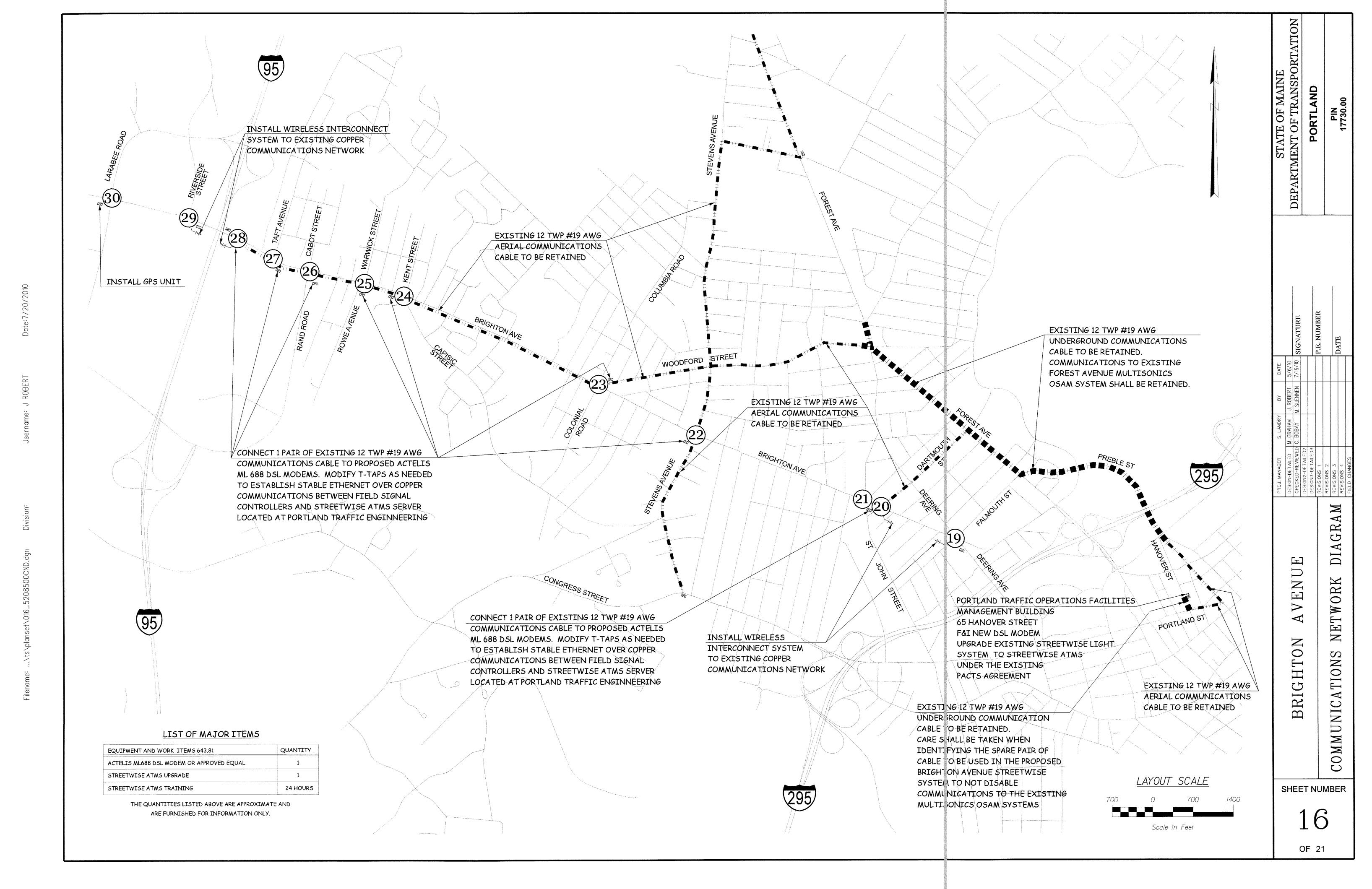
BRIGHTON

SHEET NUMBER

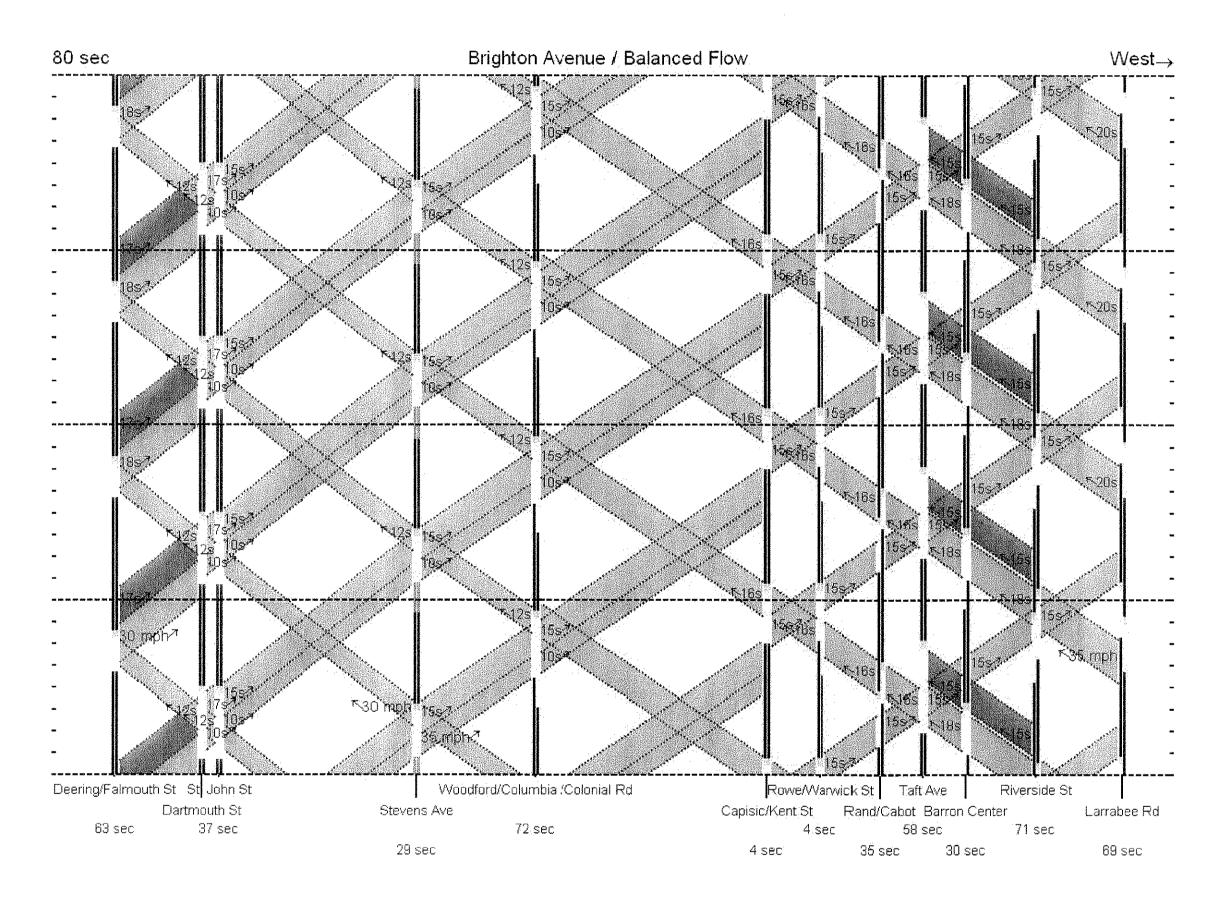
OF 21

MAIN STREET / LARRABEE ROAD SIGNAL GROUP: LOCATION / PROPOSED DROP:

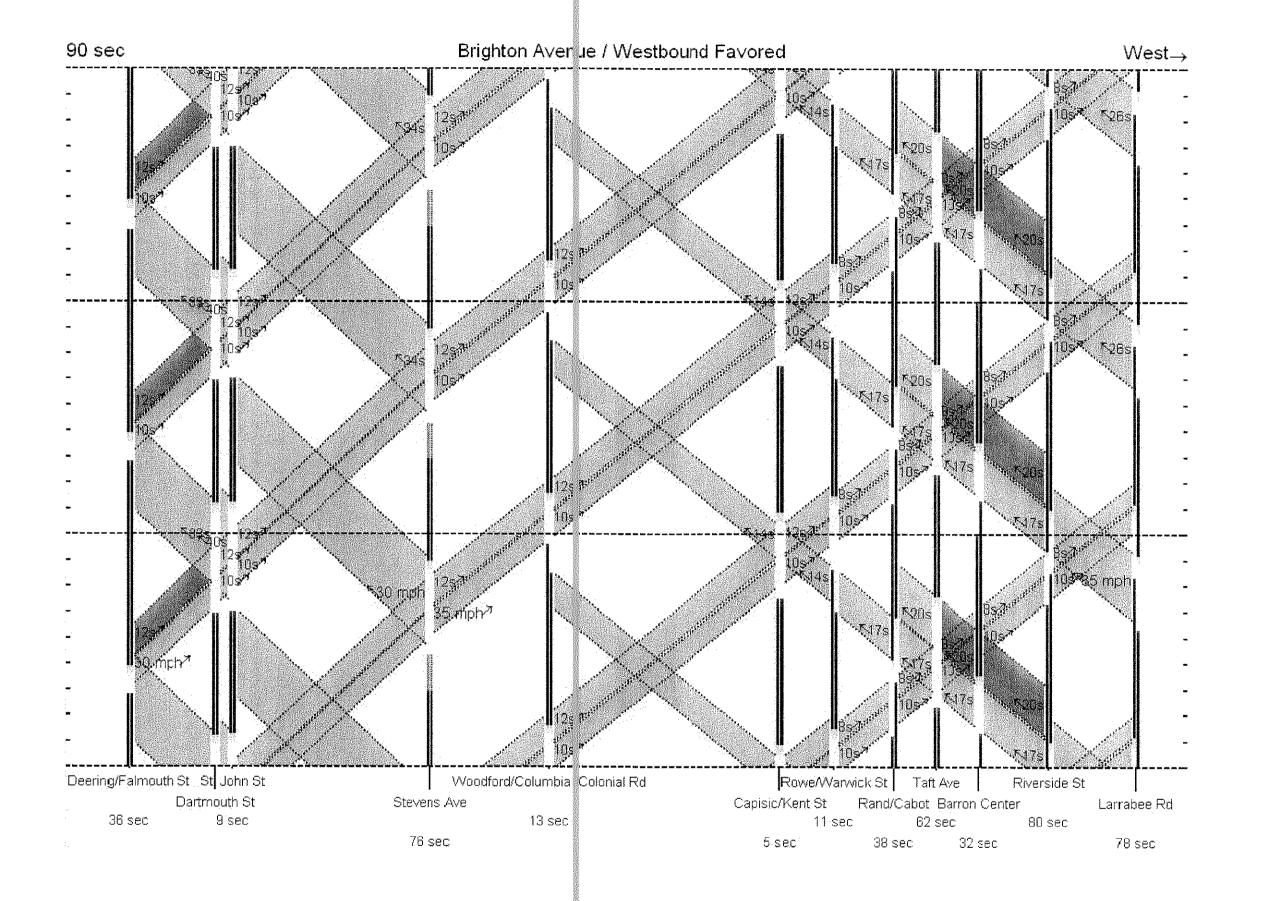
INTERSECTION:



PLAN 1 80 SECOND BACKGROUND CYCLE



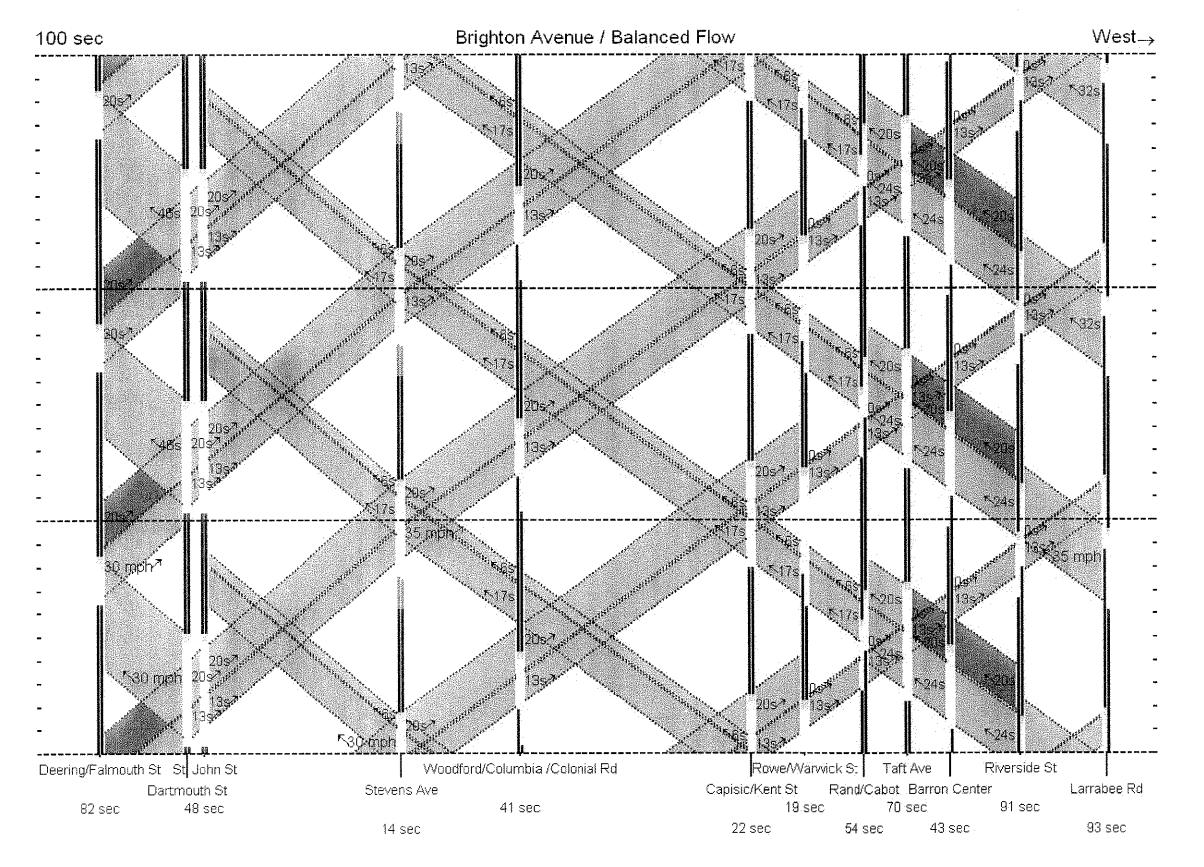
PLAN 2 90 SECOND BACKGROUND CYCLE



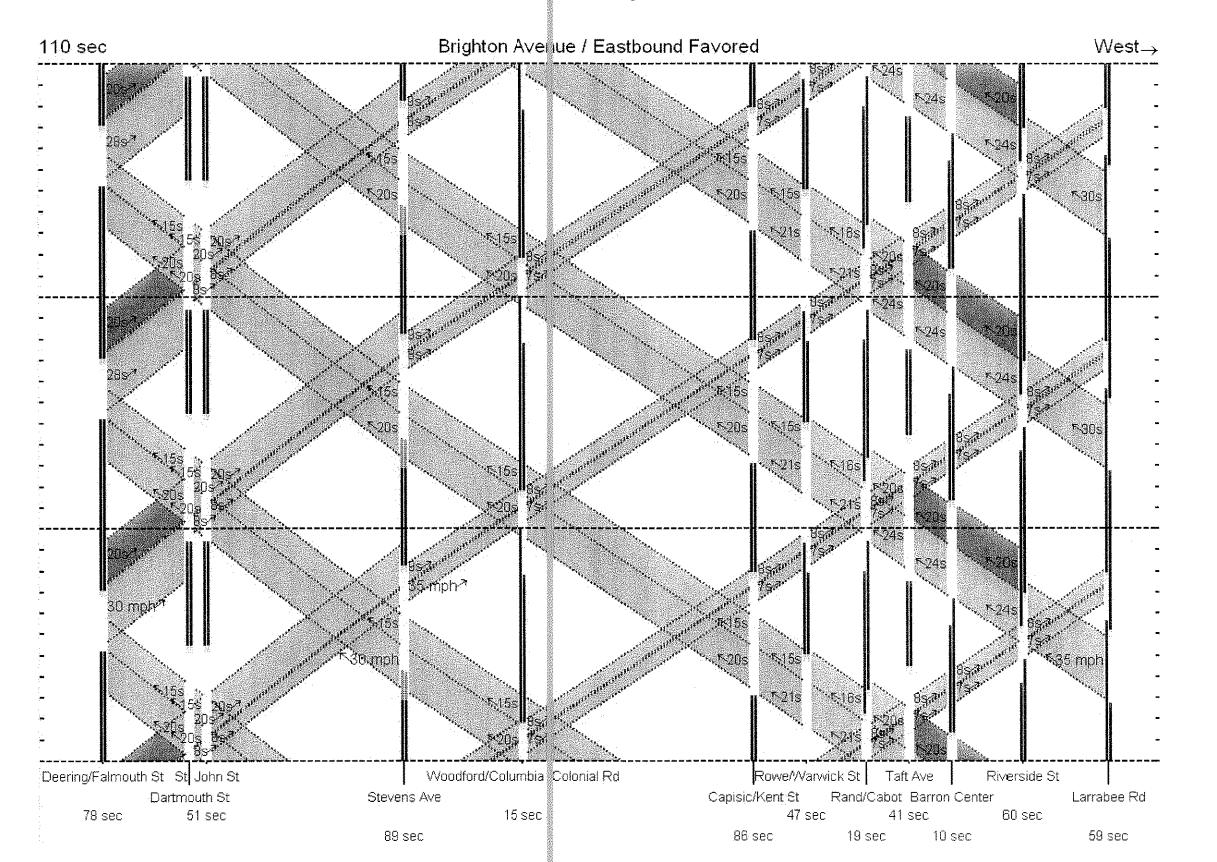
SHEET NUMBER

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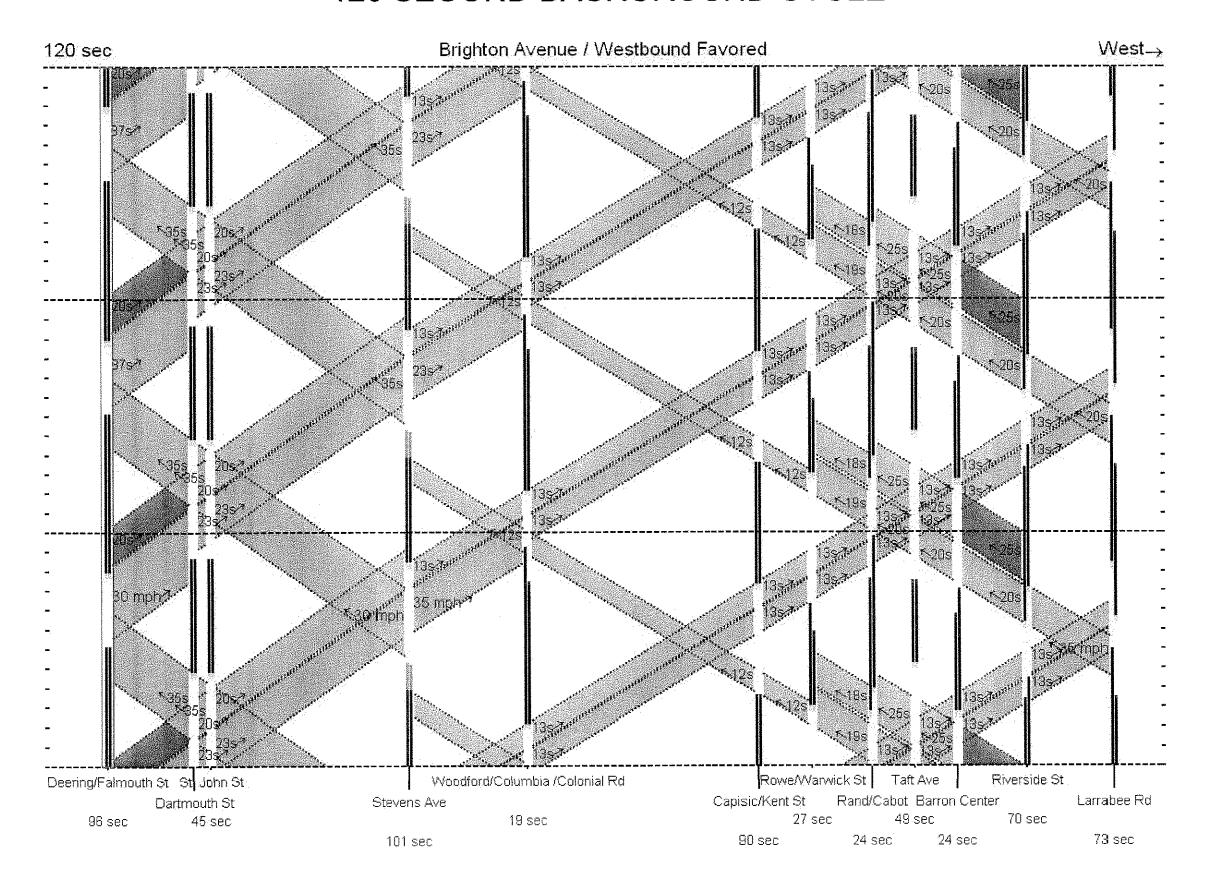
PLAN 3 100 SECOND BACKGROUND CYCLE



PLAN 4 110 SECOND EACKGROUND CYCLE



PLAN 5 120 SECOND BACKGROUND CYCLE



STATE OF MAINE DEPARTMENT OF TRANSPORTATION

SPACE DIAGRAMS

SHEET NUMBER

18