STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

WATERVILLE-WINSLOW

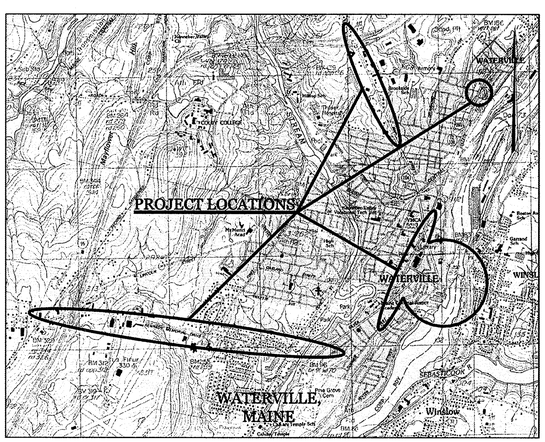
KENNEBEC COUNTY

FEDERAL PROJECT NUMBER: STP-1728(800)X

MODERNIZATION OF THE ROUTE 11/137 (KENNEDY MEMORIAL DR), ROUTE 11/100/201(COLLEGE AVE), ROUTE 11/104 (ELM ST), ROUTE 137 (SPRING ST), AND ROUTE 104 (MAIN ST)
TRAFFIC SIGNALS

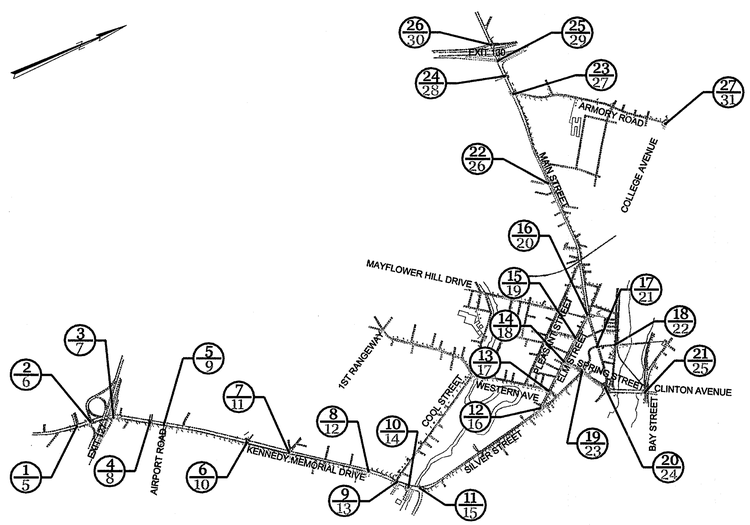
TRAFFIC SIGNAL LEGEND

- PROPOSED SIGNAL CONTROLLER WITH CABINET
- EXISTING SIGNAL CONTROLLER WITH CABINET
- EXISTING MAST ARM WITH STEEL POLE
- PROPOSED MAST ARM WITH STEEL POLE AND FOUNDATION
- PROPOSED VEHICULAR HEAD WITH LOUVERED BACKPLATE
- EXISTING VEHICULAR HEAD WITH LOUVERED BACKPLATE
- PROPOSED VIDEO CAMERA (V*)
- PROPOSED VIDEO DETECTION ZONE
- PROPOSED WIRE LOOP DETECTOR
- PROPOSED RADAR DETECTOR ZONE
- PROPOSED PEDESTRIAN SIGNAL HEAD WITH PUSH BUTTON AND INFORMATIONAL SIGN
- PROPOSED PEDESTAL POST AND FOUNDATION
- PROPOSED PREEMPTION RECEIVER (R*)
- PROPOSED PREEMPTION CONFIRMATION STROBE (CS)
- PROPOSED BLANK OUT SIGN
- EXISTING SPAN WIRE OR MAST ARM MOUNTED SIGN
- PFODC — PROPOSED FIBER OPTIC DROP CABLE
- PFO — PROPOSED FIBER OPTIC INTERCONNECT CABLE
- FO — EXISTING AERIAL FIBER OPTIC INTERCONNECT CABLE
- PROPOSED UNDERGROUND CONDUIT
- SE — PROPOSED SPLICE ENCLOSURE (SE*)
- PB — PROPOSED JUNCTION BOX
- EXISTING JUNCTION BOX



LOCATION MAP

1/4 0 1/4 1/2
Scale in Miles



KEY:
X/X Project Intersection Number / Sheet Number

LAYOUT SCALE

2000 0 2000 4000
Scale in Feet

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* Each traffic signal plan contains a design, phasing and timing plan sheet with a supplemental major equipment, emergency preemption, overhead signs, and interconnect detail sheet, which is designated by the "A" following the sheet number.

See Sheets 9, 9B, and 22 for Non-Partcipating Bid Alternatives No. 1, 2, and 3, respectively. Bid Alternative No. 4 (for preemption system emitters) does not have an associated plan sheet.

SIGNAL DESIGN PLANS PREPARED BY:
VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
Six Bedford Farms, Suite 607
Bedford, New Hampshire 03110-6532
603 644 0888 & FAX 603 644 2385

IN ASSOCIATION WITH:
Maine Traffic Resources
25 Vine Street Gardiner, ME 04345
(207) 582-5252 FAX (207) 582-1677
mainetrafficresources.com

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED DATE

COMMISSIONER:

CHIEF ENGINEER:

STATE OF MAINE Christopher M. Bobay 9274 LICENSED PROFESSIONAL ENGINEER

SIGNATURE 9274
P.E. NUMBER
9/10/10
DATE

PROJECT INFORMATION

PROGRAM	TRAFFIC OPERATIONS
PROJECT MANAGER	J. MANSIR
DESIGNER	C. BOBAY
CONSULTANT	VHB
PROJECT RESIDENT	A. CORNEAU
CONTRACTOR	
PROJECT COMPLETION DATE	

17288.00

STP-1728(800)X

WATERVILLE-WINSLOW

TITLE SHEET

SHEET NUMBER
1
OF 54

Filename: ...\ts\planset\001_5206800COV.dgn Division: Username: J ROBERT Date:9/7/2010

GENERAL NOTES:

1. Where noted on the plans, all new vehicular signal heads shall be equipped with relocated LED lenses 12 inches in diameter and equipped with new 5-inch louvered back plates.

2. All new signal heads shall be fix mounted to any existing mast arms with Astrobrackets.

3. The Contractor shall meet all utility requirements for new service connections.

4. All splices will be made in the cabinets meeting MaineDOT specifications.

5. The bottom of the housing of new signal faces shall be at least 16 feet but not more than 19 feet above the pavement grade at the center of the roadway. 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

6. Two copies of as-built plans, wiring diagrams, box prints, and equipment manuals shall be left in each of the controller cabinets.

7. The Contractor is responsible for finding exact locations of existing utilites prior to construction. The Contractor shall contact Dig-Safe and appropriate authorities prior to any subsurface activities.

8. Traffic signal work shall be completed in a manner and order that will cause the minimum disruption to traffic.

9. 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.

10. 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.

11. Any relocations or adjustments of existing utility facilites will be made by the respective utilities in coordination with the work of the Contractor.

12. Contractor shall be responsible for obtaining any necessary opening permits.

13. All existing driveway accesses shall be maintained at all times.

14. The Contractor shall provide the Engineer, MaineDOT, and the City of Waterville with a schedule of work for constructing the traffic improvements at least two weeks prior to the commencement of work.

15. 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.

16. 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. Costs for repair of disturbed areas shall be incidental to other contract items.

17. All proposed striping shown on the plans (see sheets 14, 16-18, and 20) shall be reflectorized paint, Item 627.407 and 627.711.

18. 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. The traffic signal controllers supplied under this contract shall be NEMA TS-2, Type 1 (except location 21 which shall be 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 fiber-optic switch (see Special Provisions) to the controller's Ethernet port. Serial-to-Ethernet communications to the controller shall not be permitted. 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. If the Contractor choses to provide a complete, fully intergrated non-Naztec traffic signal control system, the Contractor may elect to replace the existing Naztec controllers with another manufacturer's hardware and software.

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 Waterville or other location as directed by the City. The Contractor is further responsible for any local wiring at the City of Waterville's system computer location, system Start-up and System Loading, Acceptance Testing, Training and System Maintenance. In addition, the Contractor shall furnish and install a light-based emergency vehicle preemption system compatible with the preemption emitters owned by the City of Waterville and Town of Winslow Fire Department.

The Contractor shall be solely responsible for furnishing and installing all other equipment to include vehicle traffic signals, pedestrian signals, pedestrian pushbuttons and signs, mast arm pole foundation (Locations 6 and 20), fiber optic interconnect and connections, emergency vehicle preemption confirmation lights, video detection cameras, video-based presence detection sensors, field wiring, pavement markings, 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.

19. Equipment Supplied by Others - Pavement marking templates (by City of Waterville). See also General Note 36.

20. Foundations

When new conduit is extended or installed into new or existing mast arm signal foundations, Contractor shall break into existing foundation to expose the existing conduit bend. New conduit shall be attached to existing conduit bend.

In lieu of installing new controller cabinet foundations with new, extended or modified conduit connections to the existing signal system, 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. 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 Disabilities Act (ADA) requirements.

21. 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 detectors and system detector 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.

22. 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 Waterville 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 Waterville.

23. Training

The Contractor agrees to provide one week 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 Waterville and Town of Winslow) and MaineDOT personnel who will use and monitor the system. The Contractor should budget for up to 12 attendees.
Training documentation shall include operating manuals for all system equipment and components.
Documentation shall also be provided, explaining the operationof 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 all devices.
- 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.

24. 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 Waterville.

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 Waterville at no additional cost during the warranty period.

Hardware equipment shall be warranted for three (3) years, effective when the proposed system has been accepted, in writing, by MaineDOT, the City of Waterville, and the Town of Winslow.

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

25. The Contractor shall replace any 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.

26. Video Detection Installation - 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.

27. As payment for this work, the Contractor shall submit a lump sum bid per intersection and in addition a lump sum bid for interconnection. Work shall be paid for as outlined in Special Provision 643.

28. Salvage Rights: MaineDOT shall have first rights to all equipment removed or replaced by the project (contact Mike Delois at 207-624-3625). The City of Waterville and Town of Winslow (Location 21) shall have second salvage rights to all equipment not claimed by MaineDOT. The Contractor shall carefully remove and store all equipment claimed by either MaineDOT or the City of Waterville at a central location on site for retrieval by MaineDOT or the City of Waterville. 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 either MaineDOT, the City of Waterville, or the Town of Winslow (Location 21) for salvage shall be removed from the site by the Contractor and disposed of in a manner acceptable to the Engineer.

29. 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.

30. The Contractor will be responsible for the relocation of power meters if required. This work will be incidental to item 643.71 as applicable to the location of the work.

31. 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.

32. The Maine Department of Environmental Protection (MDEP) has reported spills and releases involving petroleum products adjacent to the project. Based on the scope of work presented, available data suggests that this contamination may only be adjacent to the immediate areas of any excavation proposed by the Maine Department of Transportation (MaineDOT). However, in light of MDEP's findings, the contractor shall employ appropriate health and safety measures to protect its workers against hazards associated with working near petroleum-impacted soils. Furthermore, the Contractor shall remain alert for any additionally evidence of contamination. 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 Resident. The Resident 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.

33. The Contractor is directed to project Special Provision 718 for additional information related to the following:

- 718.12 Traffic signal control system
- 718.13 Emergency vehicle preemption system
- 718.14 Single mode fiber optic cable
- 718.15 Fiber optic splice enclosure
- 718.16 Twelve (12) position fiber optic patch panel
- 718.17 Ethernet switch with fiber optic interfaces
- 718.18 Messenger wire
- 718.19 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.

34. Loop detector cards shall be dual functional to support both local detection and counting.

35. The intersection base plans shown on Sheets 5-31A were digitized by VHB based on aerial photography provided by MaineDOT. Supplemental information was obtained by VHB from field reviews and inventory conducted November 17-20, 2009 and checked by MTR December 29-31, 2009.

36. Contractor shall obtain City of Waterville template and coordinate with city staff in the installation of *ONLY* text following existing onstreet turn arrow markings (per Mainedot Standards) at the following locations:

- Location 1 (Sheet 5) - All First Park Southbound lanes;
- Location 3 (Sheet 7) - KMD Eastbound left-turn lane;
- Location 4 (Sheet 8) - KMD Eastbound left-turn and Westbound left- and right-turn lanes;
- Location 5 (Sheet 9) - KMDWestbound left-turn lane and Airport Road right-turn lane (note: work only with awarding of Bid Alternate 1 or 2);
- Location 6 (Sheet 10) - KMD Eastbound left-turn and Westbound left- and right-turn lanes;
- Location 7 (Sheet 11) - KMD Eastbound and Westbound left-turn lanes.
- Location 8 (Sheet 12) - KMDWestbound left-turn lane;
- Location 9 (Sheet 13) - KMD Eastbound left-turn lane;
- Location 10 (Sheet 14) - KMD Westbound left-turn lane;
- Location 11 (Sheet 15) - KMD Westbound and CMD Northbound (2) left-turn lanes;
- Location 12 (Sheet 16) - Silver Street left-turn lane;
- Location 14 (Sheet 18) - Elm Street left-turn lane and Spring Street left- and right-turn lanes;
- Location 15 (Sheet 19) - Elm Street left-turn and right-turn lanes;
- Location 16 (Sheet 20) - Elm Street and College Avenue left-turn lanes;
- Location 17 (Sheet 21) - Main Street left-turn lane;
- Location 19 (Sheet 23) - Spring Street left-turn lanes;
- Location 20 (Sheet 24) - Man Street, Spring Street, and Bridge Street left-turn lanes;
- Location 22 (Sheet 26) - Main Street Northbound left-turn and Southbound left- and right-turn lanes;
- Location 23 (Sheet 27) - Main Street Northbound and Soutbound left-turn lanes;
- Location 24 (Sheet 28) - Main Street Northbound and Soutbound left-turn lanes;
- Location 25 (Sheet 29) - Main Street Southbound left-turn lane; and
- Location 26 (Sheet 30) - Main Street Northbound left-turn lane.

Contractor is advised that some or all work may be performed "by others" under city yearly pavement marking program as determined through coordination effort.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN
17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

GENERAL NOTES AND DETAILS

SHEET NUMBER
2
OF 54

Filename: ...\planset\002_5206800NOTES.dgn Division: Username: J ROBERT Date:9/7/2010

SECTION 0001 PROJECT ITEMS - BASIS OF AWARD

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
201.23	REMOVING SINGLE TREE TOP ONLY	EA	1
626.11	PRECAST CONCRETE JUNCTION BOX	EA	14
626.111	PRECAST CONCRETE JUNCTION BOX 36-INCHES	EA	1
626.22	NON-METALLIC CONDUIT	LF	3,250
626.31	18-INCH FOUNDATION	EA	37**
626.33	30-INCH FOUNDATION	EA	1
626.331	36-INCH FOUNDATION	EA	3
626.35	CONTROLLER CABINET FOUNDATION	EA	18
626.36	REMOVE OR MODIFY CONCRETE FOUNDATION	EA	6
627.18	12-INCH SOLID WHITE PAVEMENT MARKING LINE	LF	50
627.75	WHITE PAVEMENT & CURB MARKING	SF	1,317
643.71	TRAFFIC SIGNAL MODIFICATION: KMD & FIRST PARK DR.	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: KMD & I-95 SB RAMPS	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: KMD & I-95 NB RAMPS	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: KMD & WASHINGTON ST.	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: KMD & SHAW'S DRIVEWAY	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: KMD & 1ST RANGEWAY DR.	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: KMD & JFK DR.	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: KMD & COOL ST. & COLLETTE ST.	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: KMD & W. RIVER RD.	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: KMD & CMD & SILVER ST.	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: ELM ST. & SILVER ST.	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: ELM ST. & WESTERN AVE.	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: ELM ST. & SPRING ST. & PERCIVAL CT.	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: ELM ST. & PARK ST. & APPLETON ST.	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: ELM ST. & SPRING ST. & PERCIVAL CT.	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: MAIN ST. & TEMPLE ST. & W. CONCOURSE	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: SPRING ST. & SILVER ST. & E. CONCOURSE	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: SPRING ST. & MAIN ST. & WATER ST. & BRIDGE ST.	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: BRIDGE ST. & BAY ST. & CLINTON AVE. & BENTON AVE.	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: MAIN ST. & OAK ST. & EUSTIS PARKWAY	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: MAIN ST. & ARMORY ST.	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: MAIN ST. & WATERVILLE COMMONS DR.	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: MAIN ST. & I-95 NB RAMPS	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: MAIN ST. & I-95 SB RAMPS	LUMP	1
643.71	TRAFFIC SIGNAL MODIFICATION: COLLEGE AVE. & HAZELWOOD AVE.	LUMP	1
643.81	TRAFFIC SIGNAL CONTROL SYSTEM	LUMP	1
643.83	VIDEO DETECTION SYSTEM: KMD & I-95 SB RAMPS	LUMP	1
643.83	VIDEO DETECTION SYSTEM: KMD & I-95 NB RAMPS	LUMP	1
643.83	VIDEO DETECTION SYSTEM: KMD & WASHINGTON ST.	LUMP	1
643.83	VIDEO DETECTION SYSTEM: KMD & SHAW'S DRIVEWAY	LUMP	1
643.83	VIDEO DETECTION SYSTEM: KMD & 1ST RANGEWAY DR.	LUMP	1
643.83	VIDEO DETECTION SYSTEM: KMD & JFK DR.	LUMP	1
643.83	VIDEO DETECTION SYSTEM: KMD & W. RIVER RD.	LUMP	1
643.83	VIDEO DETECTION SYSTEM: ELM ST. & SILVER ST.	LUMP	1
643.83	VIDEO DETECTION SYSTEM: ELM ST. & WESTERN AVE.	LUMP	1
643.83	VIDEO DETECTION SYSTEM: ELM ST. & SPRING ST.	LUMP	1
643.83	VIDEO DETECTION SYSTEM: ELM ST. & PARK ST. & APPLETON ST.	LUMP	1
643.83	VIDEO DETECTION SYSTEM: MAIN ST. & ELM ST. & COLLEGE AVE. & RITE AID	LUMP	1
643.83	VIDEO DETECTION SYSTEM: MAIN ST. & TEMPLE ST. & W. CONCOURSE	LUMP	1
643.83	VIDEO DETECTION SYSTEM: SPRING ST. & MAIN ST. & WATER ST. & BRIDGE ST.	LUMP	1
643.83	VIDEO DETECTION SYSTEM: MAIN ST. & OAK ST. & EUSTIS PARKWAY	LUMP	1
643.83	VIDEO DETECTION SYSTEM: MAIN ST. & ARMORY ST.	LUMP	1
643.83	VIDEO DETECTION SYSTEM: MAIN ST. & WATERVILLE COMMONS DR.	LUMP	1
643.83	VIDEO DETECTION SYSTEM: MAIN ST. & I-95 NB RAMPS	LUMP	1
643.83	VIDEO DETECTION SYSTEM: MAIN ST. & I-95 SB RAMPS	LUMP	1
643.86	TRAFFIC SIGNAL LOOP DETECTOR	EA	10*
643.90	INTERCONNECT WIRE: 72-STRAND (12,000 LF)	LUMP	1
643.90	INTERCONNECT WIRE: 12-STRAND (8,000 LF)	LUMP	1
643.92	PEDESTAL POLE	EA	35**
643.94	DUAL PURPOSE POLE	EA	1
652.31	TYPE I BARRICADE	EA	15
652.33	DRUM	EA	60
652.34	CONES	EA	75
652.35	CONSTRUCTION SIGNS	SF	1,000
652.361	MAINTENANCE OF TRAFFIC CONTROL DEVICES	LUMP	1
652.38	FLAGGERS	HR	432
652.381	UNIFORM TRAFFIC CONTROL OFFICERS	HR	836
656.75	TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LUMP	1
659.10	MOBILIZATION	LUMP	1

SECTION 0002 PROJECT ITEMS - LOCAL FUNDS NON-PARTICIPATING BID ALTERNATE NO. 1

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
626.21	METALLIC CONDUIT	LF	30
626.22	NON-METALLIC CONDUIT	LF	400
626.331	36-INCH FOUNDATION	EA	4
626.35	CONTROLLER CABINET FOUNDATION	EA	1
627.18	12-INCH SOLID WHITE PAVEMENT MARKING LINE	LF	90
627.75	WHITE PAVEMENT & CURB MARKING	SF	44
643.80	TRAFFIC SIGNALS AT: KMD & AIRPORT RD.	LUMP	1
643.91	MAST ARM POLE	EA	4

SECTION 0002 NOTES:

1. SEE LIST OF MAJOR EQUIPMENT ON SIGNAL PLAN SHEET 9A 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 643.80.
3. MOBILIZATION, TRAFFIC CONTROL PLAN, FLAGGERS, UNIFORM OFFICERS, AND ALL MAINTENANCE OF TRAFFIC CONTROL DEVICE ITEMS SHALL BE SUBSIDIARY TO 643.80

SECTION 0003 PROJECT ITEMS - LOCAL FUNDS NON-PARTICIPATING BID ALTERNATE NO. 2

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
626.21	METALLIC CONDUIT	LF	30
626.22	NON-METALLIC CONDUIT	LF	50
626.331	36-INCH FOUNDATION	EA	4
626.35	CONTROLLER CABINET FOUNDATION	EA	1
627.18	12-INCH SOLID WHITE PAVEMENT MARKING LINE	LF	90
627.75	WHITE PAVEMENT & CURB MARKING	SF	44
643.80	TRAFFIC SIGNALS AT: KMD & AIRPORT RD.	LUMP	1
643.93	STRAIN POLE	EA	4

SECTION 0003 NOTES:

1. SEE LIST OF MAJOR EQUIPMENT ON SIGNAL PLAN SHEET 9A 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 643.80.
3. MOBILIZATION, TRAFFIC CONTROL PLAN, FLAGGERS, UNIFORM OFFICERS, AND ALL MAINTENANCE OF TRAFFIC CONTROL DEVICE ITEMS SHALL BE SUBSIDIARY TO 643.80

SECTION 0004 PROJECT ITEMS - LOCAL FUNDS NON-PARTICIPATING BID ALTERNATE NO. 3

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
626.21	METALLIC CONDUIT	LF	10
626.22	NON-METALLIC CONDUIT	LF	225
626.31	18-INCH FOUNDATION	EA	4
626.331	36-INCH FOUNDATION	EA	1
626.35	CONTROLLER CABINET FOUNDATION	EA	1
627.18	12-INCH SOLID WHITE PAVEMENT MARKING LINE	LF	66
627.75	WHITE PAVEMENT & CURB MARKING	SF	87
643.80	TRAFFIC SIGNALS AT: FRONT ST. & TEMPLE ST.	LUMP	1
643.91	MAST ARM POLE	EA	1
643.92	PEDESTAL POLE	EA	4

SECTION 0004 NOTES:

1. SEE LIST OF MAJOR EQUIPMENT ON SIGNAL PLAN SHEET 22A 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 643.80.
3. MOBILIZATION, TRAFFIC CONTROL PLAN, FLAGGERS, UNIFORM OFFICERS, AND ALL MAINTENANCE OF TRAFFIC CONTROL DEVICE ITEMS SHALL BE SUBSIDIARY TO 643.80

SECTION 0005 PROJECT ITEMS - LOCAL FUNDS NON-PARTICIPATING BID ALTERNATE NO. 4

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
643.712	PRE-EMPTIVE SYSTEM EMITTERS	EA	12

SECTION 0001 NOTES:

1. SEE LIST OF MAJOR EQUIPMENT ON SIGNAL PLANS ("A" SHEETS 5 THROUGH 31) FOR ITEMIZATION OF WORK ITEMS 643.71.

2. ANY PAVEMENT MARKING MODIFICATIONS OR REESTABLISHMENT MAY BE COMPLETED BY OTHERS, AS DIRECTED BY THE RESIDENT ENGINEER. (SEE SHEET 2, GENERAL NOTE 36).

*** = INCLUDES FOUR UNDETERMINED LOCATIONS (SEE SHEET 2, GENERAL NOTE 25.)**

**** = INCLUDES TWO UNDETERMINED LOCATIONS IN THE EVENT EXISTING POLE OR FOUNDATION IS FOUND DEFICIENT DURING CONSTRUCTION**

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/. Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

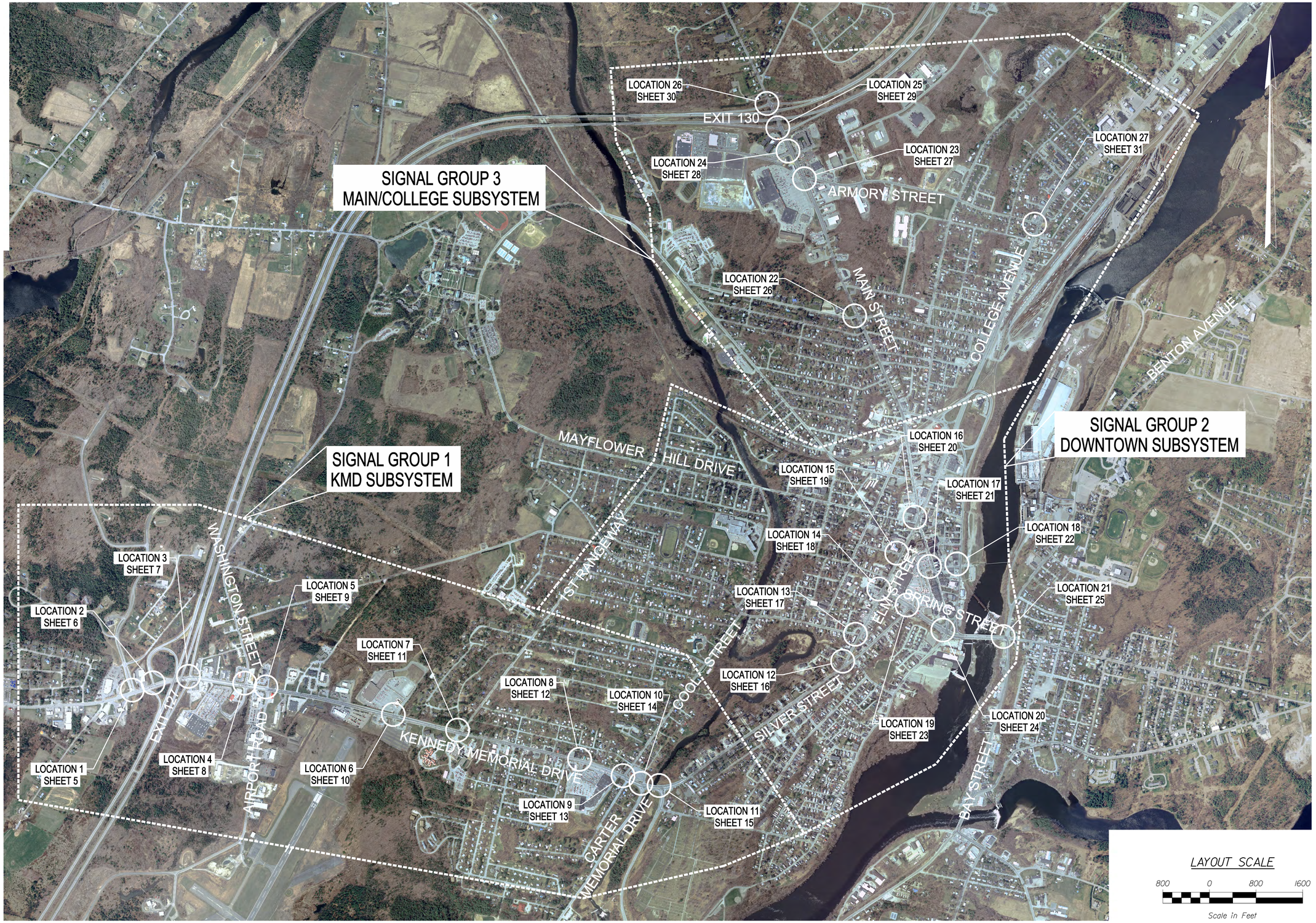
QUANTITIES

SHEET NUMBER

3

OF 54

Filename: ...\ts\planset\003_52068000QUAN.dgn Division: Username: J ROBERT Date:9/9/2010



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN
17288.00

PROJ. MANAGER	J. MANSER	BY	DATE
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

OVERALL MAP

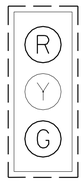
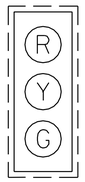
SHEET NUMBER

4

OF 54

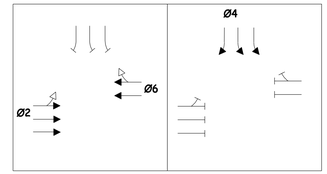
Filename: ...\ts\planset\004_5206800MAP.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

EXISTING	PROPOSED
A1,A2,B1,B2, C1,C3	A3,C2
	
12" LENS	12" LENS
WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES	

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RESET L.E.D. MODULES -
(SEE LED LENSE SCHEDULE)

PHASING SEQUENCE



PAVEMENT MARKING MODIFICATION
TO INCLUDE "ONLY" / 2 SETS
(SEE GENERAL NOTE 36, SHEET 2)

RIGHT-TURN DETECTION
TO BE SET WITH A
20 SECOND DELAY

ABANDON EXISTING
VEHICLE DETECTION

F&I STOPLINE RADAR
VEHICLE DETECTION
DEVICE ON EXISTING
STEEL STRAIN POLE

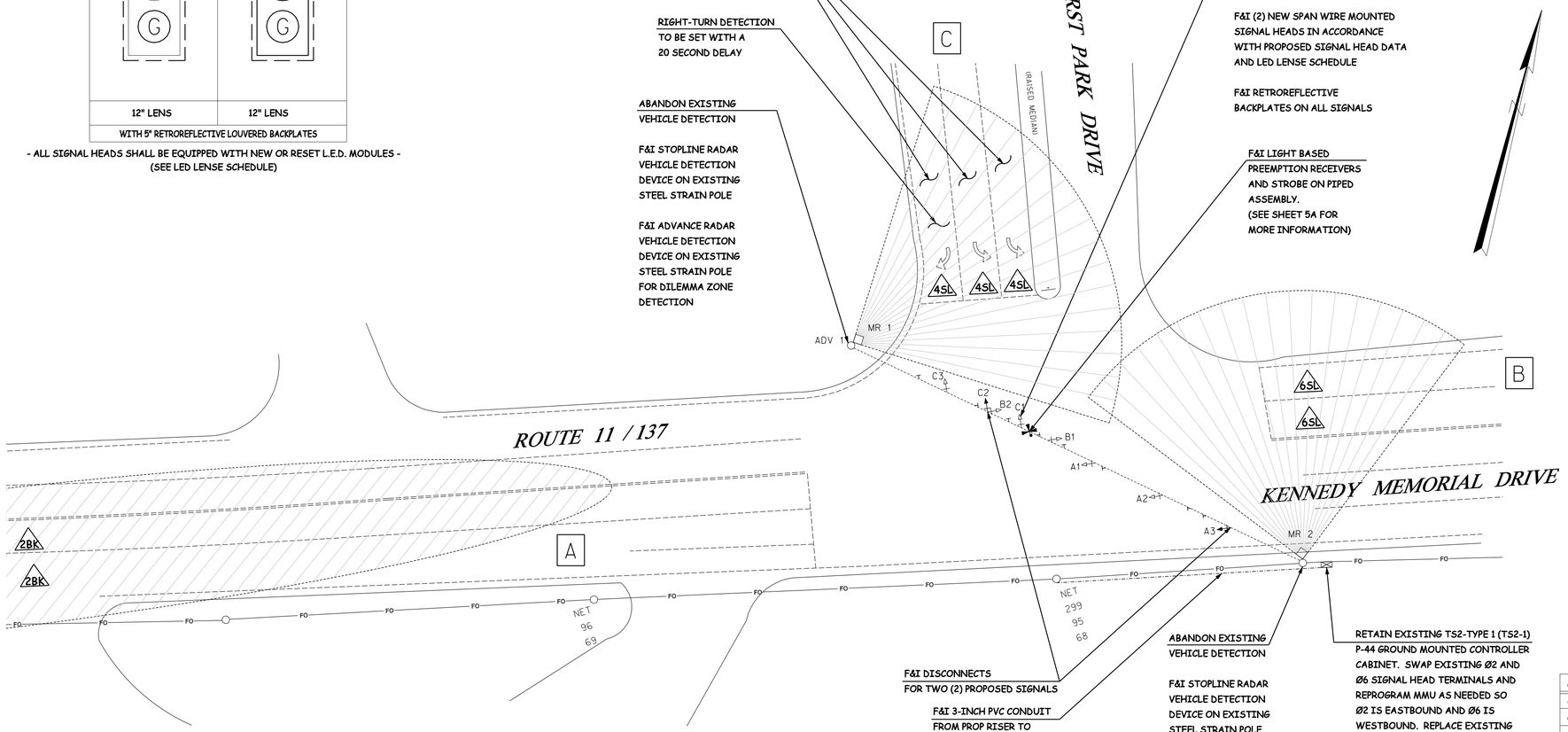
F&I ADVANCE RADAR
VEHICLE DETECTION
DEVICE ON EXISTING
STEEL STRAIN POLE
FOR DILEMMA ZONE
DETECTION

RETAIN (OR REPOSITION TO PROVIDE
8' MINIMUM SEPARATION) EXISTING
SIGNAL HEADS (TYP) AND EXISTING
YELLOW LED MODULES (6) F&I NEW
RED AND GREEN LED MODULES IN
ACCORDANCE WITH LED LENSE SCHEDULE.

F&I (2) NEW SPAN WIRE MOUNTED
SIGNAL HEADS IN ACCORDANCE
WITH PROPOSED SIGNAL HEAD DATA
AND LED LENSE SCHEDULE

F&I RETROREFLECTIVE
BACKPLATES ON ALL SIGNALS

F&I LIGHT BASED
PREEMPTION RECEIVERS
AND STROBE ON PIPED
ASSEMBLY.
(SEE SHEET 5A FOR
MORE INFORMATION)



F&I DISCONNECTS
FOR TWO (2) PROPOSED SIGNALS

F&I 3-INCH PVC CONDUIT
FROM PROP RISER TO
CONTROLLER CABINET

ABANDON EXISTING
VEHICLE DETECTION

F&I STOPLINE RADAR
VEHICLE DETECTION
DEVICE ON EXISTING
STEEL STRAIN POLE.

RETAIN EXISTING TS2-TYPE 1 (TS2-1)
P-44 GROUND MOUNTED CONTROLLER
CABINET. SWAP EXISTING Ø2 AND
Ø6 SIGNAL HEAD TERMINALS AND
REPROGRAM MMU AS NEEDED SO
Ø2 IS EASTBOUND AND Ø6 IS
WESTBOUND. REPLACE EXISTING
CONTROLLER TO MATCH PROPOSED
SIGNAL SYSTEM OR IF EXISTING
CONTROLLER IS THE SAME BRAND
PROVIDE ETHERNET PORT AND UPGRADE
THE SOFTWARE TO THE LATEST
VERSION.

IMPLEMENT LOCAL AND SYSTEM
TIMING PLANS

L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1	1	*	1							
A2	1	*	1							
A3	1	1	1							
B1	1	*	1							
B2	1	*	1							
C1	1	*	1							
C2	1	1	1							
C3	1	*	1							
TOTAL	8	2	8	0	0	0	0	0	0	0

NOTES: * = EXISTING L.E.D. LENSES TO BE RETAINED
R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL		10		5		10		
PASSAGE TIME		4		2		4		
MAXIMUM 1		40		30		40		
MAXIMUM 2		65		35		65		
YELLOW		4.0		4.0		4.0		
ALL RED		2.5		2.5		2.5		
PEDESTRIAN WALK								
PEDESTRIAN CLEARANCE								
RECALL		S		O		S		
DETECTOR OPERATION		PR		PR		PR		
PREEMPTION PRIORITY		2		3		1		
FLASH		Y		R		Y		
DUAL ENTRY		ON		OFF		ON		

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	42	100	55	60	75	75	
OFFSET (END GRN)	40	66	42	7	62	2	
COORDINATED Ø	6	6	6	6	6	6	
SPLIT TIME Ø1	0	0	0	0	0	0	
SPLIT TIME Ø2	25	63	33	37	48	48	
SPLIT TIME Ø3	0	0	0	0	0	0	
SPLIT TIME Ø4	17	37	22	23	27	27	
SPLIT TIME Ø5	0	0	0	0	0	0	
SPLIT TIME Ø6	25	63	33	37	48	48	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	17	37	22	23	27	27	

FLOATING FORCE-OFF

COORDINATION NOTES:

1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY
(SEE SHEET 5A FOR DAY PLAN SETTINGS).
3. PHASE 8 IS A DUMMY PHASE TO BE SET WITH SPLIT TIMES FOR
NTCIP COMPLIANCE.

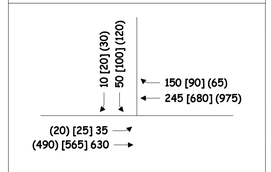
DETECTOR SCHEDULE

	DETECTOR					SETTINGS	
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	DETECTOR NO.
ADV1	2BK	KMD	EASTBOUND	ALL APPROACH	2	RADAR	2
MR 1	4SL	FIRST PARK DRIVE	SOUTHBOUND	ALL APPROACH	4	RADAR	4
MR 2	6SL	KMD	WESTBOUND	ALL APPROACH	6	RADAR	6

DETECTOR NOTES:
ALL DETECTION SHOULD BE SET TO NONLOCKING OPERATIONS.
DETECTOR M1 IS TO BE USED FOR ADVANCE DILEMMA ZONE DETECTION.
THE FIRST PARK RIGHT-TURN LANE SHALL BE SET WITH A 20 SECOND DELAY.

INTERSECTION:
KMD (ROUTE 11/137)
AND FIRST PARK DRIVE
SIGNAL GROUP:
1
LOCATION:
1

SYSTEM DESIGN VOLUMES AM [MID] (PM)



PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN
17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE	
DESIGN-DETAILED	C. BIGBAY	J. ROBERT	7/16/10	
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10	
DESIGN2-DETAILED2				
DESIGN3-DETAILED3				
REVISIONS 1	Address 98/ Comments		9/07/10	
REVISIONS 2				
REVISIONS 3				
REVISIONS 4				
FIELD CHANGES				

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND FIRST PARK DRIVE

TRAFFIC SIGNAL PLAN

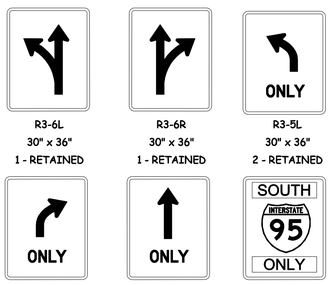
SHEET NUMBER
5
OF 54

Filename: ...\ts\planset\005_5206800SG01.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY	EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER (AS NEEDED - SEE CABINET NOTE SHEET 5)	1	FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	110 LF
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1	INSTALL WHITE "ONLY" PAVEMENT MARKING (ITEM 627.75)	132 SF
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH SPAN WIRE MOUNTED FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS.	2	FURNISH AND INSTALL APPROXIMATELY 350 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON EXISTING AND PROPOSED SIGNAL HEADS	8	FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL NEW 12-INCH LED RED, YELLOW, AND GREEN LENSES INTO NEW AND/OR EXISTING SIGNAL HEADS	18	FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH IN EXISTING CONTROLLER CABINET	1	THE QUANTITIES LISTED ABOVE ARE APPROXIMATE AND ARE FURNISHED FOR INFORMATION ONLY.	
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL IN EXISTING CONTROLLER CABINET	1		
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS IN EXISTING CONTROLLER CABINET	1		
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE ON SPAN WIRE ASSEMBLY	3		
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE ON SPAN WIRE PIPE ASSEMBLY	1		
FURNISH AND INSTALL POST MOUNTED SIGNS	2		
FURNISH AND INSTALL RADAR BASED VEHICLE DETECTION SYSTEM (3-DETECTION UNITS PLUS FIELD WIRING TO ANCILLARY CABINET MOUNTED DEVICES)	1		
IMPLEMENT LOCAL AND SYSTEM TIMING	-		

EXISTING SPAN WIRE MOUNTED SIGNS



R3-6L 30" x 36" 1 - RETAINED

R3-6R 30" x 36" 1 - RETAINED

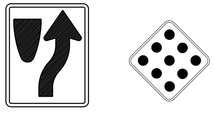
R3-5L 30" x 36" 2 - RETAINED

R3-5R 30" x 36" 1 - RETAINED

R3-5a 30" x 36" 2 - RETAINED

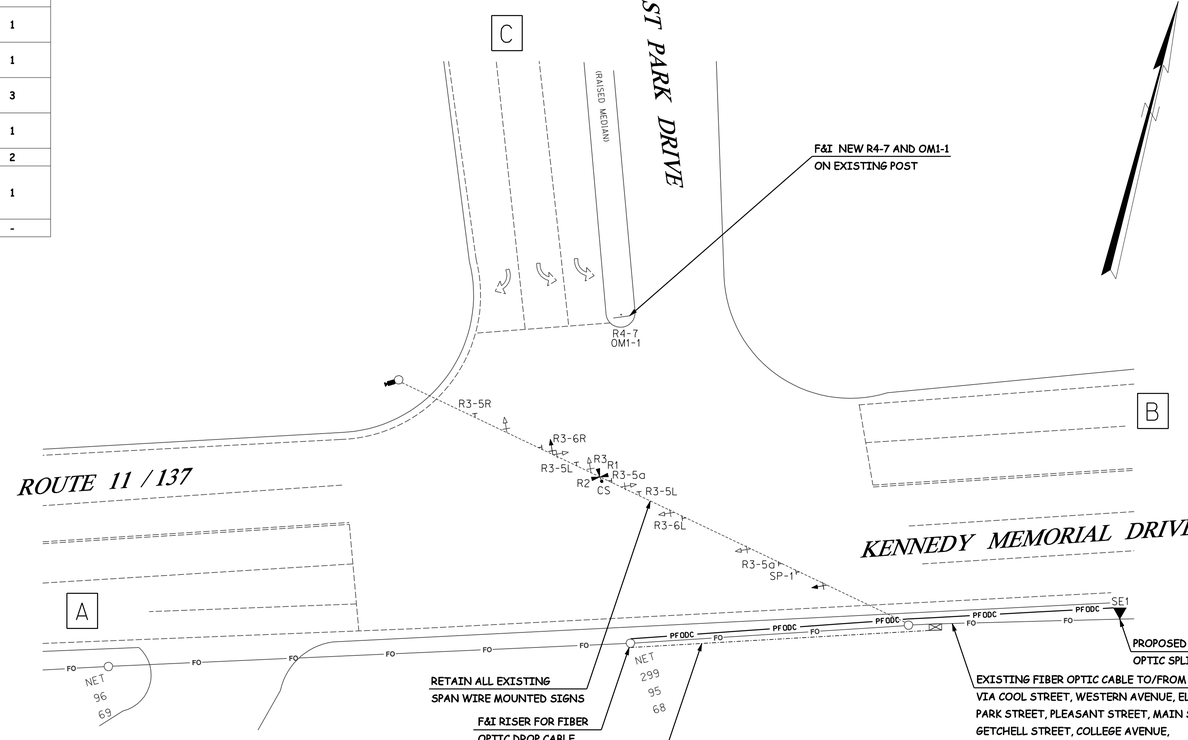
SP-1 30" x 36" 1 - RETAINED

PROPOSED POST MOUNTED SIGNS



R4-7 24" x 30" 1 - PROPOSED

OM1-1 18" x 18" 1 - PROPOSED



F&I NEW R4-7 AND OM1-1 ON EXISTING POST

RETAIN ALL EXISTING SPAN WIRE MOUNTED SIGNS

F&I RISER FOR FIBER OPTIC DROP CABLE

F&I 12 STRAND FIBER OPTIC INTERCONNECT (DROP CABLE) FROM SE1 TO EXISTING WOOD POLE THROUGH PROPOSED UNDERGROUND CONDUIT TO PROPOSED PATCH PANEL AND ETHERNET SWITCH INSTALLED WITH FIBER OPTIC INTERFACES WITHIN THE EXISTING TRAFFIC SIGNAL CABINET. SEE FIBER OPTIC SPLICE TABLE FOR ADDITIONAL INFORMATION.

PROPOSED FIBER OPTIC SPLICE ENCLOSURE

EXISTING FIBER OPTIC CABLE TO/FROM CITY HALL VIA COOL STREET, WESTERN AVENUE, ELM STREET, PARK STREET, PLEASANT STREET, MAIN STREET, GETCHELL STREET, COLLEGE AVENUE, UNION STREET, AND FRONT STREET

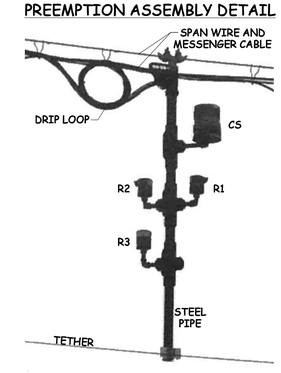
EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø6
R2	4	2	Ø2
R3	5	3	Ø4
	6	NOT USED	

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 3 = LOWEST)
3. 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 (4.0 SECONDS YELLOW AND 2.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

PREEMPTION ASSEMBLY DETAIL



PLAN

25 0 25 50

SCALE

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE1	BB-A (48F) TO SE2	25	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
SE1	BB-A (48F) TO SE2	26	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
SE1	BB-A (48F)	1-24, 27-48	THROUGH	BB-A (48F) TO OAKLAND WILLIAMS SCHOOL	-	BBA (48F) FIBER OPTIC BACKBONE
PPP CONTROL CABINET	12F TO SE1	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
PPP CONTROL CABINET	12F TO SE1	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
PPP CONTROL CABINET	12F TO SE1	1-2, 5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
KMD (ROUTE 11/137) AND FIRST PARK DRIVE
SIGNAL GROUP:
1
LOCATION:
1

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 42/84 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

	BY	DATE
PROJ. MANAGER	J. MANSIR	
DESIGN-DETAILED	C. BOBAY	7/16/10
CHECKED-REVIEWED	M. GRAHAM	8/13/10
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1	Address 98/ Comments	9/07/10
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

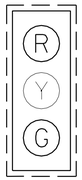
WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND FIRST PARK DRIVE

TRAFFIC SIGNAL PLAN

SHEET NUMBER
5A
OF 54

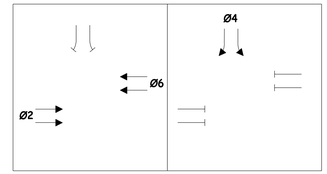
Filename: ...\planset\006_5206800SG01A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

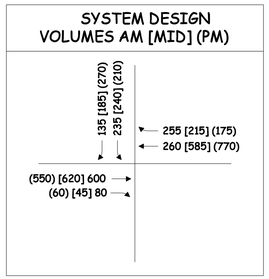
PROPOSED
A1,A2,B1,B2 C1,C2

12" LENS
WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES

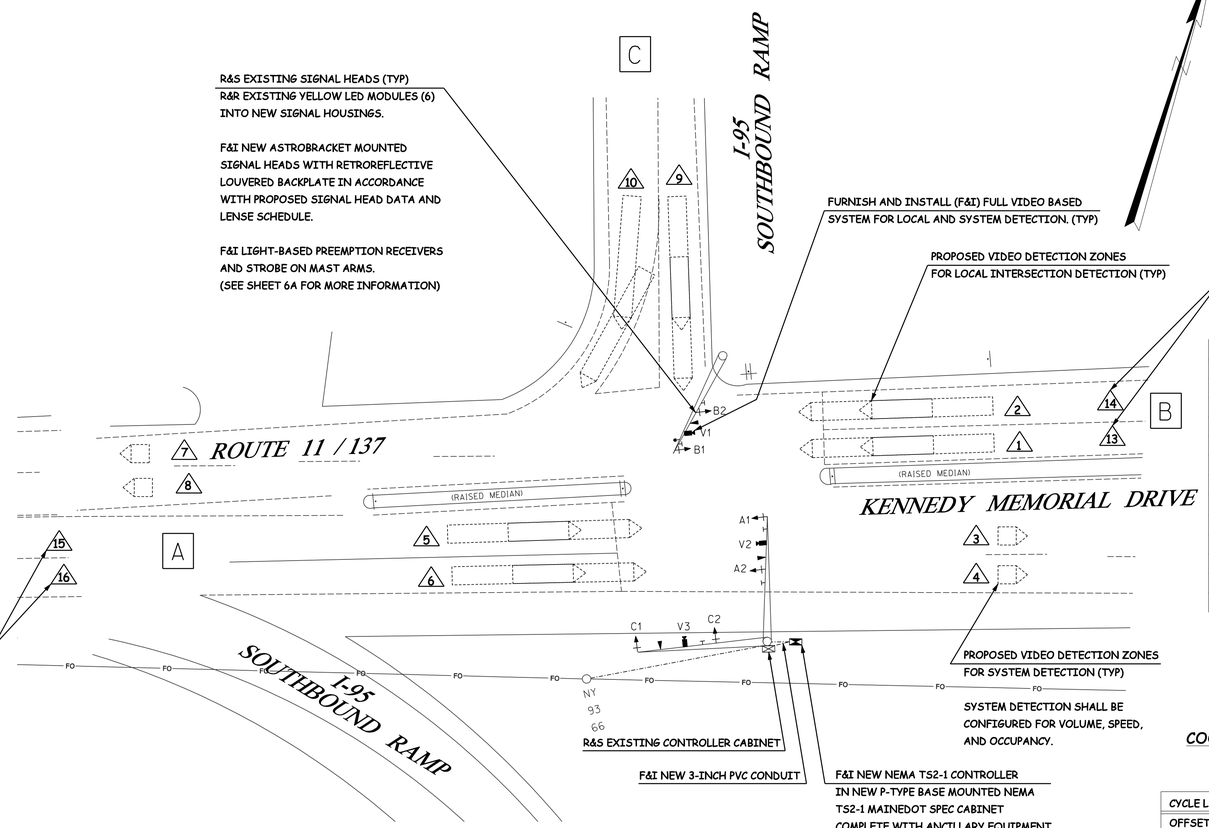
- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RESET L.E.D. MODULES - (SEE LED LENSE SCHEDULE)

PHASING SEQUENCE



SYSTEM DESIGN VOLUMES AM [MID] (PM)





L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1	1	*	1							
A2	1	*	1							
B1	1	*	1							
B2	1	*	1							
C1	1	*	1							
C2	1	*	1							
TOTAL	6	0	6	0	0	0	0	0	0	0

NOTES: * = EXISTING L.E.D. LENSES TO BE RESET

R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL		10		5		10		
PASSAGE TIME		2		2		2		
MAXIMUM 1		40		30		40		
MAXIMUM 2		55		45		55		
YELLOW		4.0		4.0		4.0		
ALL RED		2.0		2.0		2.0		
PEDESTRIAN WALK								
PEDESTRIAN CLEARANCE								
RECALL		S		O		S		
DETECTOR OPERATION		PR		PR		PR		
PREEMPTION PRIORITY		2		3		1		
FLASH		Y		R		Y		
DUAL ENTRY		ON		OFF		ON		

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED

DETECTOR SCHEDULE

	DETECTOR					DETECTOR CARD IN VEHICLE DETECTION RACK				INDUCTANCE		CONTINUITY		RESISTANCE LOOP TO GROUND	
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO	DETECTOR NO	CHANNEL	PRIOR	PRESENT	PRIOR	PRESENT	PRIOR	PRESENT
CAMERA V1	1	KMD	WESTBOUND	MEDIAN SIDE THRU	6	FULL VIDEO	2	1/1	1	NO EXISTING STOP LINE WIRE LOOPS - F&I VIDEO					
	2	KMD	WESTBOUND	CURB SIDE THRU	6	FULL VIDEO	2	1/2	2	NO EXISTING STOP LINE WIRE LOOPS - F&I VIDEO					
	3	KMD	EASTBOUND	MEDIAN SIDE (SYSTEM)	C	FULL VIDEO	2	1/3	3	NO EXISTING STOP LINE WIRE LOOPS - F&I VIDEO					
	4	KMD	EASTBOUND	CURB SIDE (SYSTEM)	C	FULL VIDEO	2	1/4	4	NO EXISTING STOP LINE WIRE LOOPS - F&I VIDEO					
CAMERA V2	5	KMD	EASTBOUND	MEDIAN SIDE THRU	2	FULL VIDEO	4	2/1	1	NO EXISTING STOP LINE WIRE LOOPS - F&I VIDEO					
	6	KMD	EASTBOUND	CURB SIDE THRU	2	FULL VIDEO	4	2/2	2	NO EXISTING STOP LINE WIRE LOOPS - F&I VIDEO					
	7	KMD	WESTBOUND	MEDIAN SIDE (SYSTEM)	C	FULL VIDEO	4	2/3	3	NO EXISTING STOP LINE WIRE LOOPS - F&I VIDEO					
	8	KMD	WESTBOUND	CURB SIDE (SYSTEM)	C	FULL VIDEO	4	2/4	4	NO EXISTING STOP LINE WIRE LOOPS - F&I VIDEO					
CAMERA V3	9	I-95 SOUTHBOUND RAMP	SOUTHBOUND	LEFT	4	FULL VIDEO	6	3/1	1	NO EXISTING STOP LINE WIRE LOOPS - F&I VIDEO					
	10	I-95 SOUTHBOUND RAMP	SOUTHBOUND	RIGHT	4D	FULL VIDEO	6	3/2	2	NO EXISTING STOP LINE WIRE LOOPS - F&I VIDEO					
	(11)	SPARE						3/3	3	SPARE VIDEO CHANNEL					
	(12)	SPARE						3/4	4	SPARE VIDEO CHANNEL					
EXISTING WIRE LOOPS	13	KMD	WESTBOUND	MEDIAN SIDE (BACK)	6	PRESENCE^	8	13	1						
	14	KMD	WESTBOUND	CURB SIDE (BACK)	6	PRESENCE^	8	14	2						
	15	KMD	EASTBOUND	MEDIAN SIDE (BACK)	2	PRESENCE^	8	15	3						
	16	KMD	EASTBOUND	CURB SIDE (BACK)	2	PRESENCE^	8	16	4						

DETECTOR NOTES:
ALL DETECTION SHOULD BE SET TO NONLOCKING OPERATIONS.
DETECTORS DESIGNATED FOR DELAY (4D) SHALL INCLUDE A 20 SECOND DELAY.
^ = ALL EFFORTS SHALL BE MADE TO RETAIN THE EXISTING BACK WIRE LOOP (DILEMMA ZONE) DETECTION. PULL BACK EXISTING LEAD-INS AND REROUTE TO PROPOSED CONTROLLER CABINET.

INTERSECTION:
KMD (ROUTE 11/137) AND I-95 SB RAMPS
SIGNAL GROUP:
1
LOCATION:
2

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	42	100	55	60	75	75	
OFFSET (END GRN)	36	58	40	5	61	2	FLOATING FORCE-OFF
COORDINATED Ø	6	6	6	6	6	6	
SPLIT TIME Ø1	0	0	0	0	0	0	
SPLIT TIME Ø2	21	50	31	33	39	39	
SPLIT TIME Ø3	0	0	0	0	0	0	
SPLIT TIME Ø4	21	50	24	27	36	36	
SPLIT TIME Ø5	0	0	0	0	0	0	
SPLIT TIME Ø6	21	50	31	33	39	39	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	21	50	24	27	36	36	

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 6A FOR DAY PLAN SETTINGS).
3. PHASE 8 IS A DUMMY PHASE TO BE SET WITH SPLIT TIMES FOR NTCIP COMPLIANCE.

PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BIGBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND I-95 SB RAMPS

TRAFFIC SIGNAL PLAN

SHEET NUMBER
6
OF 54

Filename: ...\ts\planset\007_5206800SG02.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY	EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1	FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	85 LF
		FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
		FURNISH AND INSTALL CARD RACK MOUNT VIDEO COMMUNICATIONS BOARD (ITEM 643.83)	1
FURNISH AND INSTALL NEW 16 CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1	FURNISH AND INSTALL CARD RACK VIDEO POWER SUPPLY (ITEM 643.83)	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS.	6	FURNISH AND INSTALL 2-CHANNEL/ 4-OUTPUT CARD RACK MOUNT DATA AND PRESENCE VIDEO DETECTOR CARDS (ITEM 643.83)	2
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON PROPOSED SIGNAL HEADS	6	FURNISH AND INSTALL VIDEO DETECTION CAMERA (ITEM 643.83)	3
REMOVE AND RESET EXISTING YELLOW LED MODULES INTO NEW SIGNAL HEADS	6	FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL NEW 12-INCH LED RED AND GREEN LENSES INTO NEW SIGNAL HEADS	12		
FURNISH AND INSTALL 4-CHANNEL CARD RACK MOUNT LOOP DETECTOR AMPLIFIER	1	FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1		
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1	FURNISH AND INSTALL APPROXIMATELY 260 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1		
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	3	THE QUANTITIES LISTED ABOVE ARE APPROXIMATE AND ARE FURNISHED FOR INFORMATION ONLY.	
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1		
FURNISH AND INSTALL MAST ARM AND POST MOUNTED SIGNS	6		
RECABLE INTERSECTION	-		
IMPLEMENT LOCAL AND SYSTEM TIMING	-		

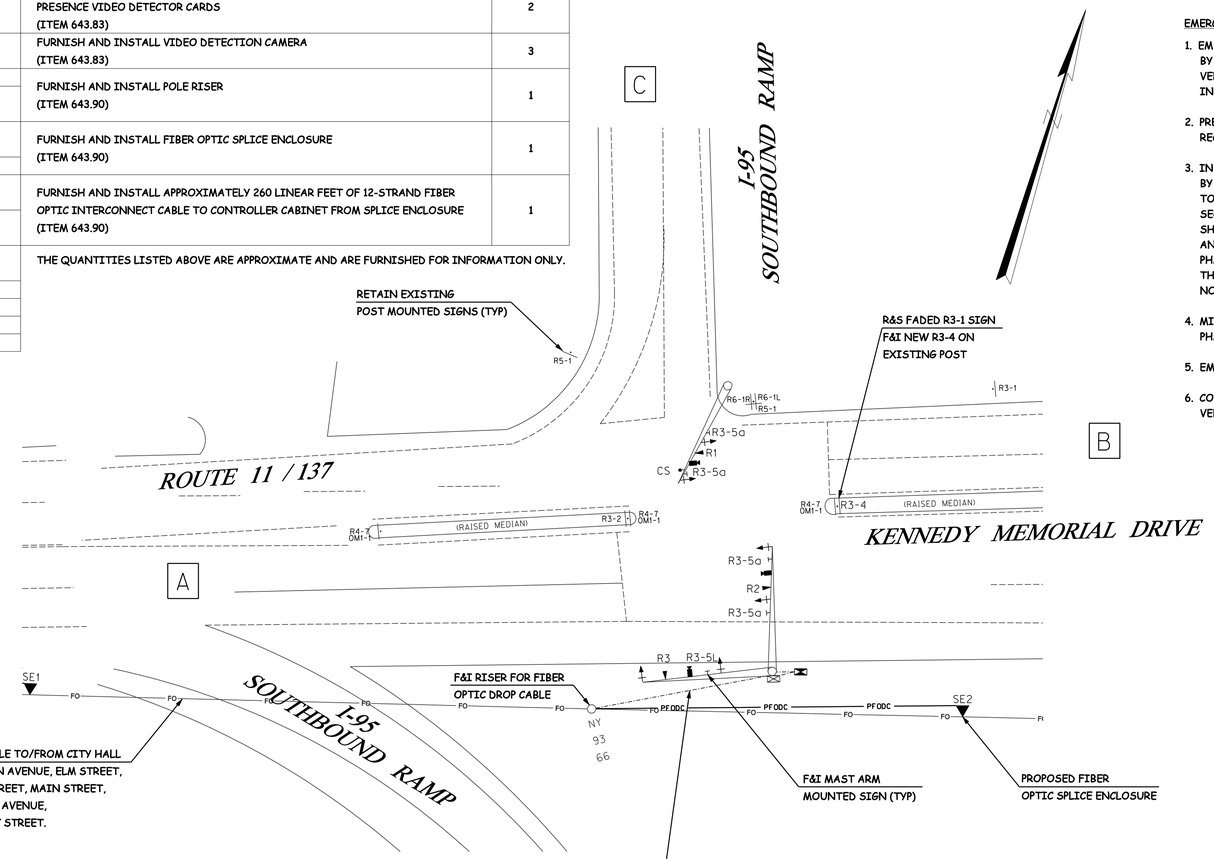
PROPOSED MAST ARM MOUNTED SIGNS

R3-5L
30" x 36"
1 - PROPOSED

R3-5a
30" x 36"
4 - PROPOSED

PROPOSED POST MOUNTED SIGNS

R3-4
36" x 36"
1 - PROPOSED



EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø6
R2	4	2	Ø2
R3	5	3	Ø4
	6	NOT USED	

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 3 = LOWEST)
3. 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 (4.0 SECONDS YELLOW AND 2.0 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE2	BB-A (48F) TO SE1	25	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE1	26	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE1	1-24, 27-48	THROUGH	BB-A (48F) TO SE3	1-24, 27-48	BBA (48F) FIBER OPTIC BACKBONE
	BB-A (48F) TO SE3	25	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE3	26	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
PPP, CONTROL CABINET	12F TO SE2	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE2	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE2	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE2	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE2	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
KMD (ROUTE 11/137) AND I-95 SB RAMPS
SIGNAL GROUP:
1
LOCATION:
2

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 42/84 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

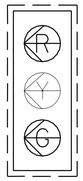
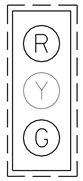
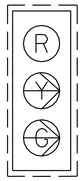
SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND I-95 SB RAMPS
TRAFFIC SIGNAL PLAN

SHEET NUMBER
6A
OF 54

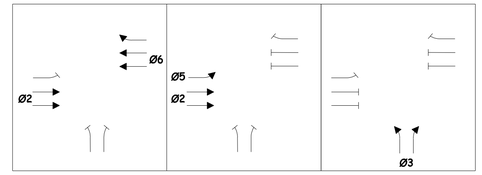
Filename: ...\planset\008_5206800SG02A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

PROPOSED		
A1	A2,A3,B1, B2,C1,C2	B3
		
12" LENS	12" LENS	12" LENS
WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES		

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RESET L.E.D. MODULES -
(SEE LED LENSE SCHEDULE)

PHASING SEQUENCE



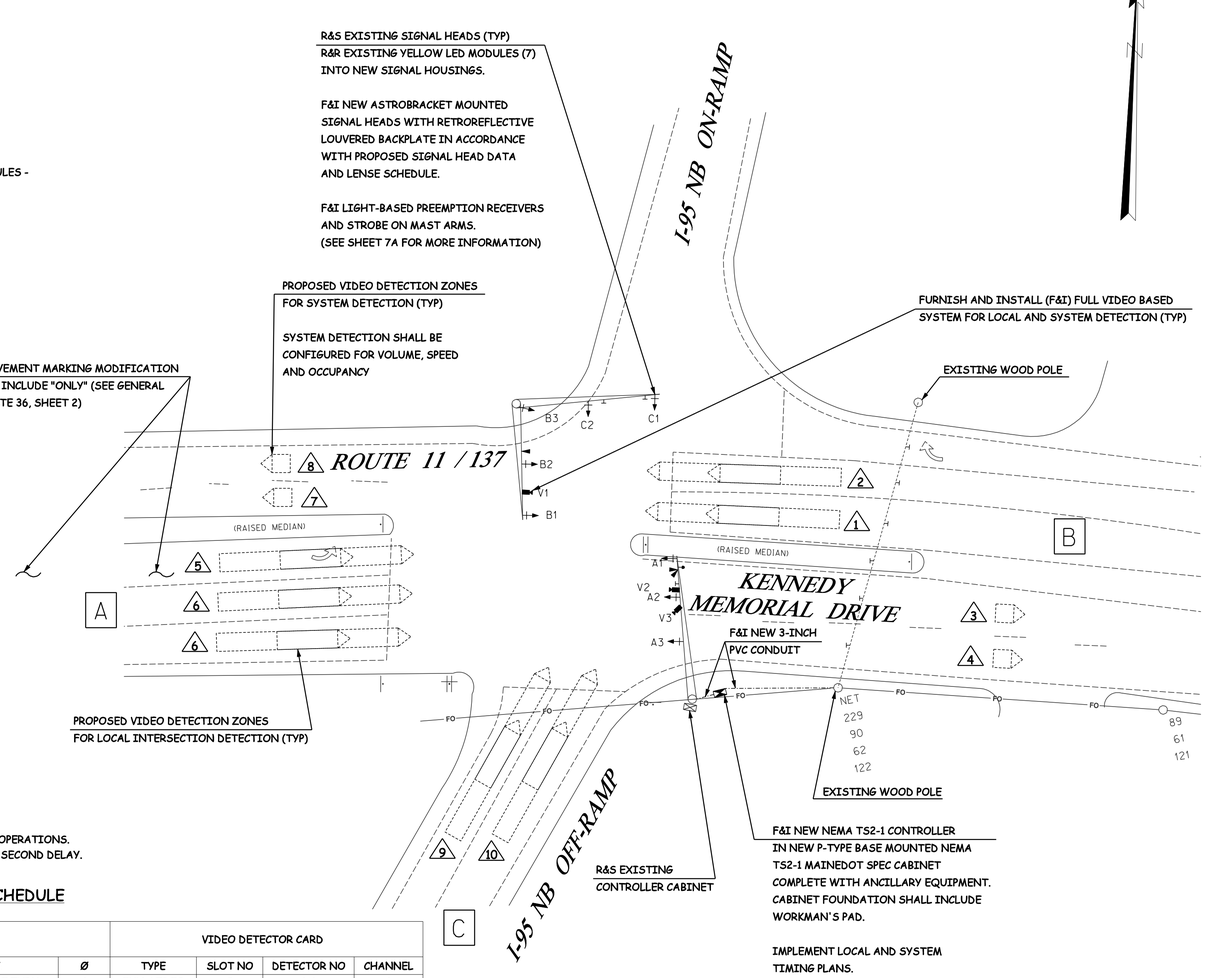
NOTE: Ø5 LAGS

L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1				1	*	1				
A2	1	*	1							
A3	1	*	1							
B1	1	*	1							
B2	1	*	1							
B3	1								1	1
C1	1	*	1							
C2	1	*	1							
TOTAL	7	0	6	1	0	1	0	0	1	1

NOTES: * = EXISTING L.E.D. LENSES TO BE RESET

R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW



SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL		10	5		5	10		
PASSAGE TIME		2	2		2	2		
MAXIMUM 1		40	30		25	40		
MAXIMUM 2		90	80		30	90		
YELLOW		4.0	4.0		4.0	4.0		
ALL RED		2.0	2.0		2.0	2.0		
PEDESTRIAN WALK								
PEDESTRIAN CLEARANCE								
RECALL		S	O		O	S		
DETECTOR OPERATION		PR	PR		PR	PR		
PREEMPTION PRIORITY		2	3		2	1		
FLASH		Y	R		R	Y		
DUAL ENTRY		ON	OFF		OFF	ON		

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	84	100	110	60	150	150	FLOATING FORCE-OFF
OFFSET (END GRN)	68	42	76	52	146	101	
COORDINATED Ø	6	6	6	6	3	6	
SPLIT TIME Ø1	0	0	0	0	0	0	
SPLIT TIME Ø2	58	69	79	40	66	109	
SPLIT TIME Ø3	26	31	31	20	84	41	
SPLIT TIME Ø4	0	0	0	0	0	0	
SPLIT TIME Ø5	26	26	31	18	24	31	
SPLIT TIME Ø6	32	43	48	22	42	78	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	26	31	31	20	84	41	

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 7A FOR DAY PLAN SETTINGS).
3. PHASE 8 IS A DUMMY PHASE TO BE SET WITH SPLIT TIMES FOR NTCIP COMPLIANCE.

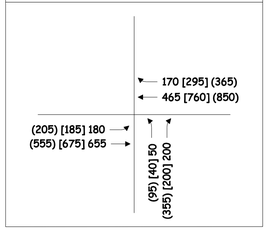
DETECTOR NOTES:
C = COUNTING LOOP
ALL DETECTION SHOULD BE INITIALLY SET TO NONLOCKING OPERATIONS.
DETECTORS DESIGNATED FOR DELAY (3D) SHALL INCLUDE A 5 SECOND DELAY.

DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD			
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO	DETECTOR NO	CHANNEL
CAMERA V1	1	KMD	WESTBOUND	MEDIAN SIDE THRU	6	FULL VIDEO	2	1/1	1
	2	KMD	WESTBOUND	CENTER LANE THRU	6	FULL VIDEO	2	1/2	2
	3	KMD	EASTBOUND	MEDIAN SIDE (SYSTEM)	C	FULL VIDEO	2	1/3	3
	4	KMD	EASTBOUND	CURB SIDE (SYSTEM)	C	FULL VIDEO	2	1/4	4
CAMERA V2	5	KMD	EASTBOUND	LEFT	5	FULL VIDEO	4	2/1	1
	6	KMD	EASTBOUND	THRU (CENTER & CURB)	2	FULL VIDEO	4	2/2	2
	7	KMD	WESTBOUND	MEDIAN SIDE (SYSTEM)	C	FULL VIDEO	4	2/3	3
	8	KMD	WESTBOUND	CURB SIDE (SYSTEM)	C	FULL VIDEO	4	2/4	4
CAMERA V3	9	I-95 NORTHBOUND RAMP	NORTHBOUND	LEFT	3	FULL VIDEO	6	3/1	1
	10	I-95 NORTHBOUND RAMP	NORTHBOUND	RIGHT	3D	FULL VIDEO	6	3/2	2
	(11)	SPARE						3/3	3
	(12)	SPARE						3/4	4
	(13)								
	(14)								
	(15)								
	(16)								

INTERSECTION:
KMD (ROUTE 11/137) AND I-95 NB RAMPS
SIGNAL GROUP:
1
LOCATION:
3

SYSTEM DESIGN VOLUMES AM [MID] (PM)



PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3		Address 98/ Comments	9/07/10
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND I-95 NB RAMPS

TRAFFIC SIGNAL PLAN

SHEET NUMBER
7
OF 54

Filename: ...\ts\planset\009_52068005G03.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY	EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1	FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	50 LF
		FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
		INSTALL WHITE "ONLY" PAVEMENT MARKING (ITEM 627.75)	44 SF
FURNISH AND INSTALL NEW 16 CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1	FURNISH AND INSTALL CARD RACK MOUNT VIDEO COMMUNICATIONS BOARD (ITEM 643.83)	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS.	8	FURNISH AND INSTALL CARD 2-CHANNEL/ 4-OUTPUT RACK MOUNT DATA AND PRESENCE VIDEO DETECTOR CARDS (ITEM 643.83)	2
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON PROPOSED SIGNAL HEADS	8	FURNISH AND INSTALL CARD RACK VIDEO POWER SUPPLY (ITEM 643.83)	1
REMOVE AND RESET EXISTING YELLOW LED MODULES INTO NEW SIGNAL HEADS	7	FURNISH AND INSTALL VIDEO DETECTION CAMERA (ITEM 643.83)	3
FURNISH AND INSTALL NEW 12-INCH LED RED, YELLOW(1) AND GREEN LENSES INTO NEW SIGNAL HEADS	17		
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1	FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1		
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1	FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	3	FURNISH AND INSTALL APPROXIMATELY 125 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1		
FURNISH AND INSTALL MAST ARM AND SPAN WIRE MOUNTED SIGNS	6	THE QUANTITIES LISTED ABOVE ARE APPROXIMATE AND ARE FURNISHED FOR INFORMATION ONLY.	
RECABLE INTERSECTION	-		
IMPLEMENT LOCAL AND SYSTEM TIMING	-		

EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø6
R2	4	2	Ø2 & Ø5
R3	5	3	Ø3
	6	NOT USED	

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 3 = LOWEST)
3. 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 (4.0 SECONDS YELLOW AND 2.0 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

EXISTING MAST ARM MOUNTED SIGNS

R10-5
30" x 36"
1 - RETAINED

PROPOSED MAST ARM MOUNTED SIGNS

R3-6L
30" x 36"
1 - PROPOSED

R3-5R
30" x 36"
1 - PROPOSED

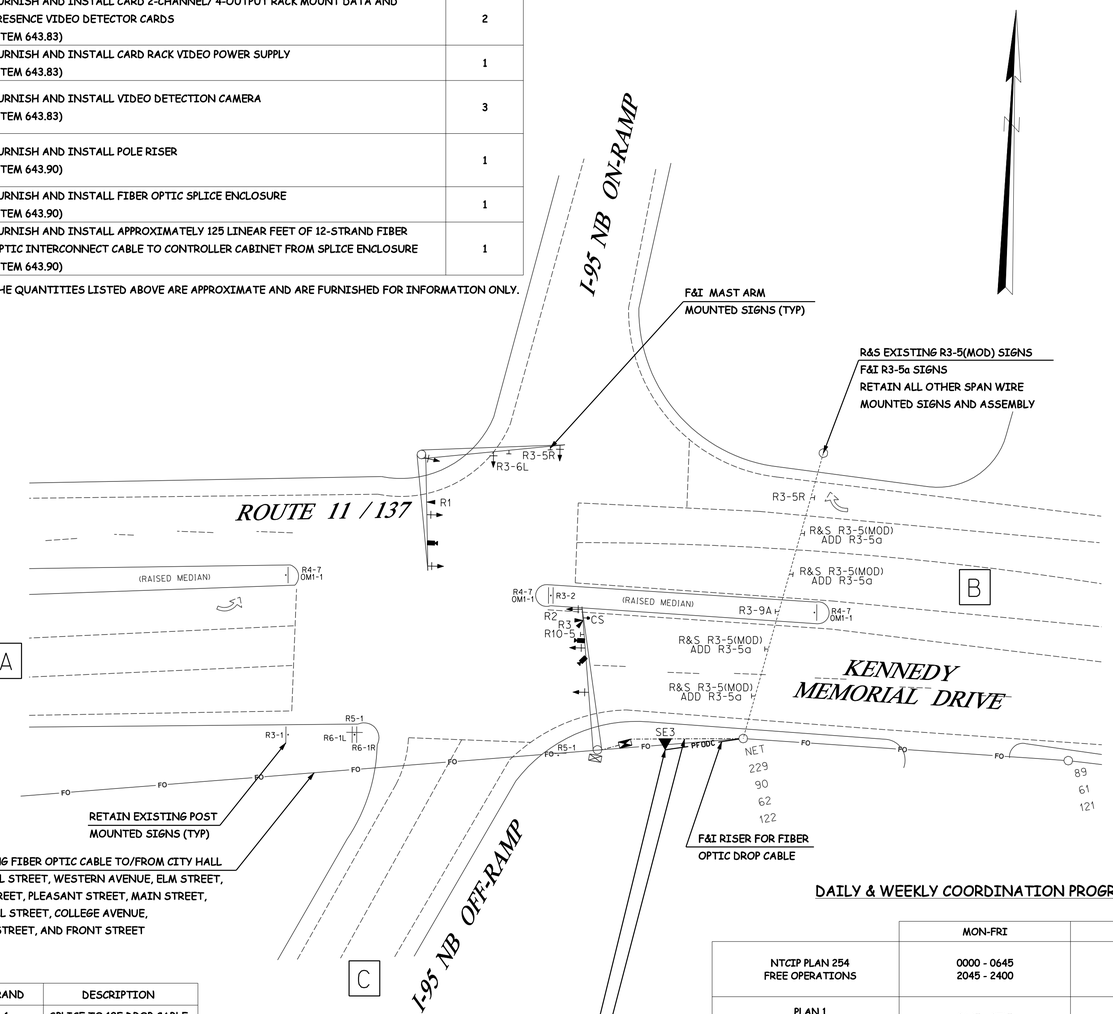
R3-5a
30" x 36"
4 - PROPOSED

EXISTING SPAN WIRE ASSEMBLY MOUNTED SIGNS

R3-9A
30" x 36"
1 - RETAINED

R3-5R
30" x 36"
1 - RETAINED

R3-5(MOD)
30" x 36"
4 - REMOVED



FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE3	BB-A (48F) TO SE2	25	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE2	26	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE2	1-24, 27-48	THROUGH	BB-A (48F) TO SE4	1-24, 27-48	BBA (48F) FIBER OPTIC BACKBONE
	BB-A (48F) TO SE4	25	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE4	26	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
PPP, CONTROL CABINET	12F TO SE3	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE3	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE3	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE3	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE3	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

F&I 12 STRAND FIBER OPTIC INTERCONNECT (DROP CABLE) FROM SE3 TO EXISTING WOOD POLE THROUGH PROPOSED UNDERGROUND CONDUIT TO PROPOSED PATCH PANEL AND ETHERNET SWITCH INSTALLED WITH FIBER OPTIC INTERFACES WITHIN THE PROPOSED TRAFFIC SIGNAL CABINET. SEE FIBER OPTIC SPLICE TABLE FOR ADDITIONAL INFORMATION.

INTERSECTION:
KMD (ROUTE 11/137) AND I-95 NB RAMPS
SIGNAL GROUP:
1
LOCATION:
3

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 42/84 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
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		BY	DATE
PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BIGBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE
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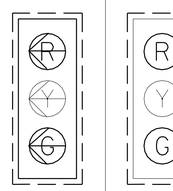
WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND I-95 NB RAMPS

TRAFFIC SIGNAL PLAN

SHEET NUMBER
7A
OF 54

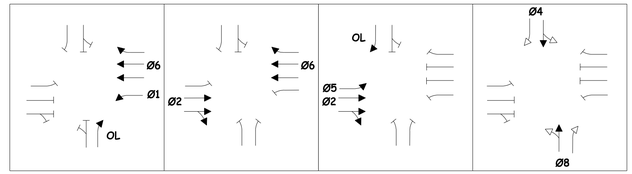
Filename: ...\planset\010_5206800SG03A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

PROPOSED			
A1,B1	A2,A3,B2, B3,C1,D1	C2,D2	B4
			
12" LENS	12" LENS	12" LENS	12" LENS
WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES			

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RESET L.E.D. MODULES -
(SEE LED LENSE SCHEDULE)

PHASING SEQUENCE



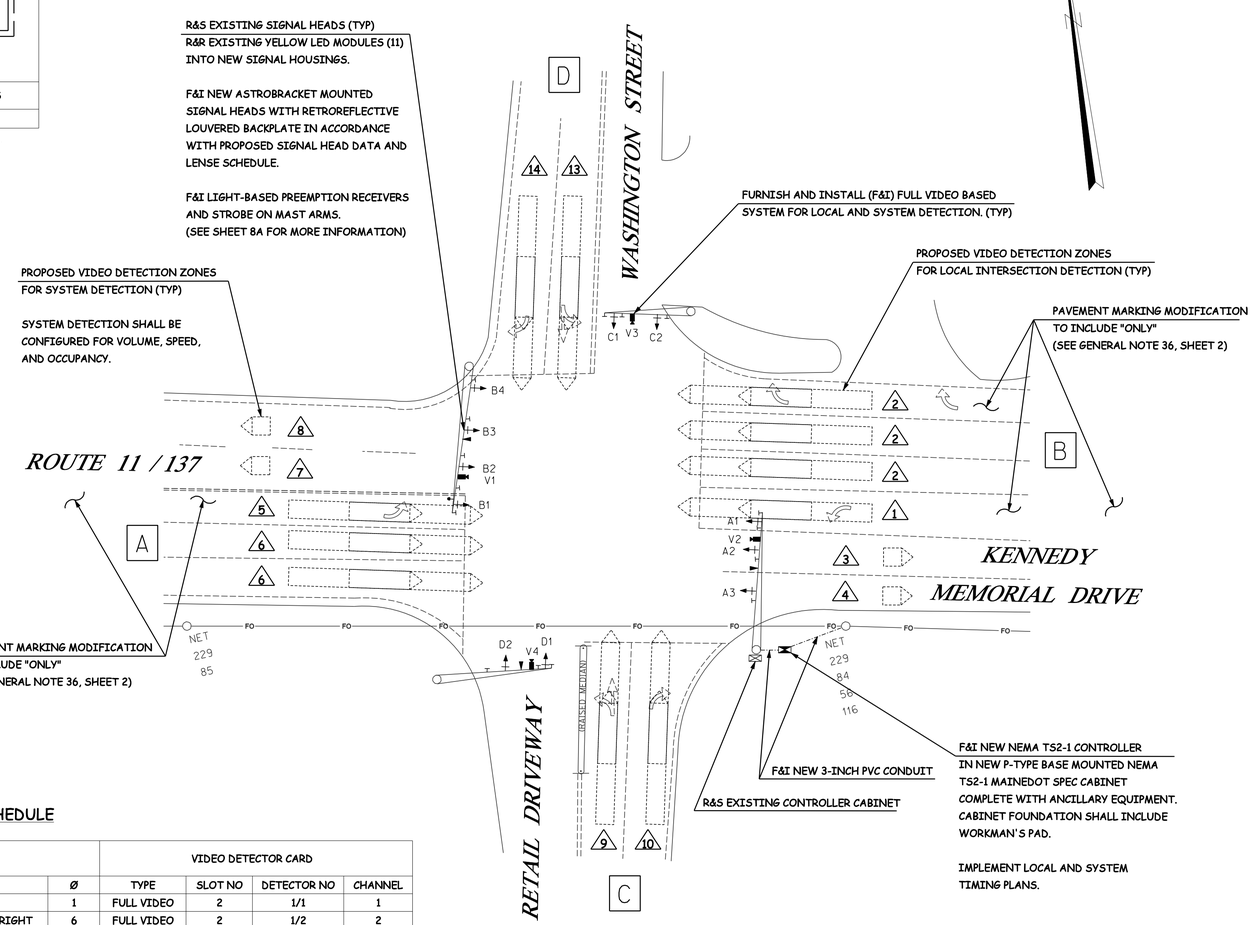
NOTE: Ø1 LEADS AND Ø5 LAGS

L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1				1	*	1				
A2	1	*	1							
A3	1	*	1							
B1				1	*	1				
B2	1	*	1							
B3	1	*	1							
B4									1	1
C1	1	*	1							
C2	1	*	1						*	1
D1	1	*	1							
D2	1	*	1						1	1
TOTAL	9	0	8	2	0	2	0	0	2	3

NOTES: * = EXISTING L.E.D. LENSES TO BE RESET

R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW



SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL	5	10		5	5	10		5
PASSAGE TIME	2	2		2	2	2		2
MAXIMUM 1	15	40		30	15	40		30
MAXIMUM 2	30	90		35	30	90		35
YELLOW	4.0	4.0		4.0	4.0	4.0		4.0
ALL RED	2.0	2.0		2.5	2.0	2.0		2.5
PEDESTRIAN WALK								
PEDESTRIAN CLEARANCE								
RECALL	O	S		O	O	S		O
DETECTOR OPERATION	PR	PR		PR	PR	PR		PR
PREEMPTION PRIORITY	1	2		3	2	1		
FLASH	R	Y		R	R	Y		R
DUAL ENTRY	OFF	ON		ON	OFF	ON		ON

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	84	100	110	120	150	150	
OFFSET (END GRN)	57	42	56	103	142	81	
COORDINATED Ø	6	6	6	6	2	6	
SPLIT TIME Ø1	21	18	31	21	27	27	
SPLIT TIME Ø2	35	45	42	62	81	81	
SPLIT TIME Ø3	0	0	0	0	0	0	
SPLIT TIME Ø4	28	37	37	37	42	42	
SPLIT TIME Ø5	21	26	21	26	32	32	
SPLIT TIME Ø6	35	37	52	57	76	76	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	28	37	37	37	42	42	

FLOATING FORCE-OFF

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY
(SEE SHEET 8A FOR DAY PLAN SETTINGS).

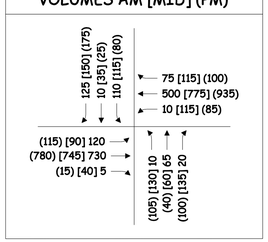
DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD			
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO	DETECTOR NO	CHANNEL
CAMERA V1	1	KMD	WESTBOUND	LEFT	1	FULL VIDEO	2	1/1	1
	2	KMD	WESTBOUND	THRU / THRU / RIGHT	6	FULL VIDEO	2	1/2	2
	3	KMD	EASTBOUND	MEDIAN SIDE (SYSTEM)	C	FULL VIDEO	2	1/3	3
	4	KMD	EASTBOUND	CURB SIDE (SYSTEM)	C	FULL VIDEO	2	1/4	4
CAMERA V2	5	KMD	EASTBOUND	LEFT	5	FULL VIDEO	4	2/1	1
	6	KMD	EASTBOUND	THRU / THRU-RIGHT	2	FULL VIDEO	4	2/2	2
	7	KMD	WESTBOUND	MEDIAN SIDE (SYSTEM)	C	FULL VIDEO	4	2/3	3
	8	KMD	WESTBOUND	CURB SIDE (SYSTEM)	C	FULL VIDEO	4	2/4	4
CAMERA V3	9	RETAIL DRIVEWAY	NORTHBOUND	LEFT-THRU	8	FULL VIDEO	6	3/1	1
	10	RETAIL DRIVEWAY	NORTHBOUND	RIGHT	8D	FULL VIDEO	6	3/2	2
	(11)	SPARE						3/3	3
	(12)	SPARE						3/4	4
CAMERA V4	13	WASHINGTON STREET	SOUTHBOUND	LEFT-THRU	4	FULL VIDEO	8	4/1	1
	14	WASHINGTON STREET	SOUTHBOUND	RIGHT	4D	FULL VIDEO	8	4/2	2
	(15)	SPARE						4/3	3
	(16)	SPARE						4/4	4

DETECTOR NOTES:
C = COUNTING LOOP
ALL DETECTION SHOULD BE INITIALLY SET TO NONLOCKING OPERATIONS.
DETECTORS DESIGNATED FOR DELAY (4D AND 8D) SHALL INCLUDE A 5 SECOND DELAY.

INTERSECTION:
KMD (ROUTE 11/137) AND WASHINGTON STREET
SIGNAL GROUP:
1
LOCATION:
4

SYSTEM DESIGN VOLUMES AM [MID] (PM)



PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

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PROJ. MANAGER	J. MANSIR		
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REVISIONS 1			
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REVISIONS 4			
FIELD CHANGES			

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WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND WASHINGTON STREET

TRAFFIC SIGNAL PLAN

SHEET NUMBER
8
OF 54

Filename: ...\ts\planset\011_5206800SG04.dgn Division: Username: J ROBERT Date:9/7/2010

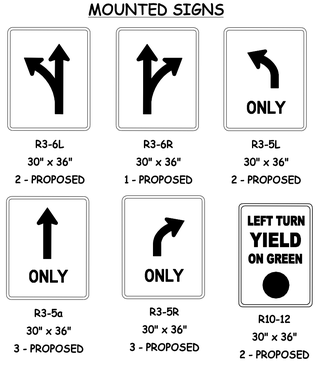
LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16 CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS.	9
FURNISH AND INSTALL ONE-WAY, 5-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS.	2
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON PROPOSED SIGNAL HEADS	11
REMOVE AND RESET EXISTING YELLOW LED MODULES INTO NEW SIGNAL HEADS	11
FURNISH AND INSTALL NEW 12-INCH LED RED, YELLOW(2), AND GREEN LENSES INTO NEW SIGNAL HEADS	26
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	3
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM MOUNTED SIGNS	13
RECABLE INTERSECTION	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	40 LF
FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
INSTALL WHITE "ONLY" PAVEMENT MARKING (ITEM 627.75)	110 SF
FURNISH AND INSTALL CARD RACK MOUNT VIDEO COMMUNICATIONS BOARD (ITEM 643.83)	1
FURNISH AND INSTALL CARD 2-CHANNEL/ 4-OUTPUT RACK MOUNT DATA AND PRESENCE VIDEO DETECTOR CARDS (ITEM 643.83)	2
FURNISH AND INSTALL CARD RACK VIDEO POWER SUPPLY (ITEM 643.83)	1
FURNISH AND INSTALL VIDEO DETECTION CAMERA (ITEM 643.83)	4
FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 120 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1

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

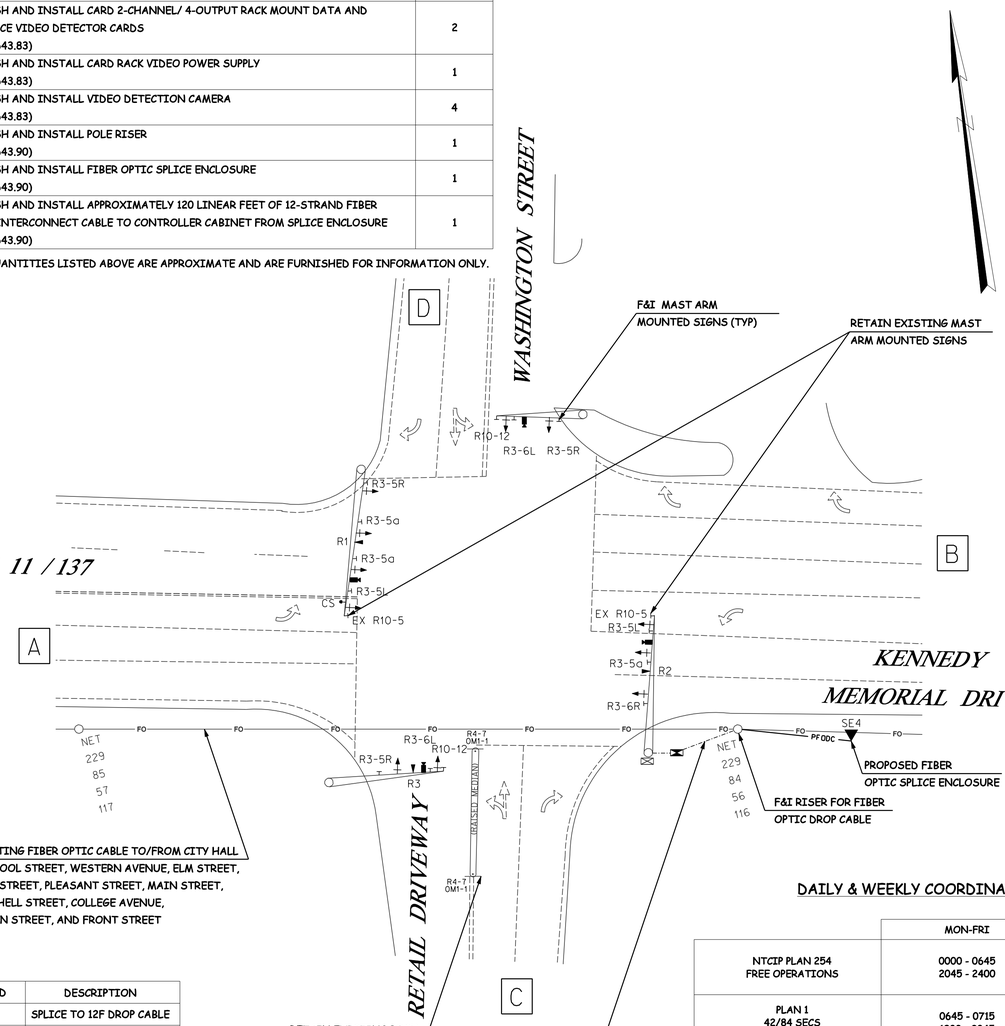
PROPOSED MAST ARM MOUNTED SIGNS



R3-6L 30" x 36" 2 - PROPOSED
R3-6R 30" x 36" 1 - PROPOSED
R3-5L 30" x 36" 2 - PROPOSED
R3-5a 30" x 36" 3 - PROPOSED
R3-5R 30" x 36" 3 - PROPOSED
R10-12 30" x 36" 2 - PROPOSED

EXISTING MAST ARM MOUNTED SIGNS

R10-5
30" x 36"
2 - RETAINED



FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE4	BB-A (48F) TO SE3	25	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE3	26	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE3	1-24, 27-48	THROUGH	BB-A (48F) TO SE5	1-24, 27-48	BBA (48F) FIBER OPTIC BACKBONE
	BB-A (48F) TO SE5	25	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE5	26	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
PPP, CONTROL CABINET	12F TO SE4	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE4	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE4	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE4	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE4	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
KMD (ROUTE 11/137) AND WASHINGTON STREET
SIGNAL GROUP:
1
LOCATION:
4

EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø1 & Ø6
R2	4	2	Ø2 & Ø5
R3	5	3	Ø4
R4	6	NOT USED	

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 3 = LOWEST)
3. 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 (4.0 SECONDS YELLOW AND 2.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 42/84 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

	BY	DATE
PROJ. MANAGER	J. MANSIR	
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1	Address 98/ Comments	9/07/10
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND WASHINGTON STREET

TRAFFIC SIGNAL PLAN

SHEET NUMBER
8A
OF 54

Filename: ...\planset\012_5206800SG04A.dgn Division: Username: J ROBERT Date:9/7/2010

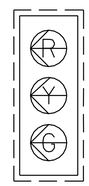
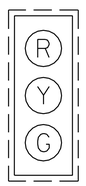
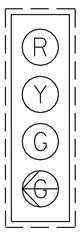
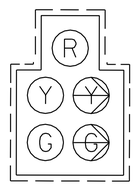
BID ALTERNATE NO. 1

NEW SIGNALIZED INTERSECTION WITH MAST ARMS

SIGNAL LAYOUT BASED ON ORIGINAL DESIGN BY GORRILL-PALMER CONSULTING ENGINEERS, INC (PROJECT NO. 99004) DATED DECEMBER 2000

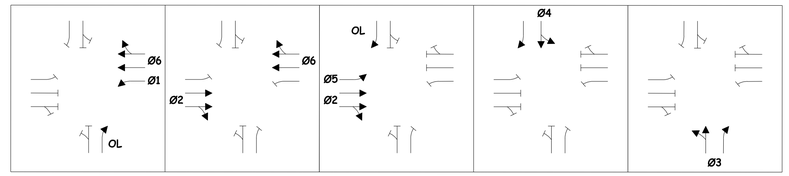
SEE ALSO SHEET 9A.

SIGNAL HEAD DATA

PROPOSED			
A1,B1	A2,A3,B2,B3	C1,D1	C2,D2
			
12" LENS	12" LENS	12" LENS	12" LENS
WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES			

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW L.E.D. MODULES - (SEE LED LENSE SCHEDULE)

PHASING SEQUENCE

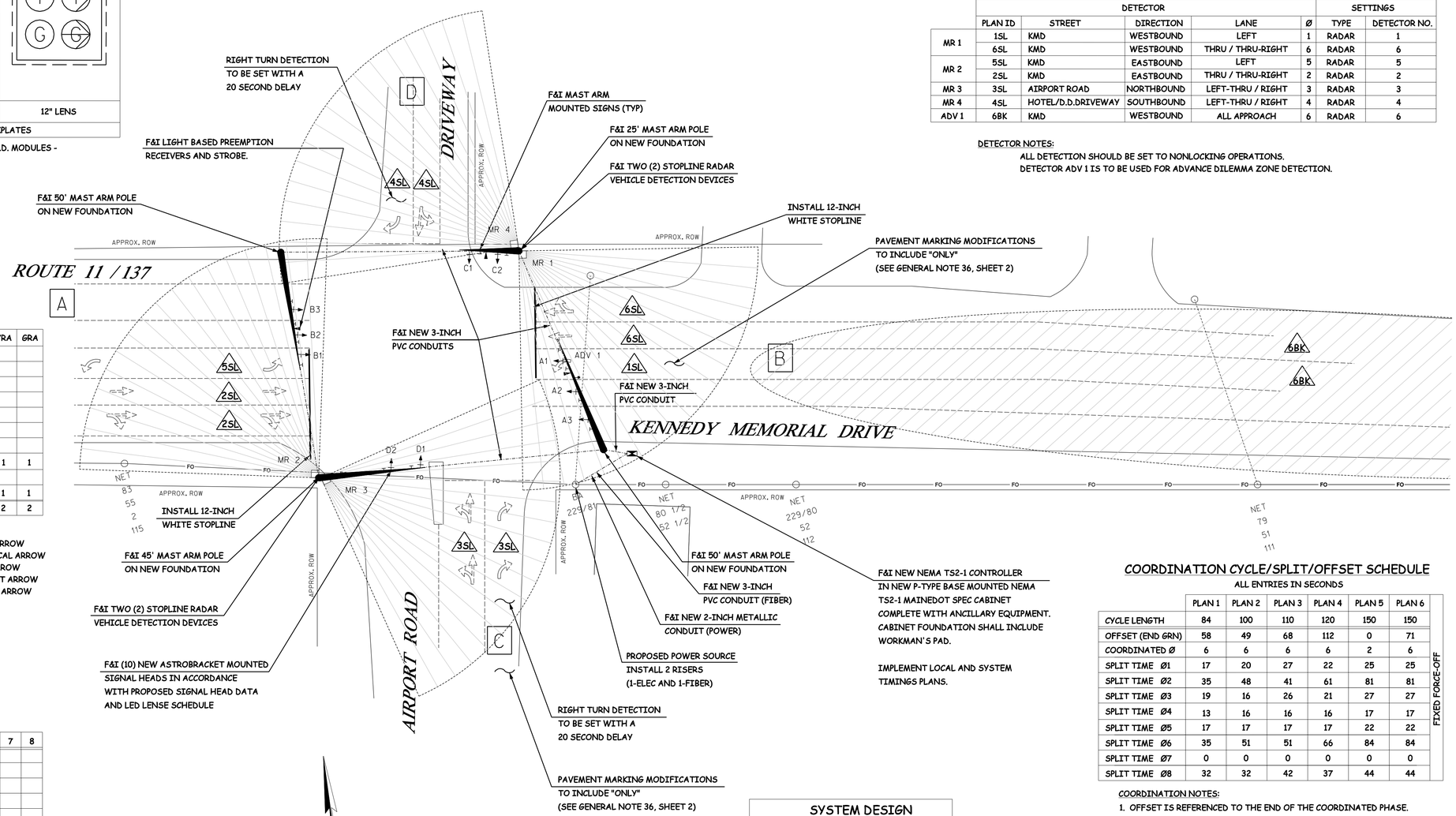


NOTE: Ø1 & Ø4 LEAD AND Ø3 & Ø5 LAG

DETECTOR SCHEDULE

	DETECTOR					SETTINGS	
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	DETECTOR NO.
MR 1	1SL	KMD	WESTBOUND	LEFT	1	RADAR	1
	6SL	KMD	WESTBOUND	THRU / THRU-RIGHT	6	RADAR	6
MR 2	5SL	KMD	EASTBOUND	LEFT	5	RADAR	5
	2SL	KMD	EASTBOUND	THRU / THRU-RIGHT	2	RADAR	2
MR 3	3SL	AIRPORT ROAD	NORTHBOUND	LEFT-THRU / RIGHT	3	RADAR	3
MR 4	4SL	HOTEL/D.D.DRIVEWAY	SOUTHBOUND	LEFT-THRU / RIGHT	4	RADAR	4
ADV 1	6BK	KMD	WESTBOUND	ALL APPROACH	6	RADAR	6

DETECTOR NOTES:
ALL DETECTION SHOULD BE SET TO NONLOCKING OPERATIONS.
DETECTOR ADV 1 IS TO BE USED FOR ADVANCE DILEMMA ZONE DETECTION.



L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1				1	1	1				
A2	1	1	1							
A3	1	1	1							
B1				1	1	1				
B2	1	1	1							
B3	1	1	1							
C1	1	1	1			1				
C2	1	1	1						1	1
D1	1	1	1			1				
D2	1	1	1						1	1
TOTAL	8	8	8	2	2	4	0	0	2	2

NOTES:

R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

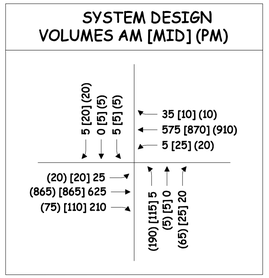
SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL	5	10	7	5	5	10		
PASSAGE TIME	2	4	2	2	2	4		
MAXIMUM 1	25	40	25	15	15	40		
MAXIMUM 2	30	90	30	15	15	90		
YELLOW	4.0	4.0	4.0	4.0	4.0	4.0		
ALL RED	2.5	2.5	2.0	2.0	2.5	2.5		
PEDESTRIAN WALK								
PEDESTRIAN CLEARANCE								
RECALL	O	S	O	O	O	S		
DETECTOR OPERATION	PR	PR	PR	PR	PR	PR		
PREEMPTION PRIORITY	1	2		3	2	1		
FLASH	R	Y	R	R	R	Y		
DUAL ENTRY	OFF	OFF	OFF	OFF	OFF	OFF		

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED

INTERSECTION:
KMD (ROUTE 11/137) AND AIRPORT ROAD
SIGNAL GROUP:
1
LOCATION:
5

SYSTEM DESIGN VOLUMES AM [MID] (PM)



COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	84	100	110	120	150	150	FIXED FORCE-OFF
OFFSET (END GRN)	58	49	68	112	0	71	
COORDINATED Ø	6	6	6	6	2	6	
SPLIT TIME Ø1	17	20	27	22	25	25	
SPLIT TIME Ø2	35	48	41	61	81	81	
SPLIT TIME Ø3	19	16	26	21	27	27	
SPLIT TIME Ø4	13	16	16	16	17	17	
SPLIT TIME Ø5	17	17	17	17	22	22	
SPLIT TIME Ø6	35	51	51	66	84	84	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	32	32	42	37	44	44	

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 9A FOR DAY PLAN SETTINGS).
3. PHASE 8 IS A DUMMY PHASE TO BE SET WITH SPLIT TIMES FOR NTCIP COMPLIANCE.

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3	Address 98/ Comments		9/07/10
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND AIRPORT ROAD

TRAFFIC SIGNAL PLAN

SHEET NUMBER
9
OF 54

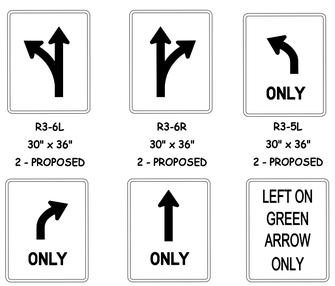
Filename: ...\ts\planset\013_52068005G05.dgn Division: Username: J ROBERT Date:9/7/2010

SUPPLEMENTAL FOR BID ALTERNATE NO. 1 & 2

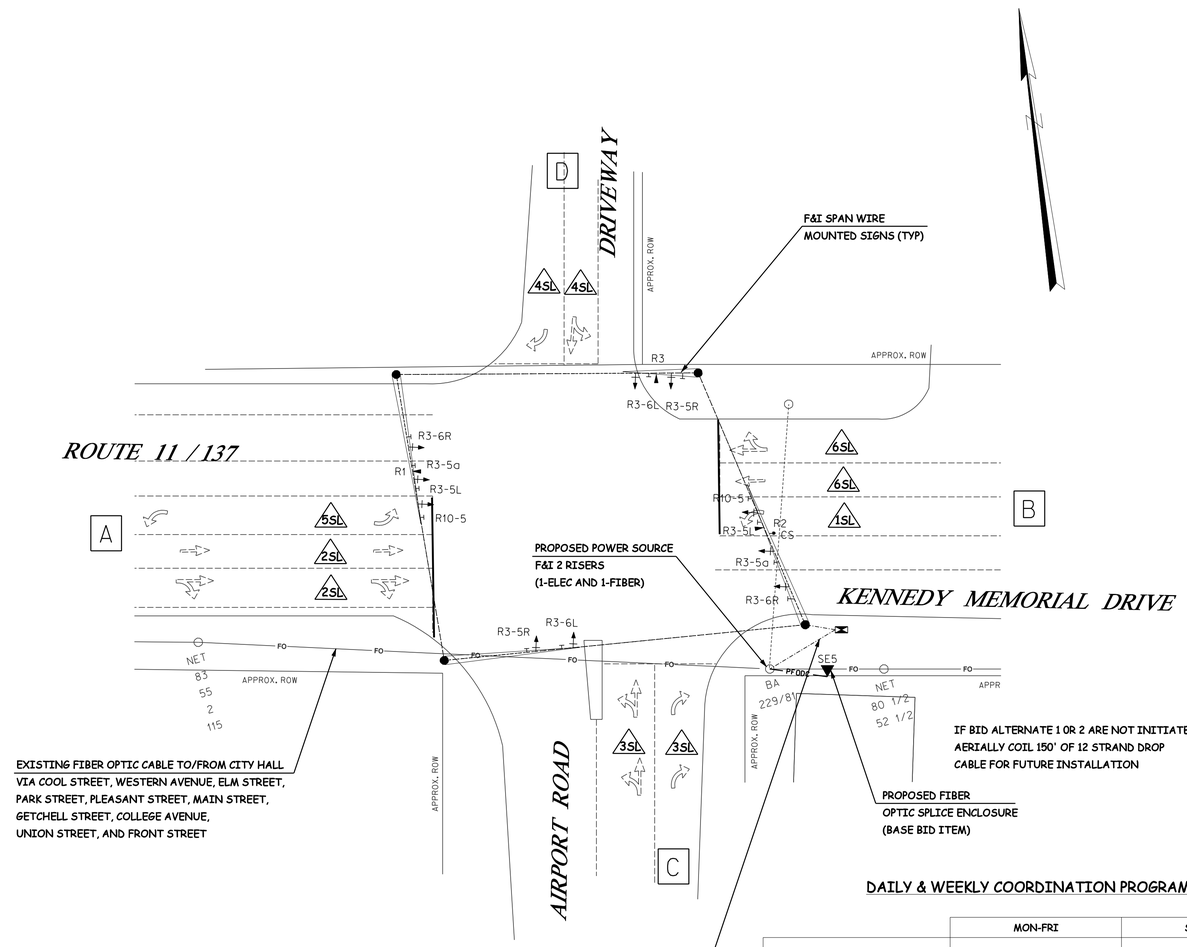
NEW SIGNALIZED INTERSECTION SIGNS AND PREEMPT LAYOUT

SIGNAL LAYOUT BASED ON ORIGINAL DESIGN BY GORRILL-PALMER CONSULTING ENGINEERS, INC (PROJECT NO. 99004) DATED DECEMBER 2000.

PROPOSED SIGNS



R3-6L 30" x 36" 2 - PROPOSED	R3-6R 30" x 36" 2 - PROPOSED	R3-5L 30" x 36" 2 - PROPOSED
R3-5R 30" x 36" 2 - PROPOSED	R3-5a 30" x 36" 2 - PROPOSED	R10-5 30" x 36" 2 - PROPOSED



EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø1 & Ø6
R2	4	2	Ø2 & Ø5
R3	5	3	Ø4
R4		NOT USED	

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 3 = LOWEST)
3. 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 (4.0 SECONDS YELLOW AND 2.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE5	BB-A (48F) TO SE4	25	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE4	26	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE4	1-24, 27-48	THROUGH	BB-A (48F) TO SE6	1-24, 27-48	BBA (48F) FIBER OPTIC BACKBONE
	BB-A (48F) TO SE6	25	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE6	26	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
PPP, CONTROL CABINET	12F TO SE5	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE5	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE5	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE5	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE5	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
KMD (ROUTE 11/137) AND AIRPORT ROAD
SIGNAL GROUP:
1
LOCATION:
5

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 42/84 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BIGBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND AIRPORT ROAD

TRAFFIC SIGNAL PLAN

SHEET NUMBER
9A
OF 54

Filename: ...\planset\014_52068005G05A.dgn Division: Username: J ROBERT Date:9/7/2010

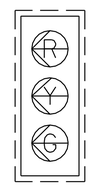
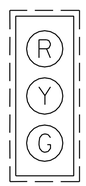
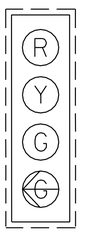
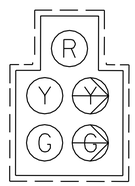
BID ALTERNATE NO. 2

NEW SIGNALIZED INTERSECTION WITH STRAIN POLES

SIGNAL LAYOUT BASED ON ORIGINAL DESIGN BY GORRILL-PALMER CONSULTING ENGINEERS, INC (PROJECT NO. 99004) DATED DECEMBER 2000

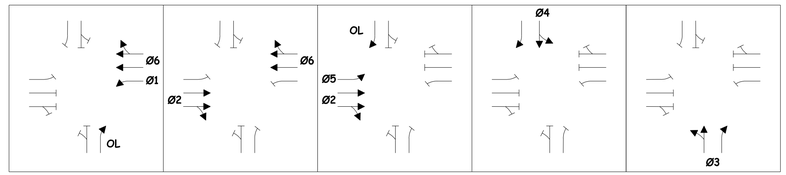
SEE ALSO SHEET 9A.

SIGNAL HEAD DATA

PROPOSED			
A1,B1	A2,A3,B2,B3	C1,D1	C2,D2
			
12" LENS	12" LENS	12" LENS	12" LENS
WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES			

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW L.E.D. MODULES - (SEE LED LENSE SCHEDULE)

PHASING SEQUENCE

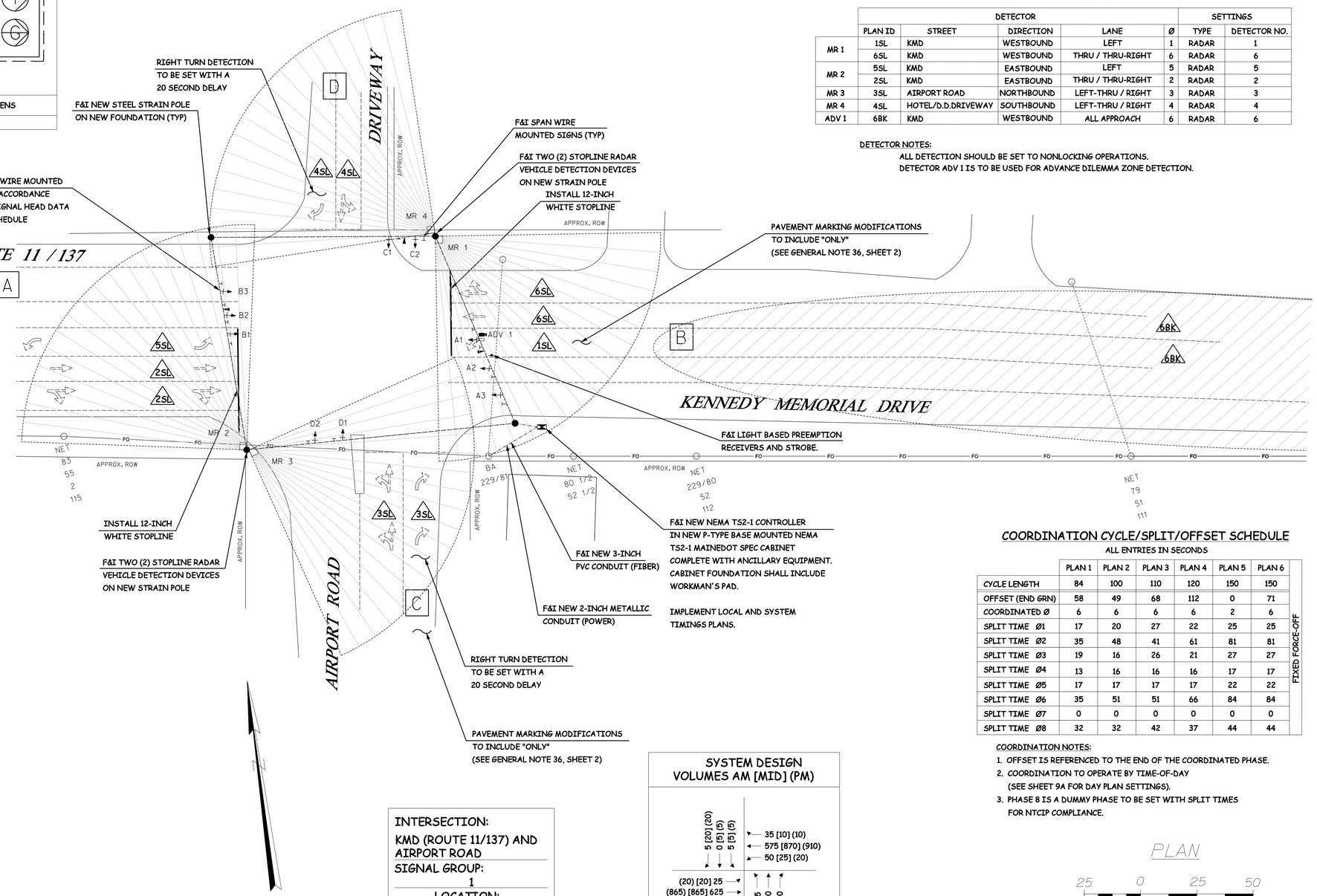


NOTE: Ø1 & Ø4 LEAD AND Ø3 & Ø5 LAG

DETECTOR SCHEDULE

	DETECTOR					SETTINGS	
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	DETECTOR NO.
MR 1	1SL	KMD	WESTBOUND	LEFT	1	RADAR	1
	6SL	KMD	WESTBOUND	THRU / THRU-RIGHT	6	RADAR	6
MR 2	5SL	KMD	EASTBOUND	LEFT	5	RADAR	5
	2SL	KMD	EASTBOUND	THRU / THRU-RIGHT	2	RADAR	2
MR 3	3SL	AIRPORT ROAD	NORTHBOUND	LEFT-THRU / RIGHT	3	RADAR	3
MR 4	4SL	HOTEL/D.D.DRIVEWAY	SOUTHBOUND	LEFT-THRU / RIGHT	4	RADAR	4
ADV 1	6BK	KMD	WESTBOUND	ALL APPROACH	6	RADAR	6

DETECTOR NOTES:
ALL DETECTION SHOULD BE SET TO NONLOCKING OPERATIONS.
DETECTOR ADV 1 IS TO BE USED FOR ADVANCE DILEMMA ZONE DETECTION.



L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1				1	1	1				
A2	1	1	1							
A3	1	1	1							
B1				1	1	1				
B2	1	1	1							
B3	1	1	1							
C1	1	1	1			1				
C2	1	1	1						1	1
D1	1	1	1			1				
D2	1	1	1						1	1
TOTAL	8	8	8	2	2	4	0	0	2	2

NOTES:

R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

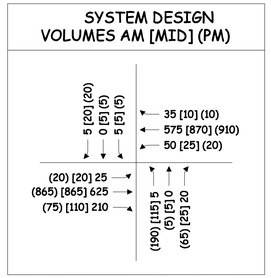
SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL	5	10	7	5	5	10		
PASSAGE TIME	2	4	2	2	2	4		
MAXIMUM 1	25	40	25	15	15	40		
MAXIMUM 2	30	90	30	15	15	90		
YELLOW	4.0	4.0	4.0	4.0	4.0	4.0		
ALL RED	2.5	2.5	2.0	2.0	2.5	2.5		
PEDESTRIAN WALK								
PEDESTRIAN CLEARANCE								
RECALL	O	S	O	O	O	S		
DETECTOR OPERATION	PR	PR	PR	PR	PR	PR		
PREEMPTION PRIORITY	1	2		3	2	1		
FLASH	R	Y	R	R	R	Y		
DUAL ENTRY	OFF	OFF	OFF	OFF	OFF	OFF		

NOTES:
S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED

INTERSECTION:
KMD (ROUTE 11/137) AND AIRPORT ROAD
SIGNAL GROUP:
1
LOCATION:
5

SYSTEM DESIGN VOLUMES AM [MID] (PM)



COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	84	100	110	120	150	150	FIXED FORCE-OFF
OFFSET (END GRN)	58	49	68	112	0	71	
COORDINATED Ø	6	6	6	6	2	6	
SPLIT TIME Ø1	17	20	27	22	25	25	
SPLIT TIME Ø2	35	48	41	61	81	81	
SPLIT TIME Ø3	19	16	26	21	27	27	
SPLIT TIME Ø4	13	16	16	16	17	17	
SPLIT TIME Ø5	17	17	17	17	22	22	
SPLIT TIME Ø6	35	51	51	66	84	84	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	32	32	42	37	44	44	

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 9A FOR DAY PLAN SETTINGS).
3. PHASE 8 IS A DUMMY PHASE TO BE SET WITH SPLIT TIMES FOR NTCIP COMPLIANCE.

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

	BY	DATE
PROJ. MANAGER	J. MANSIR	
DESIGN-DETAILED	C. BOBAY	J. ROBERT 7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR 8/13/10
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1	Address 98/ Comments	9/07/10
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND AIRPORT ROAD

TRAFFIC SIGNAL PLAN

SHEET NUMBER
9B
OF 54

Filename: ...\planset\015_5206800SG05B.dgn Division: Username: J ROBERT Date:9/7/2010

SUPPLEMENTAL FOR
BID ALTERNATE NO. 1 & 2

NEW SIGNALIZED INTERSECTION SIGNS AND PREEMPT LAYOUT

SIGNAL LAYOUT BASED ON ORIGINAL DESIGN BY GORRILL-PALMER CONSULTING ENGINEERS, INC (PROJECT NO. 99004) DATED DECEMBER 2000.

BID ALTERNATE 1 LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16 CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS.	6
FURNISH AND INSTALL ONE-WAY, 4-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS.	2
FURNISH AND INSTALL ONE-WAY, 5-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS.	2
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON PROPOSED SIGNAL HEADS	10
FURNISH AND INSTALL NEW 12-INCH LED RED, YELLLOW, AND GREEN LENSES INTO NEW SIGNAL HEADS	36
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	3
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM MOUNTED SIGNS	12
FURNISH AND INSTALL RADAR BASED VEHICLE DETECTION SYSTEM (5-DETECTION UNITS PLUS FIELD WIRING TO ANCILLARY CABINET MOUNTED DEVICES)	1
INTERSECTION CABLE AND ELECTRICAL SERVICE HOOK UP	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL (2-INCH) METALLIC CONDUIT (ITEM 626.21)	30 LF
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	400 LF
FURNISH AND INSTALL 36-INCH FOUNDATION FOR MAST ARM POLES (ITEM 626.331)	4
FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
FURNISH AND INSTALL 12 INCH SOLID WHITE PAVEMENT MARKING LINE (ITEM 627.18)	90 LF
WHITE "ONLY" PAVEMENT MARKING (ITEM 627.75)	44 SF
FURNISH AND INSTALL APPROXIMATELY 125 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL POLE RISERS (ITEM 643.90)	2
FURNISH AND INSTALL 25' GALVANIZED STEEL MAST ARM POLE (ITEM 643.91)	1
FURNISH AND INSTALL 45' GALVANIZED STEEL MAST ARM POLE (ITEM 643.91)	1
FURNISH AND INSTALL 50' GALVANIZED STEEL MAST ARM POLE (ITEM 643.91)	2

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

BID ALTERNATE 2 LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16 CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH SPAN WIRE MOUNTED FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS	6
FURNISH AND INSTALL ONE-WAY, 4-SECTION, 12-INCH SPAN WIRE MOUNTED FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS	2
FURNISH AND INSTALL ONE-WAY, 5-SECTION, 12-INCH SPAN WIRE MOUNTED FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS	2
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON PROPOSED SIGNAL HEADS	10
FURNISH AND INSTALL NEW 12-INCH LED RED, YELLLOW, AND GREEN LENSES INTO NEW SIGNAL HEADS	36
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	3
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE ON SPAN WIRE PIPE ASSEMBLY	1
FURNISH AND INSTALL SPAN WIRE MOUNTED SIGNS	12
FURNISH AND INSTALL RADAR BASED VEHICLE DETECTION SYSTEM (5-DETECTION UNITS PLUS FIELD WIRING TO ANCILLARY CABINET MOUNTED DEVICES)	1
INTERSECTION SPAN WIRE, MESSENGER CABLE, TETHERS, AND ELECTRICAL SERVICE HOOK UP	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL (2-INCH) METALLIC CONDUIT (ITEM 626.21)	30 LF
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	50 LF
FURNISH AND INSTALL 36-INCH FOUNDATION FOR STEEL STRAIN POLES (ITEM 626.331)	4
FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
FURNISH AND INSTALL 12 INCH SOLID WHITE PAVEMENT MARKING LINE (ITEM 627.18)	90 LF
WHITE "ONLY" PAVEMENT MARKING (ITEM 627.75)	44 SF
FURNISH AND INSTALL APPROXIMATELY 125 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL POLE RISERS (ITEM 643.90)	2
FURNISH AND INSTALL STEEL STRAIN POLES (ITEM 643.93)	4

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

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

		SIGNATURE	DATE
DESIGN-DETAILED	C. BIGBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3		P.E. NUMBER	
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

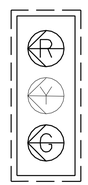
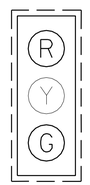
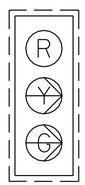
WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND AIRPORT ROAD

TRAFFIC SIGNAL PLAN

SHEET NUMBER
9C
OF 54

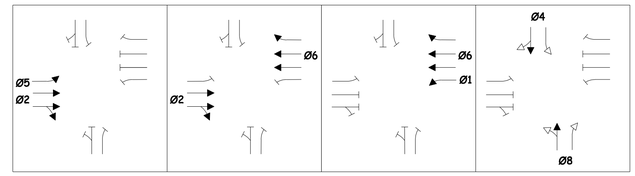
Filename: ...\planset\016_5206800SG05C.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

PROPOSED		
A1,B1	A2,A3,B2,B3 C1,C2,D1,D2	B4
		
12" LENS	12" LENS	12" LENS
WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES		

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RESET L.E.D. MODULES - (SEE LED LENSE SCHEDULE)

PHASING SEQUENCE



NOTE: Ø5 LEADS AND Ø1 LAGS

F&I VIDEO-BASED TRAFFIC PRESENCE SENSOR WITH ETHERNET CONNECTIVITY FOR LOCAL AND SYSTEM DETECTION (TYP)

R&S EXISTING SIGNAL HEADS (TYP)
R&R EXISTING YELLOW LED MODULES (10) INTO NEW SIGNAL HOUSINGS.

F&I NEW ASTROBRACKET MOUNTED SIGNAL HEADS WITH RETROREFLECTIVE LOUVERED BACKPLATE IN ACCORDANCE WITH PROPOSED SIGNAL HEAD DATA AND LENSE SCHEDULE.

F&I LIGHT-BASED PREEMPTION RECEIVERS AND STROBE ON MAST ARMS. (SEE SHEET 10A FOR MORE INFORMATION)

PAVEMENT MARKING MODIFICATION TO INCLUDE "ONLY" (SEE GENERAL NOTE 36, SHEET 2)

F&I VIDEO BASED TRAFFIC PRESENCE SENSOR ON EXISTING MAST ARM POLE FOR ADVANCE DILEMMA ZONE DETECTION, VIDEO DETECTION ZONES SHALL BE SET FOR 300' IN ADVANCE OF STOP LINE (EXISTING MAST ARM IS APPROXIMATELY 275' IN ADVANCE OF STOP LINE). CAMERA CABLING SHALL BE LASHED TO EXISTING FIBER OPTIC CABLE AND RUN BACK TO THE CONTROLLER CABINET.

RETAIN EXISTING KMD LEFT TURN AND SHAW'S DRIVEWAY WIRE LOOP DETECTION AND WIRE TO PROPOSED RACK MOUNTED DETECTOR AMPLIFIERS IN ACCORDANCE WITH DETECTOR SCHEDULES CONTRACTOR SHALL VERIFY THE INTEGRITY OF THE SHAW'S WIRE LOOPS THAT APPEAR TO BE SPLICED TO THE FAITH DRIVEWAY LOOPS AND IF FOUND DEFICIENT SHALL BE REPLACED WITH 2 NEW 6'x40' WIRE LOOPS IDENTIFIED AS "UNDETERMINED LOCATIONS" IN THE QUANTITIES ESTIMATE.

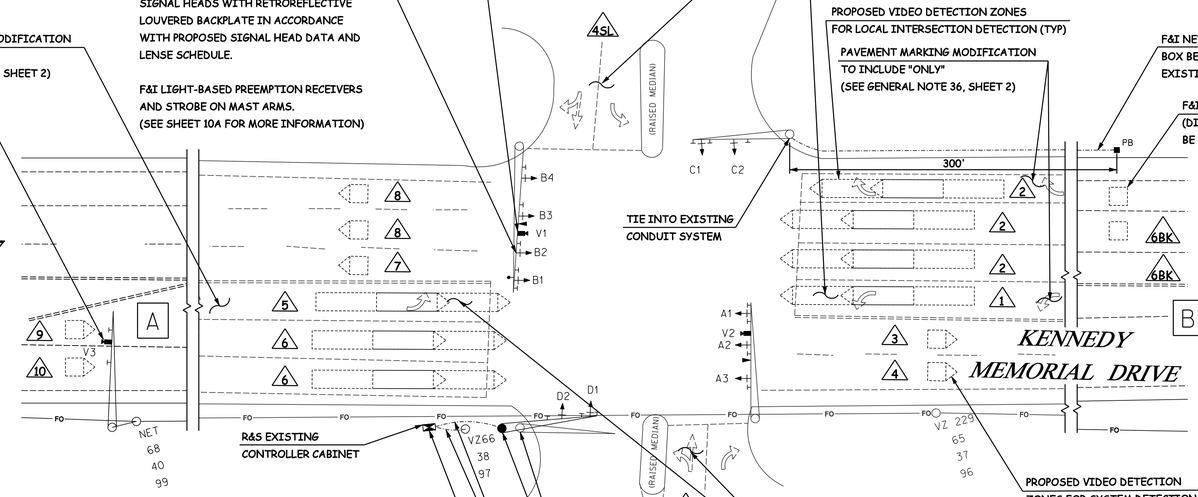
PROPOSED VIDEO DETECTION ZONES FOR LOCAL INTERSECTION DETECTION (TYP)

PAVEMENT MARKING MODIFICATION TO INCLUDE "ONLY" (SEE GENERAL NOTE 36, SHEET 2)

F&I NEW 3-INCH PVC CONDUIT AND JUNCTION BOX BEHIND EXISTING SHOULDER AND WITHIN EXISTING RIGHT-OF-WAY

F&I 6'x6' WIRE LOOPS FOR ADVANCE (DILEMMA ZONE) DETECTION. LOOPS SHALL BE INSTALLED 300' BEFORE STOP LINE

TIE INTO EXISTING CONDUIT SYSTEM



R&S EXISTING CONTROLLER CABINET

R&S EXISTING CONTROLLER CABINET F&I NEW NEMA TS2-1 CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2-1 MAINEDOT SPEC CABINET COMPLETE WITH ANCILLARY EQUIPMENT. CABINET IS RECOMMENDED TO BE ANCHORED TO MODIFIED FOUNDATION TO BE POURED AROUND THE EXISTING FOUNDATION (SEE SHEET 2, NOTE 20) IN ORDER TO BEST RETAIN LEAD-INS FROM EXISTING WIRE LOOPS.

IMPLEMENT LOCAL AND SYSTEM TIMING PLANS.

F&I NEW 3-INCH PVC CONDUIT

R&R EXISTING MAST ARM POLE ONTO NEW FOUNDATION LOCATED 2' (MINIMUM) FROM FACE OF CURB. MAST ARM SHALL BE ANGLED TO REMOVE EXISTING CONFLICT WITH OVERHEAD UTILITIES RESULTING IN THE HORIZONTAL MOUNTING OF EXISTING SIGNAL HEADS. TOP OF FOUNDATION SHALL BE SET SO MAST ARM POLE WILL NOT BE GREATER THAN 21' ABOVE GRADE

PROPOSED VIDEO DETECTION ZONES FOR SYSTEM DETECTION (TYP)

SYSTEM DETECTION SHALL BE CONFIGURED FOR VOLUME, SPEED, AND OCCUPANCY.

RETAIN EXISTING KMD LEFT TURN AND FAITH DRIVEWAY THROUGH-LEFT WIRE LOOP DETECTION AND WIRE TO PROPOSED RACK MOUNTED DETECTOR AMPLIFIERS IN ACCORDANCE WITH DETECTOR SCHEDULES

L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1				1	*	1				
A2	1	*	1							
A3	1	*	1							
B1				1	*	1				
B2	1	*	1							
B3	1	*	1							
B4	1								1	1
C1	1	*	1							
C2	1	*	1							
D1	1	*	1							
D2	1	*	1							
TOTAL	9	0	8	2	0	2	0	0	1	1

NOTES:
* = EXISTING L.E.D. LENSES TO BE RESET
R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL	5	10		5	5	10		5
PASSAGE TIME	2	2		2	2	2		2
MAXIMUM 1	15	40		25	15	40		25
MAXIMUM 2	20	90		30	35	90		30
YELLOW	4.0	4.0		4.0	4.0	4.0		4.0
ALL RED	2.0	2.0		2.5	2.0	2.0		2.5
PEDESTRIAN WALK								
PEDESTRIAN CLEARANCE								
RECALL	O	S		O	O	S		O
DETECTOR OPERATION	PR	PR		PR	PR	PR		PR
PREEMPTION PRIORITY	1	2			2	1		
FLASH	R	Y		R	R	Y		R
DUAL ENTRY	OFF	ON		ON	OFF	ON		ON

NOTES:
S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED

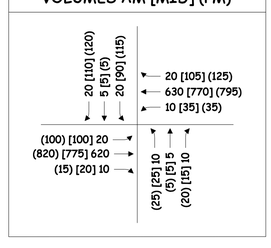
DETECTOR SCHEDULE

	DETECTOR					DETECTOR CARD IN VEHICLE DETECTION RACK OR MOUNTABLE INTERFACE MODULE (I.E., FOR CERTAIN TYPES OF VIDEO PRESENCE DETECTION) AS APPLICABLE				INDUCTANCE		CONTINUITY		RESISTANCE LOOP TO GROUND	
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO.	DETECTOR NO.	CHANNEL	PRIOR	PRESENT	PRIOR	PRESENT	PRIOR	PRESENT
CAMERA V1	1	KMD	WESTBOUND	LEFT	1	(VIDEO BACKUP)^	2	1/1	1	242µh		3.7Ω		∞	
	2	KMD	WESTBOUND	THRU/THRU-RIGHT	6	VIDEO PRESENCE	2	1/2	2	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	3	KMD	EASTBOUND	MEDIAN SIDE (SYSTEM)	C	VIDEO PRESENCE	2	1/3	3	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	4	KMD	EASTBOUND	CURB SIDE (SYSTEM)	C	VIDEO PRESENCE	2	1/4	4	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
CAMERA V2	5	KMD	EASTBOUND	LEFT	5	(VIDEO BACKUP)^	4	2/1	1	178µh		0.7Ω		∞	
	6	KMD	EASTBOUND	THRU/THRU-RIGHT	2	VIDEO PRESENCE	4	2/2	2	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	7	KMD	WESTBOUND	MEDIAN SIDE (SYSTEM)	C	VIDEO PRESENCE	4	2/3	3	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	8	KMD	WESTBOUND	CURB SIDE (SYSTEM)	C	VIDEO PRESENCE	4	2/4	4	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	6BK	KMD	WESTBOUND	MEDIAN SIDE THRU	6	WIRED PRESENCE	5	(12)							
	6BK	KMD	WESTBOUND	CURB SIDE THRU	6	WIRED PRESENCE	6	10	2						
		SHAW'S DRIVEWAY	SOUTHBOUND	ALL APPROACH	4C	WIRED PRESENCE	7	(15)							
	4SL	SHAW'S DRIVEWAY	SOUTHBOUND	ALL APPROACH	4	WIRED PRESENCE	8	13	1	150µh		1.5Ω		∞	
		FAITH DRIVEWAY	NORTHBOUND	LEFT-THRU	8C	WIRED PRESENCE	7	(16)							
	8SL	FAITH DRIVEWAY	NORTHBOUND	LEFT-THRU	8	WIRED PRESENCE	8	14	2	150µh		1.5Ω		∞	
CAMERA V3	9	KMD	EASTBOUND	MEDIAN SIDE THRU	5	VIDEO PRESENCE	10	5/1	1	NO EXISTING ADVANCE DETECTION - F&I VIDEO PRESENCE					
	10	KMD	EASTBOUND	CURB SIDE THRU	2	VIDEO PRESENCE	10	5/2	2	NO EXISTING ADVANCE DETECTION - F&I VIDEO PRESENCE					

DETECTOR NOTES:
C = COUNTING LOOP.
PRIOR = FIELD MEASUREMENTS CONDUCTED NOVEMBER 17, 2009.
PRESENT = FIELD MEASUREMENTS TO BE CONDUITED UPON NEW CABINET INSTALLATION.
( ) = SLOT IN DETECTOR RACK TO BE WIRED FOR STOPLINE COUNTING PURPOSES.
^ = EXISTING KMD LEFT-TURN WIRE LOOPS SHALL BE RETAINED; HOWEVER, VIDEO DETECTION FOR THESE LANES SHALL ALSO BE SETUP AS VIDEO DETECTION ZONES FOR EASE OF TRANSITION TO VIDEO DETECTION IN THE EVENT OF A WIRE LOOP FAILURE. IN THE INTERIM, THE KMD VIDEO DETECTED LEFT-TURN LANES SHALL BE SETUP FOR COUNTING ONLY PURPOSES.

INTERSECTION:
KMD (ROUTE 11/137) AND SHAW'S/FAITH DRIVEWAY
SIGNAL GROUP:
1
LOCATION:
6

SYSTEM DESIGN VOLUMES AM [MID] (PM)



COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	84	100	110	120	150	150	FLOATING FORCE-OFF
OFFSET (END GRN)	62	25	11	52	58	35	
COORDINATED Ø	2	2	2	2	2	6	
SPLIT TIME Ø1	18	16	16	16	22	22	
SPLIT TIME Ø2	43	63	62	72	97	97	
SPLIT TIME Ø3	0	0	0	0	0	0	
SPLIT TIME Ø4	23	21	32	32	31	31	
SPLIT TIME Ø5	26	21	26	31	37	37	
SPLIT TIME Ø6	35	58	52	57	82	82	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	23	21	32	32	31	31	

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 10A FOR DAY PLAN SETTINGS).

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR			
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10	
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10	
DESIGN2-DETAILED2				
DESIGN3-DETAILED3	Address 98/ Comments		9/07/10	
REVISIONS 1				
REVISIONS 2				
REVISIONS 3				
REVISIONS 4				
FIELD CHANGES				

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND SHAW'S/FAITH DRIVEWAY

TRAFFIC SIGNAL PLAN

SHEET NUMBER
10
OF 54

Filename: ...\ts\planset\017_5206800SG06.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
REMOVE AND RESET EXISTING MAST ARM POLE ON TO NEW FOUNDATION	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS.	11
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON PROPOSED SIGNAL HEADS	11
REMOVE AND RESET EXISTING YELLOW LED MODULES INTO NEW SIGNAL HEADS	10
FURNISH AND INSTALL NEW 12-INCH LED RED, YELLOW(1), AND GREEN LENSES INTO NEW SIGNAL HEADS	23
FURNISH AND INSTALL 2-CHANNEL CARD RACK MOUNT LOOP DETECTOR AMPLIFIER	3
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	2
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM MOUNTED SIGNS	13
RECABLE INTERSECTION	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL PRECAST CONCRETE JUNCTION BOX (ITEM 626.11)	1
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	330 LF
FURNISH AND INSTALL 30-INCH FOUNDATION FOR MAST ARM POLE (ITEM 626.33)	1
FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
REMOVE EXISTING CONCRETE MAST ARM FOUNDATION (ITEM 626.36)	1
FURNISH AND INSTALL VIDEO BASED VEHICLE DETECTION SYSTEM, REQUIRING 3-DETECTION UNITS PLUS FIELD WIRING TO ANCILLARY CABINET MOUNTED DEVICES (ITEM 643.83)	1
INSTALL WHITE "ONLY" PAVEMENT MARKING (ITEM 627.75)	66 SF
FURNISH AND INSTALL 6' x 6' WIRE LOOPS FOR ADVANCE DETECTION (ITEM 643.86)	2
FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 120 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1

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

EXISTING MAST ARM MOUNTED SIGNS

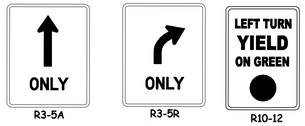
R10-5
30" x 36"
2 - RETAINED

PROPOSED MAST ARM MOUNTED SIGNS

R3-6L
30" x 36"
1 - PROPOSED

R3-6R
30" x 36"
2 - PROPOSED

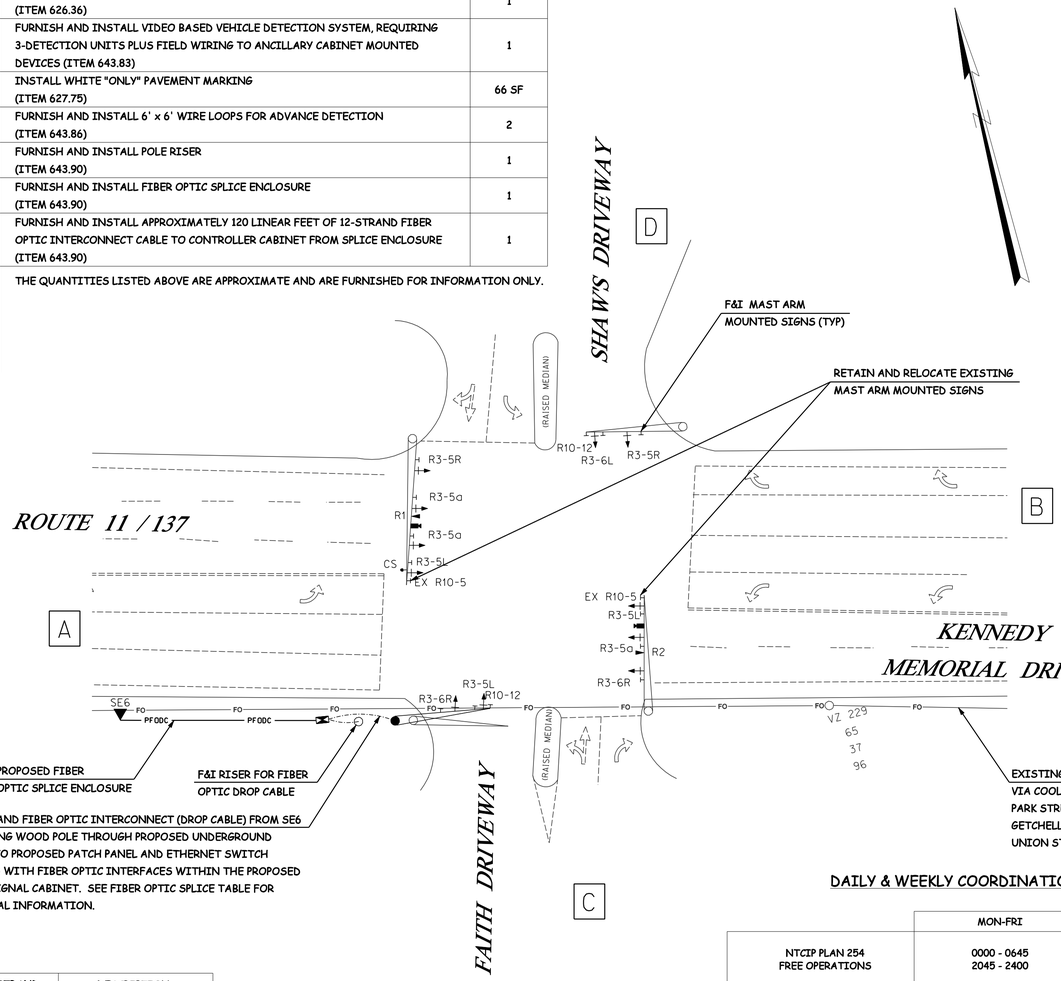
R3-5L
30" x 36"
3 - PROPOSED



R3-5A
30" x 36"
3 - PROPOSED

R3-5R
30" x 36"
2 - PROPOSED

R10-12
30" x 36"
2 - PROPOSED



FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE6	BB-A (48F) TO SE5	25	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE5	26	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE5	1-24, 27-48	THROUGH	BB-A (48F) TO SE7	1-24, 27-48	BBA (48F) FIBER OPTIC BACKBONE
	BB-A (48F) TO SE7	25	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE7	26	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
PPP, CONTROL CABINET	12F TO SE6	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE6	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE6	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE6	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE6	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
KMD (ROUTE 11/137) AND SHAW'S/FAITH DRIVEWAY
SIGNAL GROUP:
1
LOCATION:
6

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 42/84 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø1 & Ø6
R2	4	2	Ø2 & Ø5
R3	5	NOT USED	
R4	6	NOT USED	

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 2 = LOWEST)
3. 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 (4.0 SECONDS YELLOW AND 2.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN
17288.00

		BY	DATE
PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3		Address 98/ Comments	9/07/10
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

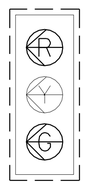
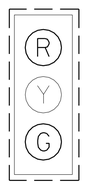
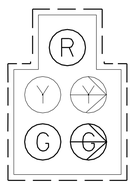
WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND SHAW'S/FAITH DRIVEWAY

TRAFFIC SIGNAL PLAN

SHEET NUMBER
10A
OF 54

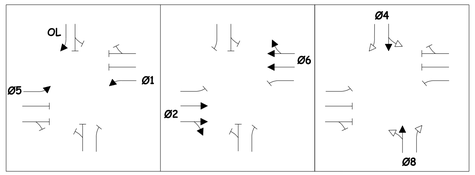
Filename: ...\planset\018_5206800SG06A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

EXISTING			PROPOSED
A1,B1	A2,A3,B2,B3 C1,C2,D1	D2	P1-P4
			
12" LENS	12" LENS	12" LENS	16" x 18" PEDESTRIAN SIGNAL
ADD 5" RETROREFLECTIVE LOUVERED BACKPLATES			

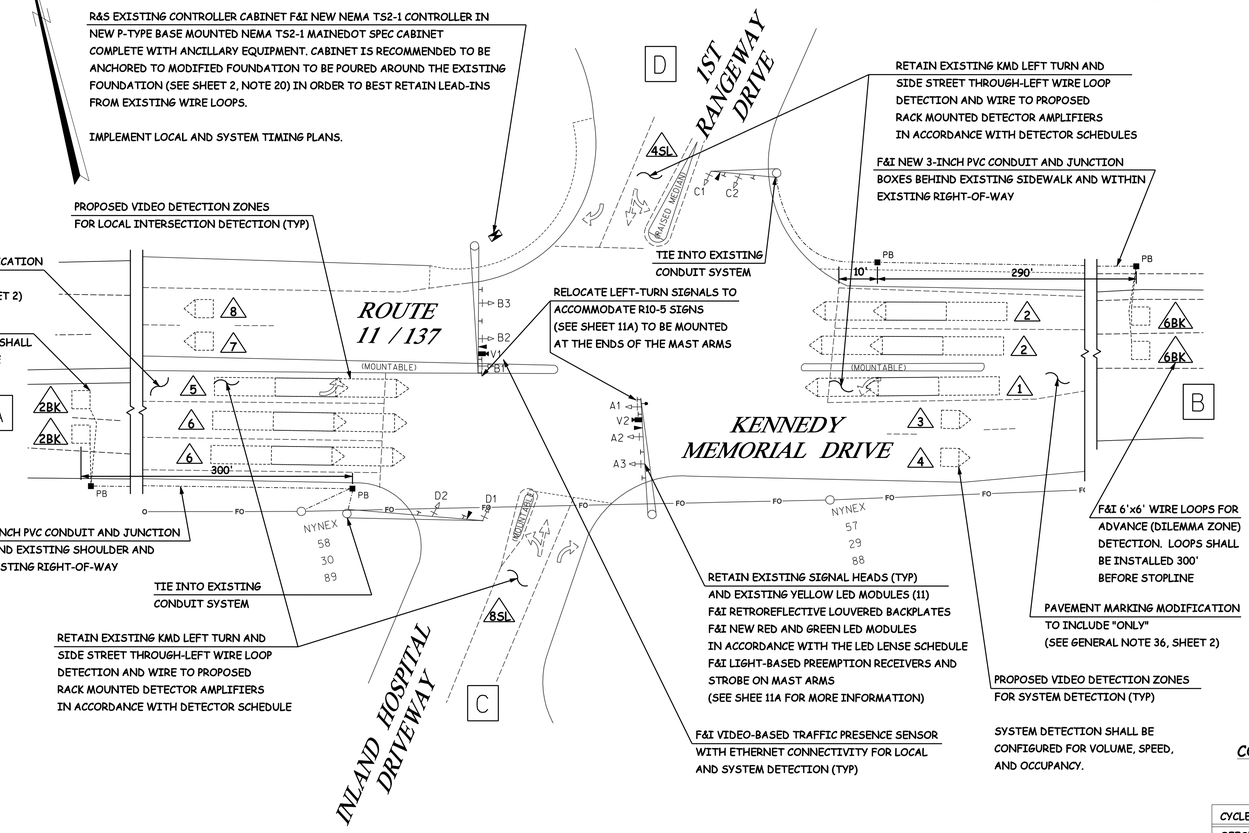
- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RETAINED L.E.D. MODULES - (SEE LED LENSE SCHEDULE)

PHASING SEQUENCE



NOTE: Ø1 & Ø5 LEAD

IN ADDITION TO THE WORK SHOWN ON THIS PLAN, THE CONTRACTOR SHALL SUPPLY THE CITY OF WATERVILLE WITH PEDESTRIAN ITEMS (SEE LIST OF MAJOR EQUIPMENT ON SHEET 11A) AS AMENITIES FOR A FORTHCOMING SIDEWALK, CURB RAMP, AND CROSSWALK STRIPING PROJECT (BY OTHERS) TO PROVIDE PEDESTRIAN ACCESS THROUGH THIS INTERSECTION. IF SIDEWALKS, CURB RAMPS, AND STRIPING HAVE BEEN INSTALLED PRIOR TO THIS PROJECTS COMPLETION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING THE PEDESTRIAN EQUIPMENT. CONTRACTORS WORK SHALL CONSIST OF BREAKING INTO THE NEAREST MAST ARM FOUNDATION OR JUNCTION BOX AND PROVIDE AN UNDERGROUND CONDUIT CONNECTION TO EACH PEDESTAL POST TO BE STAKED IN THE FIELD BY THE ENGINEER. CONTRACTOR SHALL INSTALL FOUNDATIONS, POSTS, PEDESTRIAN SIGNALS, AND PUSHBUTTONS AND WIRE THE PEDESTRIAN SIGNALS BACK TO THE CONTROLLER CABINET.



L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1				1	*	1				
A2	1	*	1							
A3	1	*	1							
B1				1	*	1				
B2	1	*	1							
B3	1	*	1							
C1	1	*	1							
C2	1	*	1							
D1	1	*	1							
D2	1	*	1						*	1
TOTAL	8	0	8	2	0	2	0	0	0	1

NOTES: * = EXISTING L.E.D. LENSES TO BE RETAINED
R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL	5	10		5	5	10		5
PASSAGE TIME	3	4		3	3	4		3
MAXIMUM 1	25	40		30	25	40		30
MAXIMUM 2	25	95		35	40	80		35
YELLOW	4.0	4.0		4.0	4.0	4.0		4.0
ALL RED	2.5	2.5		2.5	2.5	2.5		2.5
PEDESTRIAN WALK		10		8		5		5
PEDESTRIAN CLEARANCE		19		17		24		20
RECALL	O	S		O	O	S		O
DETECTOR OPERATION	PR	PR		PR	PR	PR		PR
PREEMPTION PRIORITY	1	2		4	2	1		3
FLASH	R	Y		R	R	Y		R
DUAL ENTRY	OFF	ON		ON	OFF	ON		ON

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED

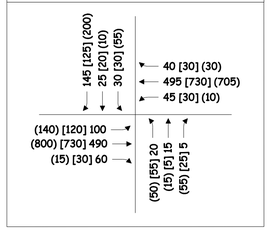
DETECTOR SCHEDULE

	DETECTOR					DETECTOR CARD IN VEHICLE DETECTION RACK OR MOUNTABLE INTERFACE MODULE (I.E., FOR CERTAIN TYPES OF VIDEO PRESENCE DETECTION) AS APPLICABLE				INDUCTANCE		CONTINUITY		RESISTANCE LOOP TO GROUND	
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO.	DETECTOR NO.	CHANNEL	PRIOR	PRESENT	PRIOR	PRESENT	PRIOR	PRESENT
CAMERA V1	1	KMD	WESTBOUND	LEFT	1	(VIDEO BACKUP)^	2	1/1	1	231µh		3.6Ω		∞	
	2	KMD	WESTBOUND	THRU/THRU-RIGHT	6	VIDEO PRESENCE	2	1/2	2	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	3	KMD	EASTBOUND	MEDIAN SIDE (SYSTEM)	C	VIDEO PRESENCE	2	1/3	3	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	4	KMD	EASTBOUND	CURB SIDE (SYSTEM)	C	VIDEO PRESENCE	2	1/4	4	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
CAMERA V2	5	KMD	EASTBOUND	LEFT	5	(VIDEO BACKUP)^	4	2/1	1	246µh		2.1Ω		∞	
	6	KMD	EASTBOUND	THRU/THRU-RIGHT	2	VIDEO PRESENCE	4	2/2	2	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	7	KMD	WESTBOUND	MEDIAN SIDE (SYSTEM)	C	VIDEO PRESENCE	4	2/3	3	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	8	KMD	WESTBOUND	CURB SIDE (SYSTEM)	C	VIDEO PRESENCE	4	2/4	4	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	6BK	KMD	WESTBOUND	ALL APPROACH	6	WIRED PRESENCE	5	(11)							
	6BK	KMD	WESTBOUND	ALL APPROACH	6	WIRED PRESENCE	6	9	1						
	2BK	KMD	EASTBOUND	ALL APPROACH	2	WIRED PRESENCE	5	(12)							
	2BK	KMD	EASTBOUND	ALL APPROACH	2	WIRED PRESENCE	6	10	2						
		KMD	SOUTHBOUND	LEFT-THRU	4C	WIRED PRESENCE	7	(15)							
	4SL	1ST RANGEWAY DRIVEWAY	SOUTHBOUND	LEFT-THRU	4	WIRED PRESENCE	8	13	1	182µh		0.7Ω		100MΩ	
		HOSPITAL DRIVEWAY	NORTHBOUND	LEFT-THRU	8C	WIRED PRESENCE	7	(16)							
	8SL	HOSPITAL DRIVEWAY	NORTHBOUND	LEFT-THRU	8	WIRED PRESENCE	8	14	2	215µh		3.6Ω		∞	

DETECTOR NOTES:
C = COUNTING LOOP.
PRIOR = FIELD MEASUREMENTS CONDUCTED NOVEMBER 17, 2009.
PRESENT = FIELD MEASUREMENTS TO BE CONDUITED UPON NEW CABINET INSTALLATION.
( ) = SLOT IN DETECTOR RACK TO BE WIRED FOR STOPLINE COUNTING PURPOSES.
^ = EXISTING KMD LEFT-TURN WIRE LOOPS SHALL BE RETAINED; HOWEVER, VIDEO DETECTION FOR THESE LANES SHALL ALSO BE SETUP AS VIDEO DETECTION ZONES FOR EASE OF TRANSITION TO VIDEO DETECTION IN THE EVENT OF A WIRE LOOP FAILURE. IN THE INTERIM, THE KMD VIDEO DETECTED LEFT-TURN LANES SHALL BE SETUP FOR COUNTING ONLY PURPOSES.

INTERSECTION:
KMD (ROUTE 11/137) AND 1ST RANGEWAY DRIVE
SIGNAL GROUP:
1
LOCATION:
7

SYSTEM DESIGN VOLUMES AM [MID] (PM)



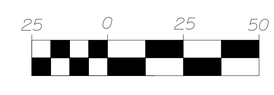
COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	84	100	110	120	150	150	FIXED FORCE-OFF
OFFSET (END GRN)	64	61	54	41	82	11	
COORDINATED Ø	2	2	2	2	2	6	
SPLIT TIME Ø1	15	22	22	22	22	22	
SPLIT TIME Ø2	36	45	52	62	95	95	
SPLIT TIME Ø3	0	0	0	0	0	0	
SPLIT TIME Ø4	33	33	36	36	33	33	
SPLIT TIME Ø5	15	32	32	32	47	47	
SPLIT TIME Ø6	36	35	42	52	70	70	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	33	33	36	36	33	33	

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 11A FOR DAY PLAN SETTINGS).
3. TRAFFIC SIGNAL CONTROLLER SHALL BE SET FOR STOP TIME IN WALK ON IN PREPARATION FOR FUTURE PEDESTRIAN FACILITIES.

PLAN



SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3		Address 98/ Comments	9/07/10
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND 1ST RANGEWAY DRIVE

TRAFFIC SIGNAL PLAN

SHEET NUMBER
11
OF 54

Filename: ...\ts\planset\019_5206800SG07.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON EXISTING SIGNAL HEADS	10
FURNISH AND INSTALL NEW 12-INCH LED RED AND GREEN LENSES INTO EXISTING SIGNAL HEADS	21
FURNISH AND INSTALL 2-CHANNEL CARD RACK MOUNT LOOP DETECTOR AMPLIFIER	3
FURNISH (AND INSTALL IF DIRECTED BY THE ENGINEER) ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	4
FURNISH (AND INSTALL IF DIRECTED BY THE ENGINEER) ONE-WAY, 16 X 18-INCH LED POLE MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	4
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	4
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM MOUNTED SIGNS	3
CABLE TO NEW PEDESTRIAN INSTALLATIONS (IF DIRECTED BY ENGINEER)	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL PRECAST CONCRETE JUNCTION BOX (ITEM 626.11)	4
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	675 LF
FURNISH (AND INSTALL IF DIRECTED BY THE ENGINEER) 18-INCH FOUNDATION (ITEM 626.31)	4
FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
INSTALL WHITE "ONLY" PAVEMENT MARKING (ITEM 627.75)	44 SF
FURNISH AND INSTALL VIDEO BASED VEHICLE DETECTION SYSTEM, REQUIRING 2-DETECTION UNITS PLUS FIELD WIRING TO ANCILLARY CABINET MOUNTED DEVICES (ITEM 643.83)	1
FURNISH AND INSTALL APPROXIMATELY 250 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL 6' x 6' WIRE LOOPS FOR ADVANCE DETECTION (ITEM 643.86)	4
FURNISH (AND INSTALL IF DIRECTED BY THE ENGINEER) 8-FOOT PEDESTAL POLE (ITEM 643.92)	4

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

EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø1 & Ø6
R2	4	2	Ø2 & Ø5
R3	5	3	Ø8
R4	6	4	Ø4

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 4 = LOWEST)
3. 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 (4.0 SECONDS YELLOW AND 2.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

EXISTING MAST ARM MOUNTED SIGNS

R3-6L 30" x 36" 2 - RETAINED

R3-6R 30" x 36" 2 - RETAINED

R3-5R 30" x 36" 2 - RETAINED

R3-5(MOD) 30" x 36" 1 - REMOVED

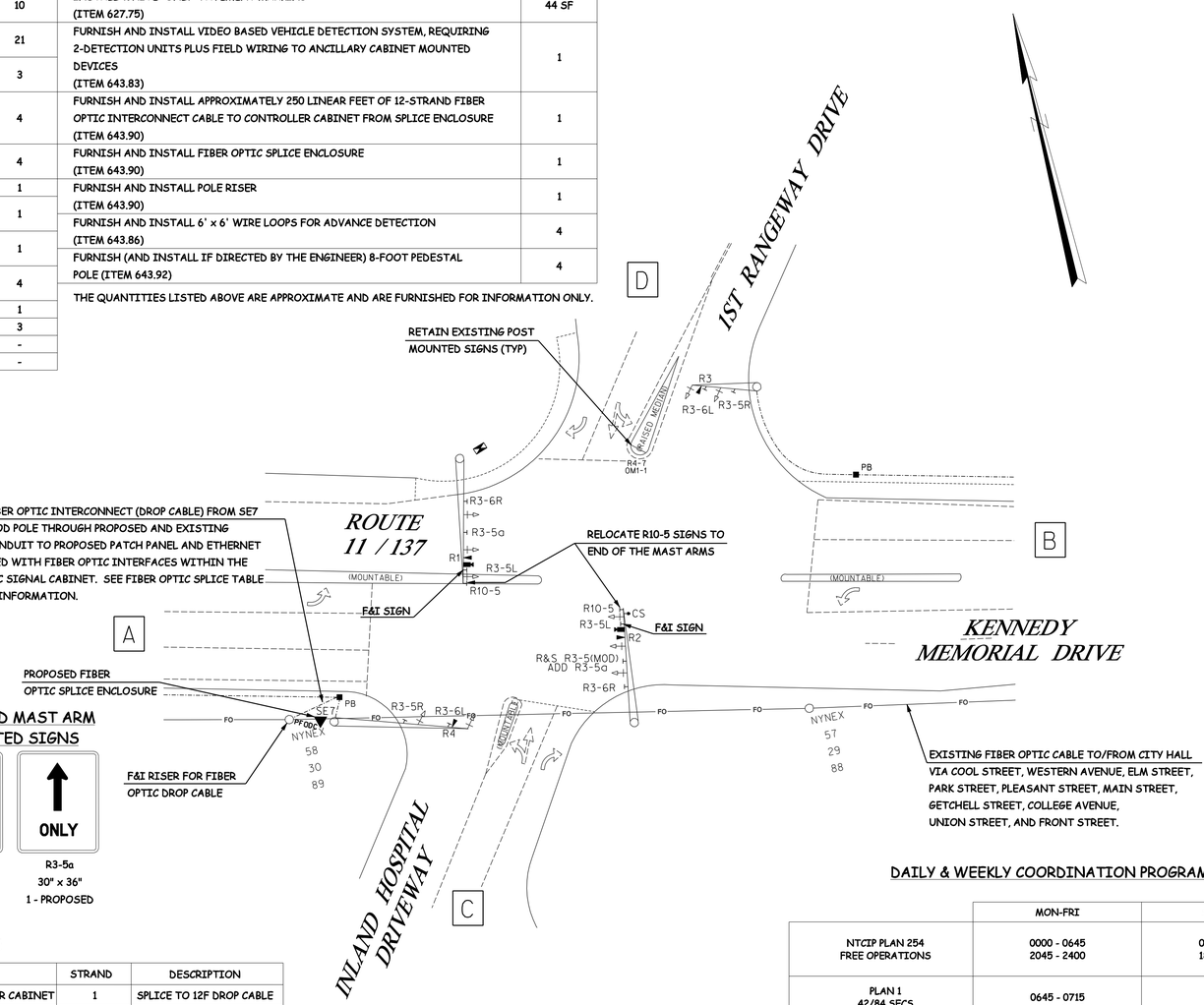
R10-5 24" x 30" 2 - RETAINED

R3-5a 30" x 36" 1 - RETAINED

PROPOSED MAST ARM MOUNTED SIGNS

R3-5L 30" x 36" 2 - PROPOSED

R3-5a 30" x 36" 1 - PROPOSED



FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE7	BB-A (48F) TO SE6	25	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE6	26	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE6	1-24, 27-48	THROUGH	BB-A (48F) TO SE8	1-24, 27-48	BBA (48F) FIBER OPTIC BACKBONE
	BB-A (48F) TO SE8	25	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE8	26	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
PPP, CONTROL CABINET	12F TO SE7	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE7	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE7	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE7	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE7	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
KMD (ROUTE 11/137) AND 1ST RANGEWAY DRIVE
SIGNAL GROUP:
1
LOCATION:
7

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 42/84 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3	Address 98/ Comments		9/07/10
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

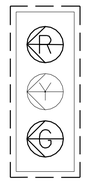
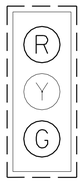
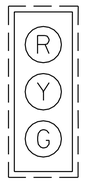
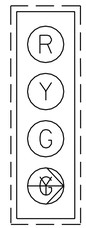
WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND 1ST RANGEWAY DRIVE

TRAFFIC SIGNAL PLAN

SHEET NUMBER
11A
OF 54

Filename: ...\planset\020_5206800SG07A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

EXISTING		PROPOSED		
B1,C1,C2	A1,A2,B2,B3	C3,D1, D2	C4	P1-P2
			 (BIMODAL)	
12" LENS	12" LENS	12" LENS	12" LENS	16" x 18" PEDESTRIAN SIGNAL
ADD 5" RETROREFLECTIVE LOUVERED BACKPLATES				

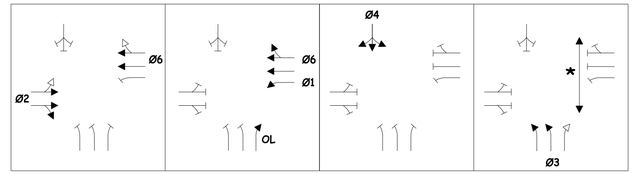
- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RETAINED L.E.D. MODULES -
(SEE LED LENSE SCHEDULE)

L.E.D. LENSE SCHEDULE

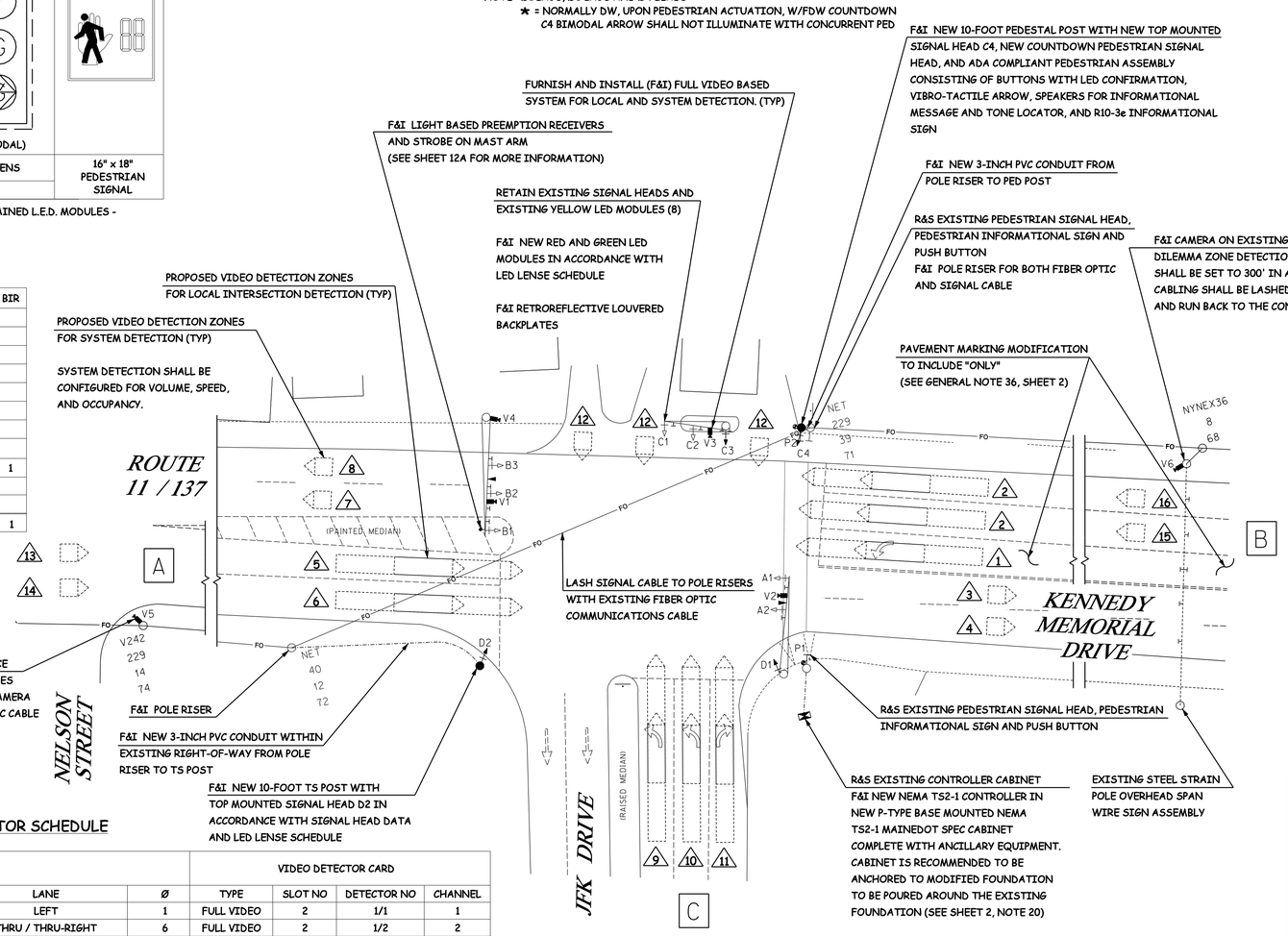
SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA	BIR
A1	1	*	1								
A2	1	*	1								
B1				1	*	1					
B2	1	*	1								
B3	1	*	1								
C1				1	*	1					
C2				1	*	1					
C3	1	1	1								
C4	1	1	1								1
D1	1	1	1								
D2	1	1	1								
TOTAL	8	4	8	3	0	3	0	0	0	0	1

NOTES:
* = EXISTING L.E.D. LENSES TO BE RETAINED
R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
BIR = BIMODAL YELLOW/GREEN RIGHT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

PHASING SEQUENCE



NOTE: Ø1 LAGS, Ø3 LAGS AND Ø4 LEADS
★ = NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN
C4 BIMODAL ARROW SHALL NOT ILLUMINATE WITH CONCURRENT PED



FURNISH AND INSTALL (F&I) FULL VIDEO BASED SYSTEM FOR LOCAL AND SYSTEM DETECTION. (TYP)

F&I LIGHT BASED PREEMPTION RECEIVERS AND STROBE ON MAST ARM (SEE SHEET 12A FOR MORE INFORMATION)

RETAIN EXISTING SIGNAL HEADS AND EXISTING YELLOW LED MODULES (8)

F&I NEW RED AND GREEN LED MODULES IN ACCORDANCE WITH LED LENSE SCHEDULE

F&I RETROREFLECTIVE LOUVERED BACKPLATES

F&I NEW 10-FOOT PEDESTAL POST WITH NEW TOP MOUNTED SIGNAL HEAD C4, NEW COUNTDOWN PEDESTRIAN SIGNAL HEAD, AND ADA COMPLIANT PEDESTRIAN ASSEMBLY CONSISTING OF BUTTONS WITH LED CONFIRMATION, VIBRO-TACTILE ARROW, SPEAKERS FOR INFORMATIONAL MESSAGE AND TONE LOCATOR, AND R10-3e INFORMATIONAL SIGN

F&I NEW 3-INCH PVC CONDUIT FROM POLE RISER TO PED POST

R&S EXISTING PEDESTRIAN SIGNAL HEAD, PEDESTRIAN INFORMATIONAL SIGN AND PUSH BUTTON
F&I POLE RISER FOR BOTH FIBER OPTIC AND SIGNAL CABLE

F&I CAMERA ON EXISTING STRAIN POLE FOR ADVANCE DILEMMA ZONE DETECTION. VIDEO DETECTION ZONES SHALL BE SET TO 300' IN ADVANCE OF STOP LINE. CAMERA CABLING SHALL BE LASHED TO EXISTING FIBER OPTIC CABLE AND RUN BACK TO THE CONTROLLER CABINET

PROPOSED VIDEO DETECTION ZONES FOR LOCAL INTERSECTION DETECTION (TYP)

PROPOSED VIDEO DETECTION ZONES FOR SYSTEM DETECTION (TYP)

SYSTEM DETECTION SHALL BE CONFIGURED FOR VOLUME, SPEED, AND OCCUPANCY.

PAVEMENT MARKING MODIFICATION TO INCLUDE "ONLY" (SEE GENERAL NOTE 36, SHEET 2)

LASH SIGNAL CABLE TO POLE RISERS WITH EXISTING FIBER OPTIC COMMUNICATIONS CABLE

F&I CAMERA ON EXISTING STRAIN POLE FOR ADVANCE DILEMMA ZONE DETECTION. VIDEO DETECTION ZONES SHALL BE SET TO 300' IN ADVANCE OF STOP LINE. CAMERA CABLING SHALL BE LASHED TO EXISTING FIBER OPTIC CABLE AND RUN BACK TO THE CONTROLLER CABINET

F&I POLE RISER

F&I NEW 3-INCH PVC CONDUIT WITHIN EXISTING RIGHT-OF-WAY FROM POLE RISER TO TS POST

F&I NEW 10-FOOT TS POST WITH TOP MOUNTED SIGNAL HEAD D2 IN ACCORDANCE WITH SIGNAL HEAD DATA AND LED LENSE SCHEDULE

R&S EXISTING PEDESTRIAN SIGNAL HEAD, PEDESTRIAN INFORMATIONAL SIGN AND PUSH BUTTON

R&S EXISTING CONTROLLER CABINET
F&I NEW NEMA TS2-1 CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2-1 MAINEDOT SPEC CABINET COMPLETE WITH ANCILLARY EQUIPMENT. CABINET IS RECOMMENDED TO BE ANCHORED TO MODIFIED FOUNDATION TO BE POURED AROUND THE EXISTING FOUNDATION (SEE SHEET 2, NOTE 20)

IMPLEMENT LOCAL AND SYSTEM TIMING PLANS.

EXISTING STEEL STRAIN POLE OVERHEAD SPAN WIRE SIGN ASSEMBLY

SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL	5	10	5	4		10		
PASSAGE TIME	2	4	2	1		4		
MAXIMUM 1	20	40	20	7		40		
MAXIMUM 2	30	75	30	7		95		
YELLOW	4.0	4.0	4.0	4.0		4.0		
ALL RED	2.5	2.5	2.5	2.5		2.5		
PEDESTRIAN WALK			5					
PEDESTRIAN CLEARANCE			14					
RECALL	O	S	O	O		S		
DETECTOR OPERATION	PR	PR	PR	PR		PR		
PREEMPTION PRIORITY	1	2				1		
FLASH ~	R	Y	R	R		Y		
DUAL ENTRY	OFF	ON	OFF	OFF		ON		

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED
~ PED. SIGNALS SHALL BE DARK DURING FLASHING OPERATIONS.

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	84	100	110	120	150	150	
OFFSET (END GRN)	16	0	92	83	102	119	FLOATING FORCE-OFF
COORDINATED Ø	2	2	2	2	2	6	
SPLIT TIME Ø1	19	18	32	37	32	32	
SPLIT TIME Ø2	27	42	38	43	79	79	
SPLIT TIME Ø3	26	27	27	27	27	27	
SPLIT TIME Ø4	12	13	13	13	12	12	
SPLIT TIME Ø5	0	0	0	0	0	0	
SPLIT TIME Ø6	46	60	70	80	111	111	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	38	40	40	40	39	39	

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 12A 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.

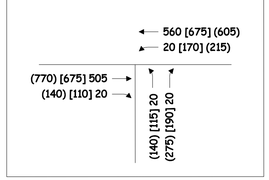
DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD			
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO	DETECTOR NO	CHANNEL
CAMERA V1	1	KMD	WESTBOUND	LEFT	1	FULL VIDEO	2	1/1	1
	2	KMD	WESTBOUND	THRU / THRU-RIGHT	6	FULL VIDEO	2	1/2	2
	3	KMD	EASTBOUND	MEDIAN SIDE (SYSTEM)	C	FULL VIDEO	2	1/3	3
	4	KMD	EASTBOUND	CURB SIDE (SYSTEM)	C	FULL VIDEO	2	1/4	4
CAMERA V2	5	KMD	EASTBOUND	THRU	2	FULL VIDEO	4	2/1	1
	6	KMD	EASTBOUND	THRU-RIGHT	2	FULL VIDEO	4	2/2	2
	7	KMD	WESTBOUND	MEDIAN SIDE (SYSTEM)	C	FULL VIDEO	4	2/3	3
	8	KMD	WESTBOUND	CENTER-CURB SIDE (SYSTEM)	C	FULL VIDEO	4	2/4	4
CAMERA V3	9	JFK DRIVE	NORTHBOUND	LEFT	8	FULL VIDEO	6	3/1	1
	10	JFK DRIVE	NORTHBOUND	LEFT-THRU	8	FULL VIDEO	6	3/2	2
	11	JFK DRIVE	NORTHBOUND	RIGHT	8D	FULL VIDEO	6	3/3	3
CAMERA V4									
	12	DRIVEWAYS	SOUTHBOUND	ALL APPROACH	4D	FULL VIDEO	8	4/1	1
CAMERA V5	13	KMD	EASTBOUND	MEDIAN SIDE THRU	2	FULL VIDEO	10	5/1	1
	14	KMD	EASTBOUND	CURB SIDE THRU	2	FULL VIDEO	10	5/2	2
CAMERA V6	15	KMD	WESTBOUND	MEDIAN SIDE THRU	6	FULL VIDEO	12	6/1	1
	16	KMD	WESTBOUND	CURB SIDE THRU	6	FULL VIDEO	12	6/2	2

DETECTOR NOTES:
C = COUNTING LOOP
ALL DETECTION SHOULD BE INITIALLY SET TO NONLOCKING OPERATIONS.
DETECTORS DESIGNATED FOR DELAY (4D AND 8D) SHALL INCLUDE A 10 SECOND DELAY.
CAMERAS V5 AND V6 AND PLAN ID'S 13-16 ARE TO BE USED FOR ADVANCE DILEMMA ZONE DETECTION.

INTERSECTION:
KMD (ROUTE 11/137) AND JFK DRIVE
SIGNAL GROUP:
1
LOCATION:
8

SYSTEM DESIGN VOLUMES AM [MID] (PM)



PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
PIN 17288.00

PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BIGBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND JFK DRIVE

TRAFFIC SIGNAL PLAN

SHEET NUMBER
12
OF 54

Filename: ...\ts\planset\021_5206800SG08.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY	EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1	FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	70 LF
		FURNISH AND INSTALL 18-INCH FOUNDATION (ITEM 626.31)	2
		FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1	INSTALL WHITE ""ONLY"" PAVEMENT MARKING (ITEM 627.75)	44 SF
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH POST AND POLE MOUNTED FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS.	3	FURNISH AND INSTALL 2-CHANNEL/4-OUTPUT CARD RACK MOUNT DATA AND PRESENCE VIDEO DETECTOR CARDS (ITEM 643.83)	3
FURNISH AND INSTALL ONE-WAY, 4-SECTION, POST MOUNTED FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS.	1	FURNISH AND INSTALL CARD RACK MOUNT VIDEO COMMUNICATIONS BOARD (ITEM 643.83)	1
		FURNISH AND INSTALL EXPANSION DETECTION RACK WITH I/O CARD (ITEM 643.83)	1
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON EXISTING AND PROPOSED SIGNAL HEADS	11	FURNISH AND INSTALL CARD RACK VIDEO POWER SUPPLY (ITEM 643.83)	1
FURNISH AND INSTALL NEW 12-INCH LED RED, YELOW(3), AND GREEN LENSES INTO NEW AND EXISTING SIGNAL HEADS, INCLUDING 1-BIMODAL YELLOW/GREEN ARROW	27	FURNISH AND INSTALL VIDEO DETECTION CAMERA (ITEM 643.83)	6
FURNISH AND INSTALL ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	2	FURNISH AND INSTALL POLE RISER (ITEM 643.90)	2
FURNISH AND INSTALL ONE-WAY, 16 X 18-INCH LED POST MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	2	FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1	FURNISH AND INSTALL APPROXIMATELY 225 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1		
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1	FURNISH AND INSTALL (10-FOOT) PEDESTAL POLE (ITEM 643.92)	2
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	2	THE QUANTITIES LISTED ABOVE ARE APPROXIMATE AND ARE FURNISHED FOR INFORMATION ONLY.	
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1		
FURNISH AND INSTALL MAST ARM AND POST MOUNTED SIGNS	12		
CABLE TO NEW SIGNAL INSTALLATIONS	-		
IMPLEMENT LOCAL AND SYSTEM TIMING	-		

EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø1 & Ø6
R2	4	2	Ø2
R3	5	NOT USED	
R4	6	NOT USED	

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
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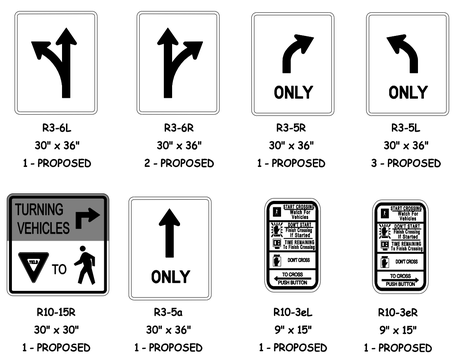
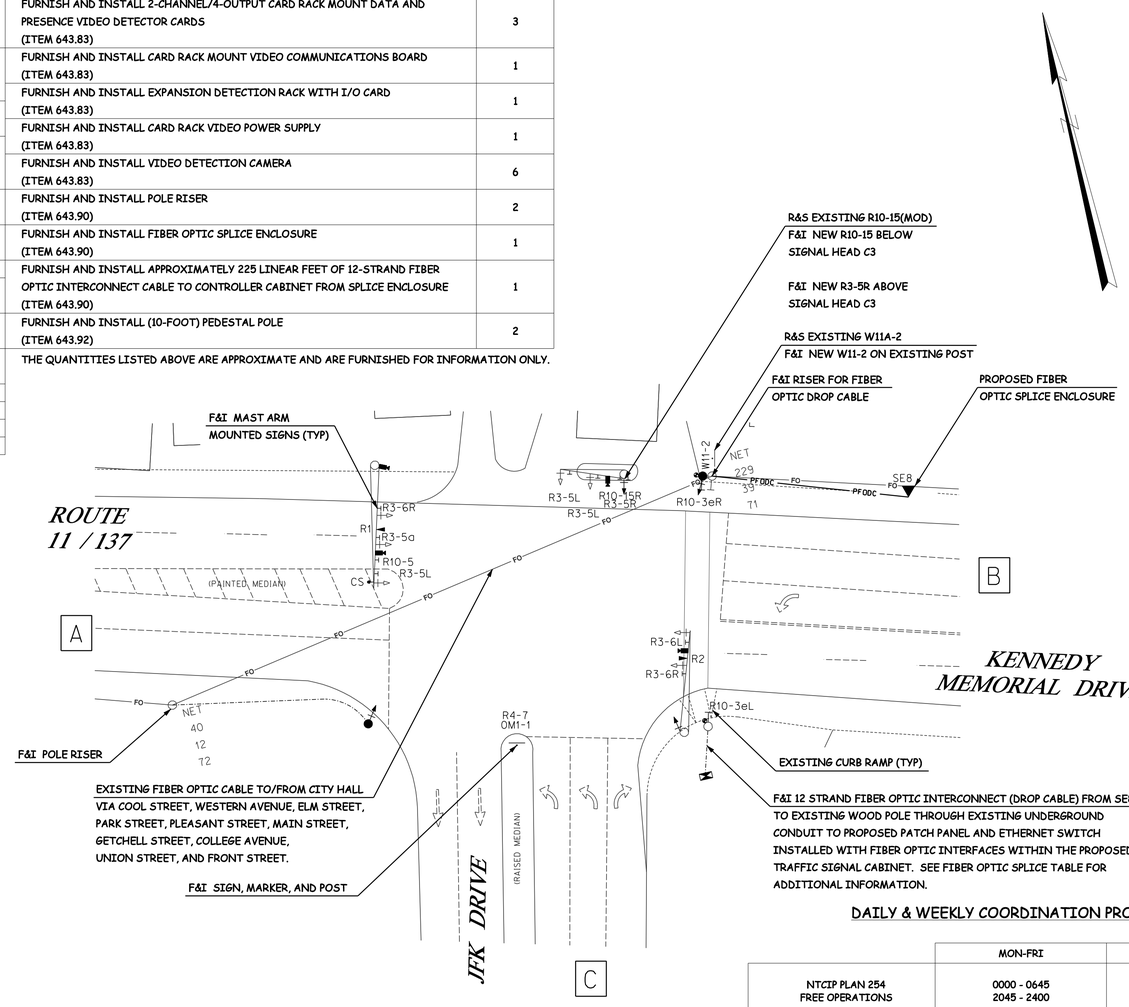
3. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY AN OPTICAL DETECTOR, THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD THE EMERGENCY ACTIVE PHASE GREEN FOR A MINIMUM OF 10 SECONDS OR UNTIL THE PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCE (4.0 SECONDS YELLOW AND 2.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

PROPOSED MAST ARM AND POST MOUNTED SIGNS



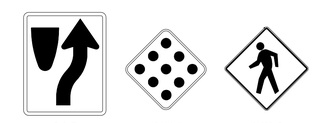
R3-6L 30" x 36" 1 - PROPOSED
R3-6R 30" x 36" 2 - PROPOSED
R3-5R 30" x 36" 1 - PROPOSED
R3-5L 30" x 36" 3 - PROPOSED
R10-15R 30" x 30" 1 - PROPOSED
R3-5a 30" x 36" 1 - PROPOSED
R10-3eL 9" x 15" 1 - PROPOSED
R10-3eR 9" x 15" 1 - PROPOSED



EXISTING MAST ARM MOUNTED SIGN

R10-5
24" x 30"
1 - RETAINED

PROPOSED POST MOUNTED SIGNS



R4-7 24" x 30" 1 - PROPOSED
OM1-1 18" x 18" 1 - PROPOSED
W11-2 18" x 18" 1 - PROPOSED

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE8	BB-A (48F) TO SE7	25	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE7	26	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE7	1-24, 27-48	THROUGH	BB-A (48F) TO SE9	1-24, 27-48	BBA (48F) FIBER OPTIC BACKBONE
	BB-A (48F) TO SE9	25	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE9	26	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
PPP, CONTROL CABINET	12F TO SE8	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE8	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE8	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE8	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE8	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
KMD (ROUTE 11/137) AND JFK DRIVE
SIGNAL GROUP:
1
LOCATION:
8

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 42/84 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3	Address 98/ Comments		9/07/10
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND JFK DRIVE

TRAFFIC SIGNAL PLAN

SHEET NUMBER
12A
OF 54

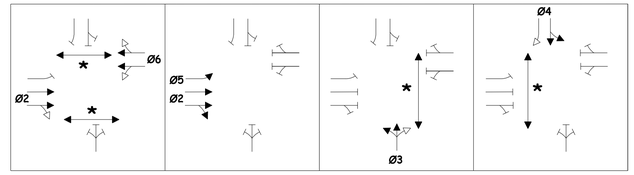
Filename: ...\planset\022_52068005G08A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

EXISTING		PROPOSED	
A1	A2,A3,B1 B2,C2,D2	C1,D1	P1-P8
12" LENS	12" LENS	12" LENS	16" x 18" PEDESTRIAN SIGNAL
ADD 5" RETROREFLECTIVE LOUVERED BACKPLATES			

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RETAINED L.E.D. MODULES - (SEE LED LENSE SCHEDULE)

PHASING SEQUENCE

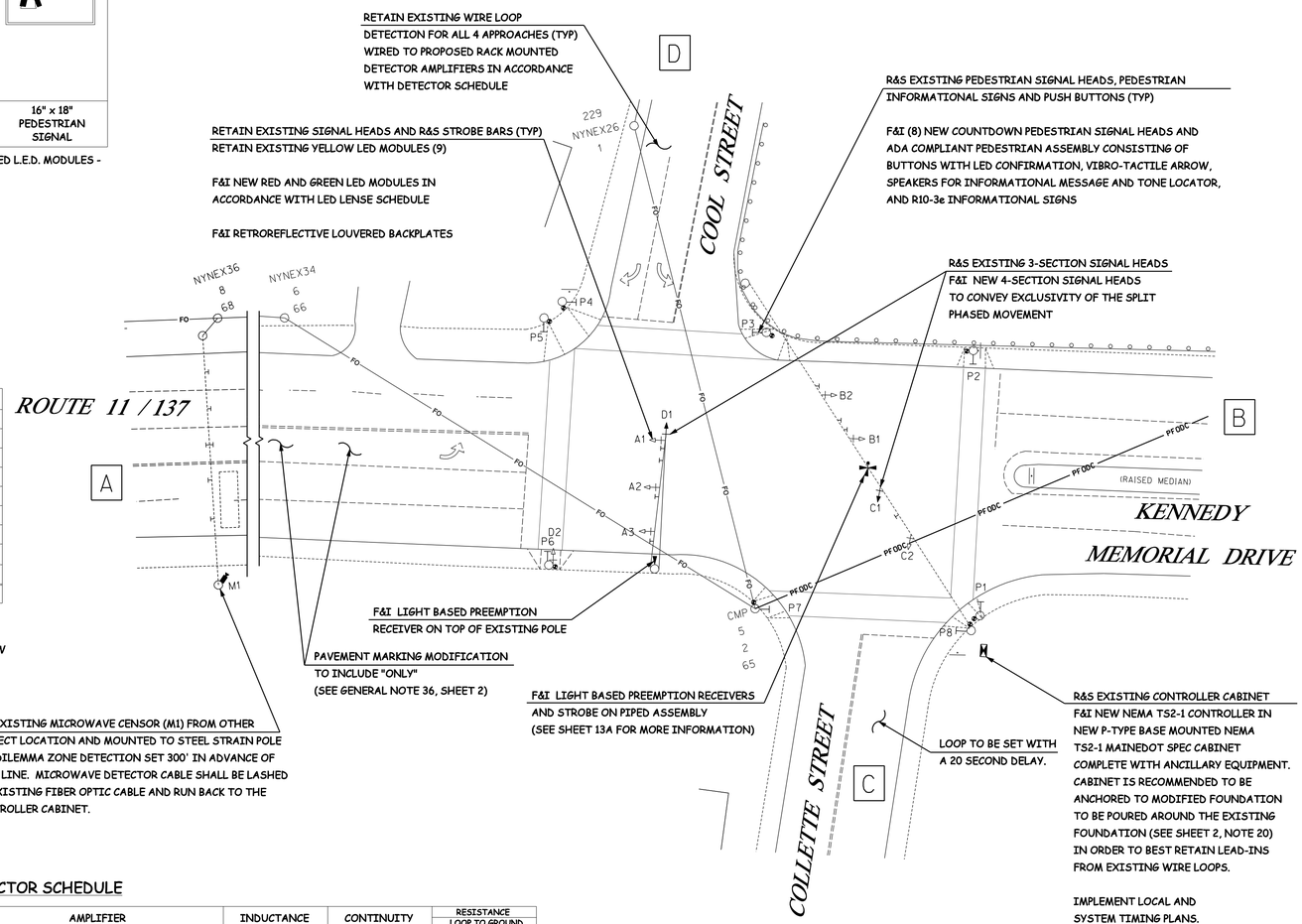


NOTE: Ø5 LAGS
★ = NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN

L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1				1	*	1				
A2	1	*	1							
A3	1	*	1							
B1	1	*	1							
B2	1	*	1							
C1	1	*	1			1				
C2	1	*	1							
D1	1	*	1			1				
D2	1	*	1							
TOTAL	8	0	8	1	0	3	0	0	0	0

NOTES: * = EXISTING L.E.D. LENSES TO BE RETAINED
R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW



SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL		10	4	4	4	10		
PASSAGE TIME		4	2	2	2	4		
MAXIMUM 1		45	10	15	15	45		
MAXIMUM 2		95	10	20	25	70		
YELLOW		4.0	4.0	4.0	4.0	4.0		
ALL RED		3.0	3.5	3.5	3.0	3.0		
PEDESTRIAN WALK		7	5	5		7		
PEDESTRIAN CLEARANCE		13	15	13		13		
RECALL		S	O	O	O	S		
DETECTOR OPERATION		PR	PR	PR	PR	PR		
PREEMPTION PRIORITY		2	3	4	2	1		
FLASH ~		Y	R	R	R	Y		
DUAL ENTRY		ON	OFF	OFF	OFF	ON		

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED
~ PED. SIGNALS SHALL BE DARK DURING FLASHING OPERATIONS.

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	84	100	110	120	150	150	
OFFSET (END GRN)	10	10	104	99	130	103	
COORDINATED Ø	6	6	6	6	2	6	
SPLIT TIME Ø1	0	0	0	0	0	0	
SPLIT TIME Ø2	45	45	56	66	96	96	
SPLIT TIME Ø3	13	13	28	28	28	28	
SPLIT TIME Ø4	26	26	26	26	26	26	
SPLIT TIME Ø5	17	17	18	22	27	27	
SPLIT TIME Ø6	28	28	38	44	69	69	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	39	39	54	54	54	54	

FLOATING FORCE-OFF

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 13A 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.

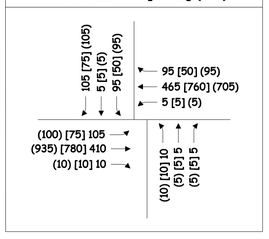
DETECTOR SCHEDULE

DETECTOR				AMPLIFIER				INDUCTANCE		CONTINUITY		RESISTANCE LOOP TO GROUND	
STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO.	DETECTOR NO.	CHANNEL	PRIOR	PRESENT	PRIOR	PRESENT	PRIOR	PRESENT
KMD	EASTBOUND	THRU LANES	2	MICROWAVE	1	(3)							
KMD	EASTBOUND	THRU LANES	2C	MICROWAVE	2	1	1						
KMD	EASTBOUND	LEFT	5C	PRESENCE	1	(4)							
KMD	EASTBOUND	LEFT	5	PRESENCE	2	2	2	209µh		3.4Ω		130 MΩ	
KMD	EASTBOUND	THRU/THRU-RIGHT	2C	PRESENCE	3	(7)							
KMD	EASTBOUND	THRU/THRU-RIGHT	2	PRESENCE	4	5	1	205µh		3.6Ω		125 MΩ	
KMD	WESTBOUND	THRU-RIGHT	6C	PRESENCE	3	(8)							
KMD	WESTBOUND	LEFT-THRU/THRU-RIGHT	6	PRESENCE	4	6	2	190µh		1.8Ω		∞	
COLLETTE ST	NORTHBOUND	LEFT-THRU-RIGHT	3C	PRESENCE	5	(11)							
COLLETTE ST	NORTHBOUND	LEFT-THRU-RIGHT	3D	PRESENCE	6	9	1	181µh		0.7Ω		∞	
COOL ST	SOUTHBOUND	LEFT-THRU/RIGHT	4C	PRESENCE	5	(12)							
COOL ST	SOUTHBOUND	LEFT-THRU/RIGHT	4	PRESENCE	6	10	2	413µh		4.8Ω		∞	
								RECORD FIELD MEASUREMENTS HERE					

DETECTOR NOTES:
C = COUNTING LOOP
PRIOR = FIELD MEASUREMENTS CONDUCTED NOVEMBER 20, 2009.
PRESENT = FIELD MEASUREMENTS TO BE CONDUCTED UPON NEW CABINET INSTALLATION.
( ) = SLOT IN THE DETECTOR RACK TO BE WIRED/SET FOR STOPLINE COUNTING PURPOSES.
PER MAINEDOT AND CITY DIRECTION, PHASE 3D LOOP SHALL BE SET WITH A 20 SECOND DELAY.
M1 SHALL BE USED FOR ADVANCE DILEMMA ZONE DETECTION AND HOLD Ø2 DURING FREE OPERATIONS.

INTERSECTION:
KMD (ROUTE 11/137) AND COOL ST/COLLETTE ST
SIGNAL GROUP:
1
LOCATION:
9

SYSTEM DESIGN VOLUMES AM [MID] (PM)



PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BIGBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND COOL ST/COLLETTE ST

TRAFFIC SIGNAL PLAN

SHEET NUMBER
13
OF 54

Filename: ...\1ts\planset\023_5206800SG09.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL ONE-WAY, 4-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS ON SPAN WIRE AND MAST ARM WITH ASTRO-BRACKETS.	2
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON EXISTING AND PROPOSED SIGNAL HEADS	9
REMOVE AND RESET EXISTING YELLOW LED MODULES INTO NEW SIGNAL HEADS	2
FURNISH AND INSTALL NEW 12-INCH LED RED AND GREEN LENSES INTO NEW AND EXISTING SIGNAL HEADS	20
FURNISH AND INSTALL ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	8
FURNISH AND INSTALL ONE-WAY, 16 X 18-INCH LED POST MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	8
FURNISH AND INSTALL 2-CHANNEL CARD RACK MOUNT LOOP DETECTOR AMPLIFIER	3
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	4
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL SPAN WIRE, MAST ARM, AND POST MOUNTED SIGNS	10
CABLE FOR RESET MICROWAVE DETECTOR	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
INSTALL WHITE "ONLY" PAVEMENT MARKING (ITEM 627.75)	44 SF
FURNISH AND INSTALL MULTI-PORT FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 180 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1

EQUIPMENT AND WORK (ITEM 643.90)	QUANTITY
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE AT GILMAN STREET AND PLEASANT STREET	1
FURNISH AND INSTALL PATCH CORDS AT ALBERT S. HALL SCHOOL	4

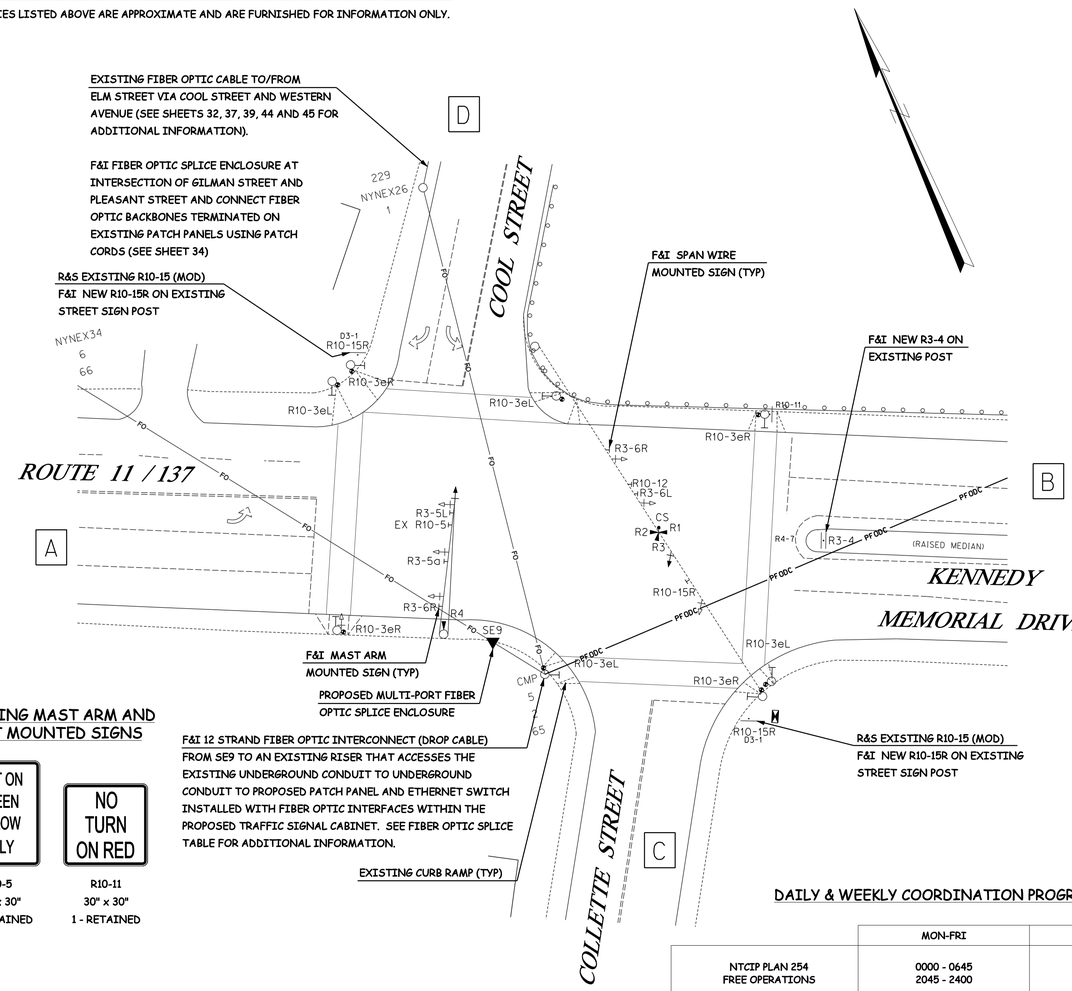
THE QUANTITIES LISTED ABOVE ARE APPROXIMATE AND ARE FURNISHED FOR INFORMATION ONLY.

EMERGENCY VEHICLE PRE-EMPTION OPERATION

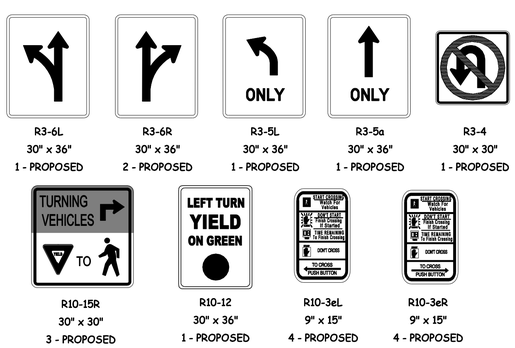
ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø6
R2	4	2	Ø2 & Ø5
R3	5	3	Ø3
R4	6	4	Ø4

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 4 = LOWEST)
3. 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 (4.0 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.



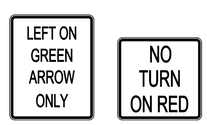
PROPOSED MAST ARM, SPAN WIRE, AND POST MOUNTED SIGNS



R3-6L	R3-6R	R3-5L	R3-5a	R3-4
30" x 36"	30" x 36"	30" x 36"	30" x 36"	30" x 30"
1 - PROPOSED	2 - PROPOSED	1 - PROPOSED	1 - PROPOSED	1 - PROPOSED

R10-15R	R10-12	R10-3eL	R10-3eR
30" x 36"	30" x 36"	9" x 15"	9" x 15"
3 - PROPOSED	1 - PROPOSED	4 - PROPOSED	4 - PROPOSED

EXISTING MAST ARM AND POST MOUNTED SIGNS

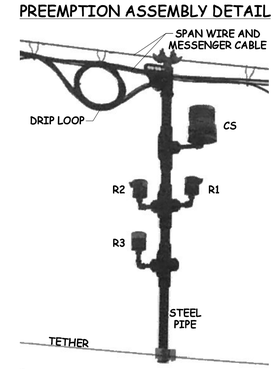


R10-5	R10-11
24" x 30"	30" x 30"
1 - RETAINED	1 - RETAINED

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 42/84 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PREEMPTION ASSEMBLY DETAIL



PLAN

25 0 25 50

SCALE

FIBER OPTIC SPLICE TABLE

NOTES:

1. FIBER OPTIC SPLICE TABLE CAN BE FOUND ON SHEET 53.
2. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
3. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
KMD (ROUTE 11/137) AND COOL ST/COLLETTE ST
SIGNAL GROUP:
1
LOCATION:
9

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

	BY	DATE
PROJ. MANAGER	J. MANSIR	
DESIGN-DETAILED	J. ROBERT	7/16/10
CHECKED-REVIEWED	C. BOBAY	8/13/10
DESIGN2-DETAILED2	M. GRAHAM	
DESIGN3-DETAILED3		
REVISIONS 1	Address 98/ Comments	9/07/10
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

KMD (ROUTE 11/137) AND COOL ST/COLLETTE ST

TRAFFIC SIGNAL PLAN

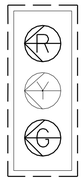
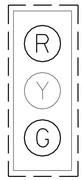
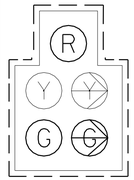
SHEET NUMBER

13A

OF 54

Filename: ...\planset\024_5206800SG09A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

EXISTING			PROPOSED
B1	A1,A2,B2,B3 C1,D1,D2	C2	P1-P2
			
12" LENS	12" LENS	12" LENS	16" x 18" PEDESTRIAN SIGNAL
ADD 5" RETROREFLECTIVE LOUVERED BACKPLATES			

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RETAINED L.E.D. MODULES -
(SEE LED LENSE SCHEDULE)

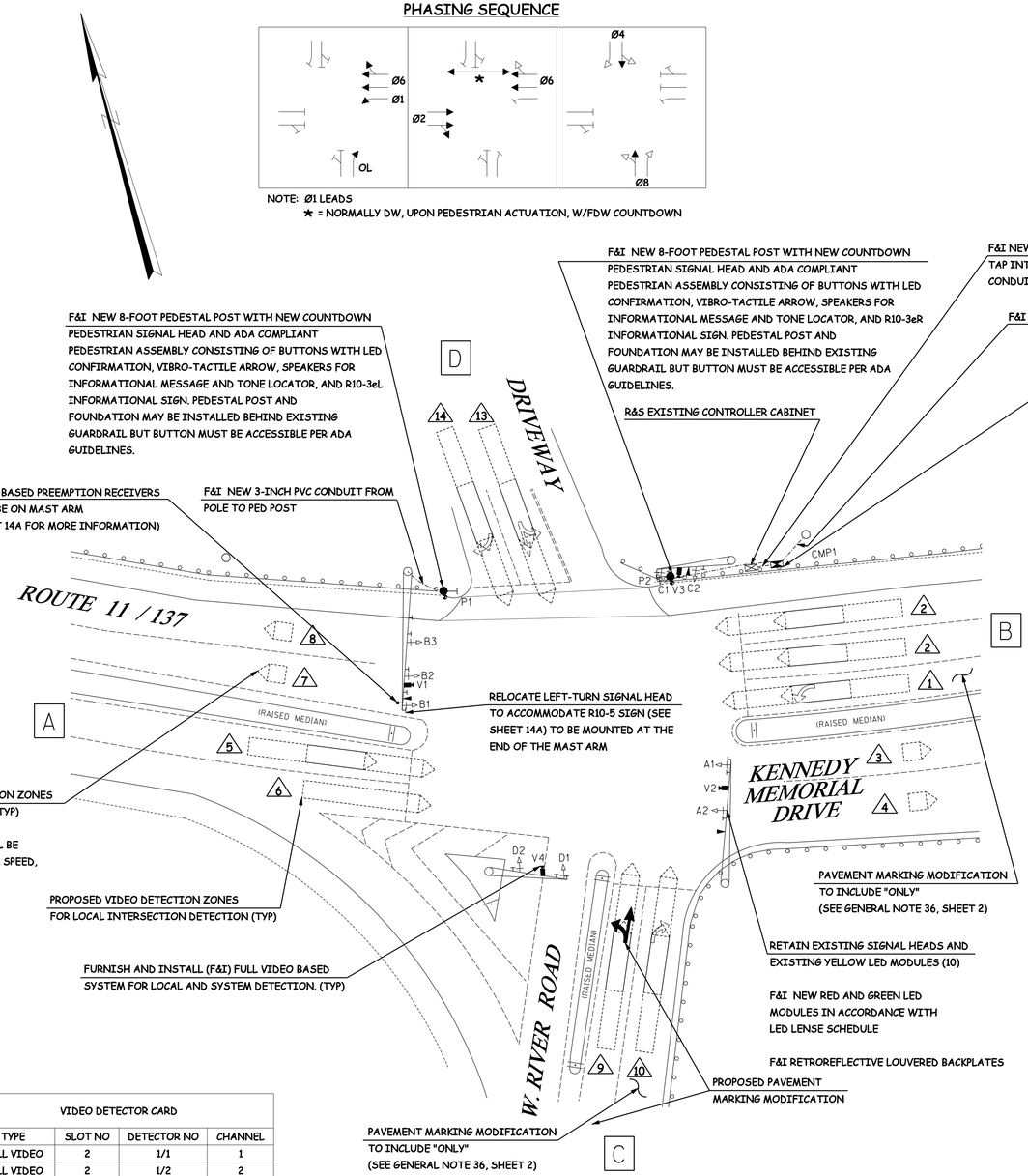
L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1	1	*	1							
A2	1	*	1							
B1				1	*	1				
B2	1	*	1							
B3	1	*	1							
C1	1	*	1							
C2	1	*	1						*	1
D1	1	*	1							
D2	1	*	1							
TOTAL	8	0	8	1	0	1	0	0	0	1

NOTES: * = EXISTING L.E.D. LENSES TO BE RETAINED
R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

PHASING SEQUENCE

NOTE: Ø1 LEADS
★ = NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN



SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL	5	10		5		10		5
PASSAGE TIME	2	2		2		2		2
MAXIMUM 1	15	40		20		40		20
MAXIMUM 2	20	75		30		90		30
YELLOW	4.0	4.0		4.0		4.0		4.0
ALL RED	2.0	2.0		2.5		2.0		2.5
PEDESTRIAN WALK						7		
PEDESTRIAN CLEARANCE						18		
RECALL	O	S		O		S		O
DETECTOR OPERATION	PR	PR		PR		PR		PR
PREEMPTION PRIORITY	1	2				1		3
FLASH ~	R	Y		R		Y		R
DUAL ENTRY	OFF	ON		ON		ON		ON

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED
~ PED. SIGNALS SHALL BE DARK DURING FLASHING OPERATIONS.

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	84	100	110	120	150	150	FLOATING FORCE-OFF
OFFSET (END GRN)	35	24	5	7	142	124	
COORDINATED Ø	2	2	2	2	2	6	
SPLIT TIME Ø1	17	21	26	26	27	27	
SPLIT TIME Ø2	42	49	52	59	91	91	
SPLIT TIME Ø3	0	0	0	0	0	0	
SPLIT TIME Ø4	25	30	32	35	32	32	
SPLIT TIME Ø5	0	0	0	0	0	0	
SPLIT TIME Ø6	59	70	78	85	118	118	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	25	30	32	35	32	32	

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 14A FOR DAY PLAN SETTINGS).
3. TRAFFIC SIGNAL CONTROLLER SHALL BE SET FOR STOP TIME IN WALK TO ON.

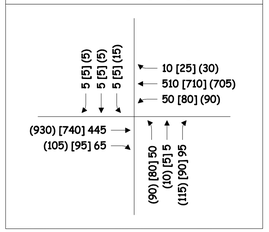
DETECTOR SCHEDULE

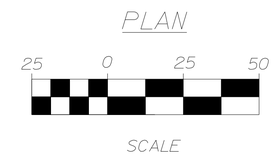
	DETECTOR					VIDEO DETECTOR CARD			
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO	DETECTOR NO	CHANNEL
CAMERA V1	1	KMD	WESTBOUND	LEFT	1	FULL VIDEO	2	1/1	1
	2	KMD	WESTBOUND	THRU / THRU-RIGHT	6	FULL VIDEO	2	1/2	2
	3	KMD	EASTBOUND	MEDIAN SIDE (SYSTEM)	C	FULL VIDEO	2	1/3	3
	4	KMD	EASTBOUND	CURB SIDE (SYSTEM)	C	FULL VIDEO	2	1/4	4
CAMERA V2	5	KMD	EASTBOUND	MEDIAN SIDE THRU	2	FULL VIDEO	4	2/1	1
	6	KMD	EASTBOUND	CURB SIDE THRU	2	FULL VIDEO	4	2/2	2
	7	KMD	WESTBOUND	MEDIAN SIDE (SYSTEM)	C	FULL VIDEO	4	2/3	3
	8	KMD	WESTBOUND	CENTER-CURB SIDE (SYSTEM)	C	FULL VIDEO	4	2/4	4
CAMERA V3	9	WEST RIVER ROAD	NORTHBOUND	LEFT-THRU	8	FULL VIDEO	6	3/1	1
	10	WEST RIVER ROAD	NORTHBOUND	RIGHT	8D	FULL VIDEO	6	3/2	2
	(11)	SPARE						3/3	3
	(12)	SPARE						3/4	4
CAMERA V4	13	CVS DRIVEWAY	SOUTHBOUND	LEFT-THRU	4	FULL VIDEO	8	4/1	1
	(14)	CVS DRIVEWAY	SOUTHBOUND	RIGHT	4D	FULL VIDEO	8	4/2	2
	(15)	SPARE						4/3	3
	(16)	SPARE						4/4	4

DETECTOR NOTES:
C = COUNTING LOOP
ALL DETECTION SHOULD BE INITIALLY SET TO NONLOCKING OPERATIONS.
DETECTORS DESIGNATED FOR DELAY (4D AND 8D) SHALL INCLUDE A 10 SECOND DELAY.

INTERSECTION:
KMD (ROUTE 11/137) AND ROUTE 104 (W. RIVER RD)
SIGNAL GROUP:
1
LOCATION:
10

SYSTEM DESIGN VOLUMES AM [MID] (PM)





STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2	LED2		
DESIGN3-DETAILED3	LED3	Address 98/ Comments	9/07/10
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND ROUTE 104 (W. RIVER RD)
TRAFFIC SIGNAL PLAN

SHEET NUMBER
14
OF 54

Date:9/7/2010
Username: J ROBERT
Division:
Filename: ...\ts\planset\025_5206800SG10.dgn

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON EXISTING SIGNAL HEADS	9
FURNISH AND INSTALL NEW 12-INCH LED RED AND GREEN LENSES INTO EXISTING SIGNAL HEADS	19
FURNISH AND INSTALL ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	2
FURNISH AND INSTALL ONE-WAY, 16 X 18-INCH LED POST MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	2
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	3
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM MOUNTED SIGNS	13
CABLE TO NEW PEDESTRIAN SIGNAL INSTALLATIONS	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	90 LF
FURNISH AND INSTALL 18-INCH FOUNDATION (ITEM 626.31)	2
FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
INSTALL WHITE "ONLY" AND COMBINATION ARROW PAVEMENT MARKINGS (ITEM 627.75)	102 SF
FURNISH AND INSTALL CARD RACK MOUNT VIDEO COMMUNICATIONS BOARD (ITEM 643.83)	1
FURNISH AND INSTALL CARD 2-CHANNEL/ 4-OUTPUT RACK MOUNT DATA AND PRESENCE VIDEO DETECTOR CARDS (ITEM 643.83)	2
FURNISH AND INSTALL CARD RACK VIDEO POWER SUPPLY (ITEM 643.83)	1
FURNISH AND INSTALL VIDEO DETECTION CAMERA (ITEM 643.83)	4
FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURES (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 475 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL (8-FOOT) PEDESTAL POLE (ITEM 643.92)	2

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

EXISTING MAST ARM MOUNTED SIGNS

R10-5
24" x 30"
1 - RETAINED

PROPOSED MAST ARM MOUNTED SIGNS

R3-6L	R3-6R	R3-5L	R3-5R	R3-5a
30" x 36"	30" x 36"	30" x 36"	30" x 36"	30" x 36"
2 - PROPOSED	2 - PROPOSED	1 - PROPOSED	2 - PROPOSED	2 - PROPOSED

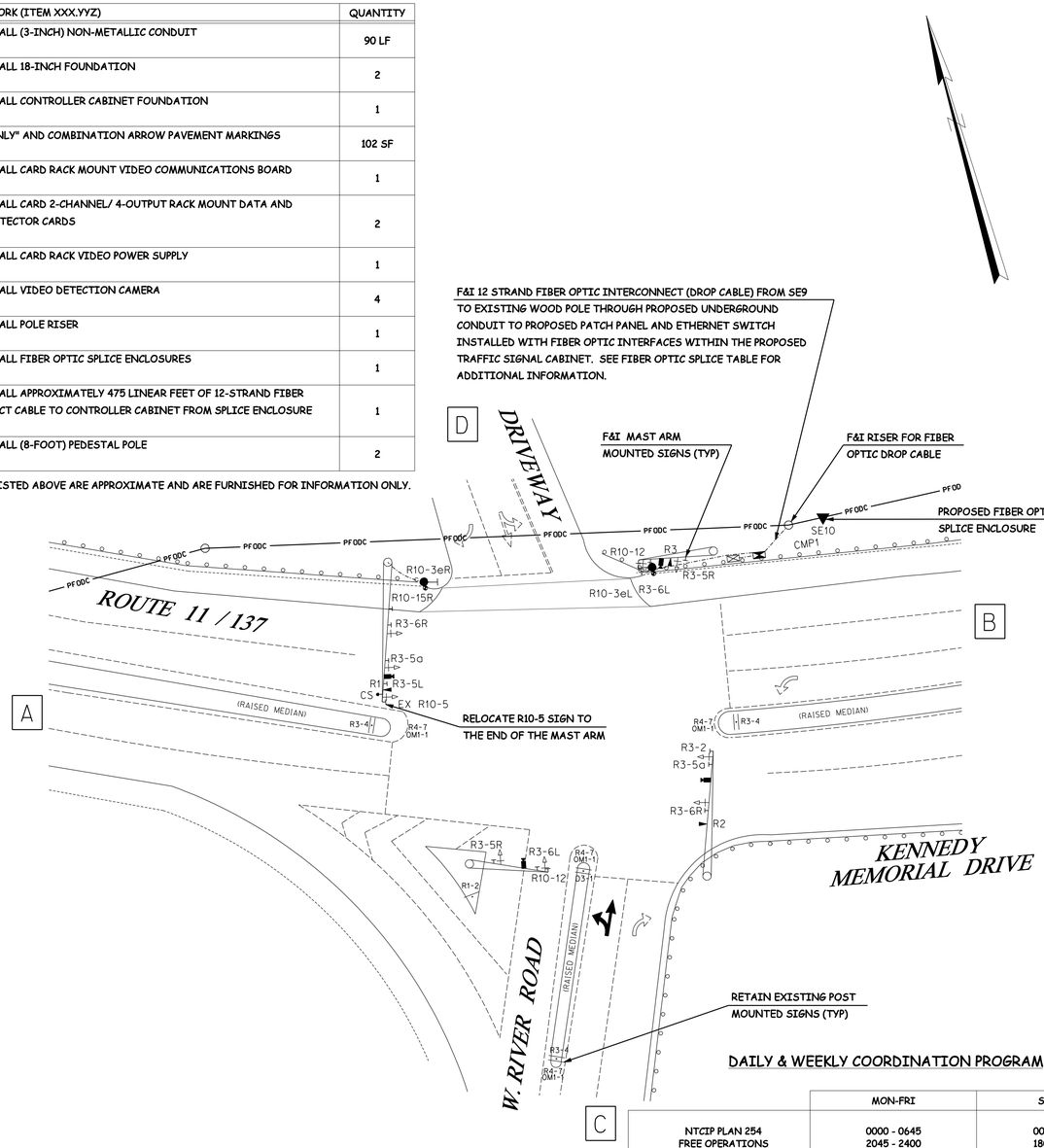
R10-15R	R10-12	R10-3eL	R10-3eR	R3-2
30" x 30"	30" x 36"	9" x 15"	9" x 15"	30" x 30"
1 - PROPOSED	2 - PROPOSED	1 - PROPOSED	1 - PROPOSED	1 - PROPOSED

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE10	12F TO SE9	1	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	12F TO SE9	2	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	12F TO SE9	3	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	12F TO SE9	4	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
	12F TO SE9	5-12	UNTERMINATED	-	-	END OF CABLE
PPP, CONTROL CABINET	12F TO SE10	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE10	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE10	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE10	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE10	5-12	UNTERMINATED	-	-	END OF CABLE

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.



EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø1 & Ø6
R2	4	2	Ø2
R3	5	3	Ø8
R4	6	NOT USED	

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 3 = LOWEST)
3. 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 (4.0 SECONDS YELLOW AND 2.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 42/84 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

INTERSECTION:
KMD (ROUTE 11/137) AND ROUTE 104 (W. RIVER RD)
SIGNAL GROUP:
1
LOCATION:
10

PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3	Address 98/ Comments		9/07/10
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE
P.E. NUMBER
DATE

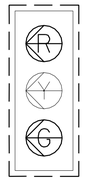
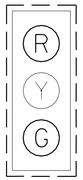
WATERVILLE-WINSLOW
KMD (ROUTE 11/137) AND ROUTE 104 (W. RIVER RD)

TRAFFIC SIGNAL PLAN

SHEET NUMBER
14A
OF 54

Filename: ...\planset\026_S20680OSG10A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

EXISTING	
B1,C1,C2	A1,A2,B2,B3
	
12" LENS	12" LENS
ADD 5" RETROREFLECTIVE LOUVERED BACKPLATES	

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RETAINED L.E.D. MODULES -
(SEE LED LENSE SCHEDULE)

L.E.D. LENSE SCHEDULE

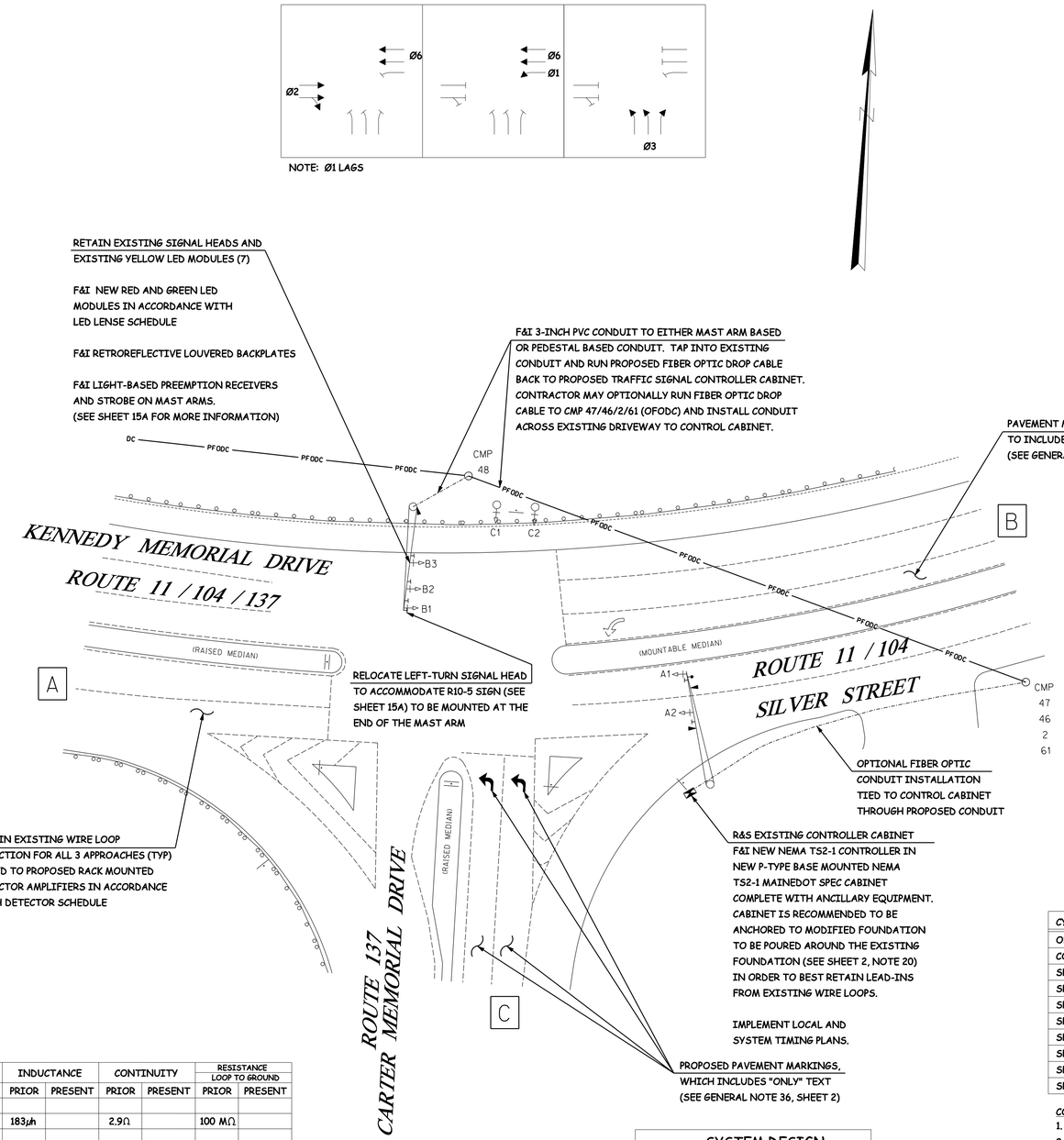
SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1	1	*	1							
A2	1	*	1							
B1				1	*	1				
B2	1	*	1							
B3	1	*	1							
C1				1	*	1				
C2				1	*	1				
TOTAL	4	0	4	3	0	3	0	0	0	0

NOTES: * = EXISTING L.E.D. LENSES TO BE RETAINED

R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

PHASING SEQUENCE

NOTE: Ø1 LAGS



SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL	5	10	5			10		
PASSAGE TIME	2	4	2			4		
MAXIMUM 1	20	40	30			40		
MAXIMUM 2	25	70	35			95		
YELLOW	4.0	4.0	4.0			4.0		
ALL RED	2.0	2.0	2.0			2.0		
PEDESTRIAN WALK								
PEDESTRIAN CLEARANCE								
RECALL	O	S	O			S		
DETECTOR OPERATION	PR	PR	PR			PR		
PREEMPTION PRIORITY	1	2	3			1		
FLASH	R	Y	R			Y		
DUAL ENTRY	OFF	ON	OFF			ON		

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	84	100	110	120	150	150	
OFFSET (END GRN)	37	23	4	10	141	149	FLOATING FORCE-OFF
COORDINATED Ø	2	2	2	2	2	6	
SPLIT TIME Ø1	20	21	26	26	26	26	
SPLIT TIME Ø2	36	44	48	58	88	88	
SPLIT TIME Ø3	28	35	36	36	36	36	
SPLIT TIME Ø4	0	0	0	0	0	0	
SPLIT TIME Ø5	0	0	0	0	0	0	
SPLIT TIME Ø6	56	65	74	84	114	114	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	28	35	36	36	36	36	

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 15A FOR DAY PLAN SETTINGS).
4. PHASE 8 IS A DUMMY PHASE TO BE SET WITH SPLIT TIMES FOR NTCIP COMPLIANCE.

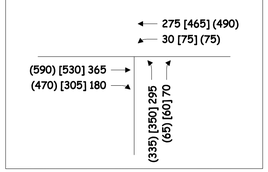
DETECTOR SCHEDULE

DETECTOR				AMPLIFIER				INDUCTANCE		CONTINUITY		RESISTANCE LOOP TO GROUND	
STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO.	DETECTOR NO.	CHANNEL	PRIOR	PRESENT	PRIOR	PRESENT	PRIOR	PRESENT
SILVER ST	WESTBOUND	LEFT	1C	PRESENCE	1	(3)							
SILVER ST	WESTBOUND	LEFT	1	PRESENCE	2	1	1	183µh		2.9Ω		100 MΩ	
				SPARE	1	(4)							
				SPARE	2	2	2						
KMD	EASTBOUND	THROUGH	2C	PRESENCE	3	(7)							
KMD	EASTBOUND	THROUGH	2	PRESENCE	4	5	1	358µh		2.5Ω		∞	
SILVER ST	WESTBOUND	THRU-RIGHT	6C	PRESENCE	3	(8)							
SILVER ST	WESTBOUND	LEFT-THRU/THRU-RIGHT	6	PRESENCE	4	6	2	370µh		3.4Ω		190 MΩ	
CMD	NORTHBOUND	LEFT-RIGHT	3C	PRESENCE	5	(11)							
CMD	NORTHBOUND	LEFT-RIGHT	3	PRESENCE	6	9	1	341µh		1.8 Ω		∞	
				SPARE	5	(12)							
				SPARE	6	10	2						
								RECORD FIELD MEASUREMENTS HERE					

DETECTOR NOTES:
C = COUNTING LOOP
PRIOR = FIELD MEASUREMENTS CONDUCTED NOVEMBER 20, 2009.
PRESENT = FIELD MEASUREMENTS TO BE CONDUCTED UPON NEW CABINET INSTALLATION.
( ) = SLOT IN THE DETECTOR RACK TO BE WIRED/SET FOR STOPLINE COUNTING PURPOSES.

INTERSECTION:
KMD (ROUTE 11/104/137) AND SILVER STREET AND ROUTE 137 (CARTER MEMORIAL DRIVE)
SIGNAL GROUP: 1
LOCATION: 11

SYSTEM DESIGN VOLUMES AM [MID] (PM)



PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BIGBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
ROUTE 11/104/137 AND ROUTE 137 (CARTER MEMORIAL DRIVE)

TRAFFIC SIGNAL PLAN

SHEET NUMBER
15
OF 54

Filename: ...\ts\planset\027_5206800SG11.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON EXISTING SIGNAL HEADS	7
FURNISH AND INSTALL NEW 12-INCH LED RED AND GREEN LENSES INTO EXISTING SIGNAL HEADS	14
FURNISH AND INSTALL 2-CHANNEL CARD RACK MOUNT LOOP DETECTOR AMPLIFIER	3
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	3
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM MOUNTED SIGNS	5
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	140 LF
FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
INSTALL WHITE "ONLY" AND TURN ARROW PAVEMENT MARKINGS (ITEM 627.75)	130 LF
FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 1200 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1

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

EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø1 & Ø6
R2	4	2	Ø2
R3	5	3	Ø3
R4	6	NOT USED	

EMERGENCY VEHICLE PRE-EMPTION NOTES:

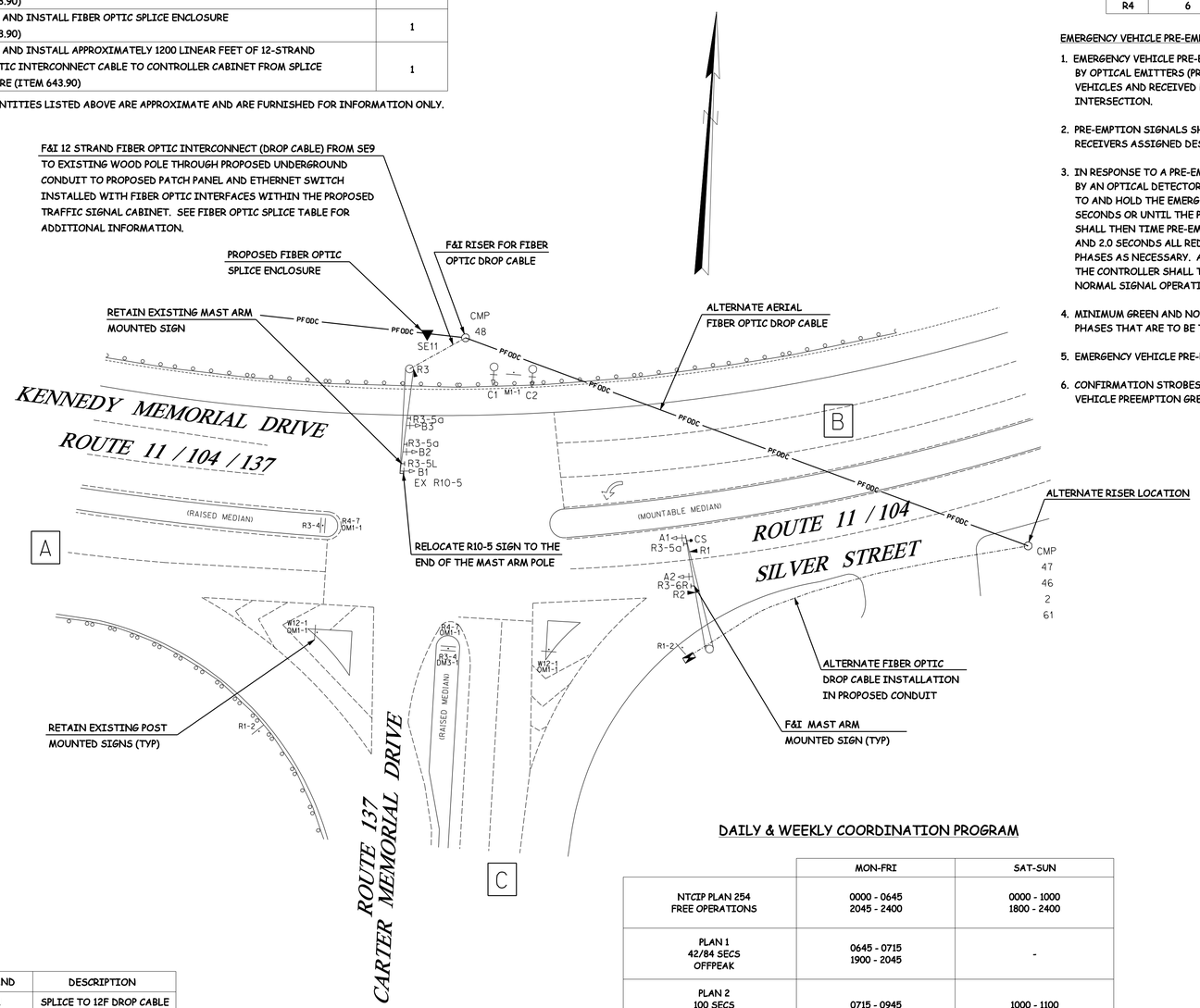
1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 3 = LOWEST)
3. 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 (4.0 SECONDS YELLOW AND 2.0 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

EXISTING MAST ARM MOUNTED SIGNS

R10-5
24" x 30"
1 - RETAINED

PROPOSED MAST ARM MOUNTED SIGNS

R3-6R	R3-5L	R3-5a
30" x 36"	30" x 36"	30" x 36"
1 - PROPOSED	1 - PROPOSED	3 - PROPOSED



FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE11	12F TO SE9	1	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	12F TO SE9	2	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	12F TO SE9	3	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	12F TO SE9	4	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
	12F TO SE9	5-12	UNTERMINATED	-	-	-
PPP CONTROL CABINET	12F TO SE11	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE11	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE11	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE11	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE11	5-12	UNTERMINATED	-	-	END OF CABLE

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
KMD (ROUTE 11/104/137) AND SILVER STREET AND ROUTE 137 (CARTER MEMORIAL DRIVE)
SIGNAL GROUP:
1
LOCATION:
11

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 42/84 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BIGBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
ROUTE 11/104/137 AND ROUTE 137 (CARTER MEMORIAL DRIVE)

TRAFFIC SIGNAL PLAN

SHEET NUMBER
15A
OF 54

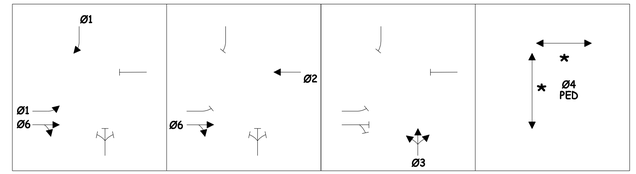
Filename: ...\planset\028_5206800SG11A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

EXISTING				PROPOSED	
B1,B2	C1,C2	A1	A2	A3 D1,D2	P1-P4
12" LENS	12" LENS	12" LENS	12" LENS	12" LENS	16" x 18" PEDESTRIAN SIGNAL
OPTICALLY PROGRAMMED		WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES			

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RESET L.E.D. MODULES -
(SEE LED LENSE SCHEDULE)

PHASING SEQUENCE

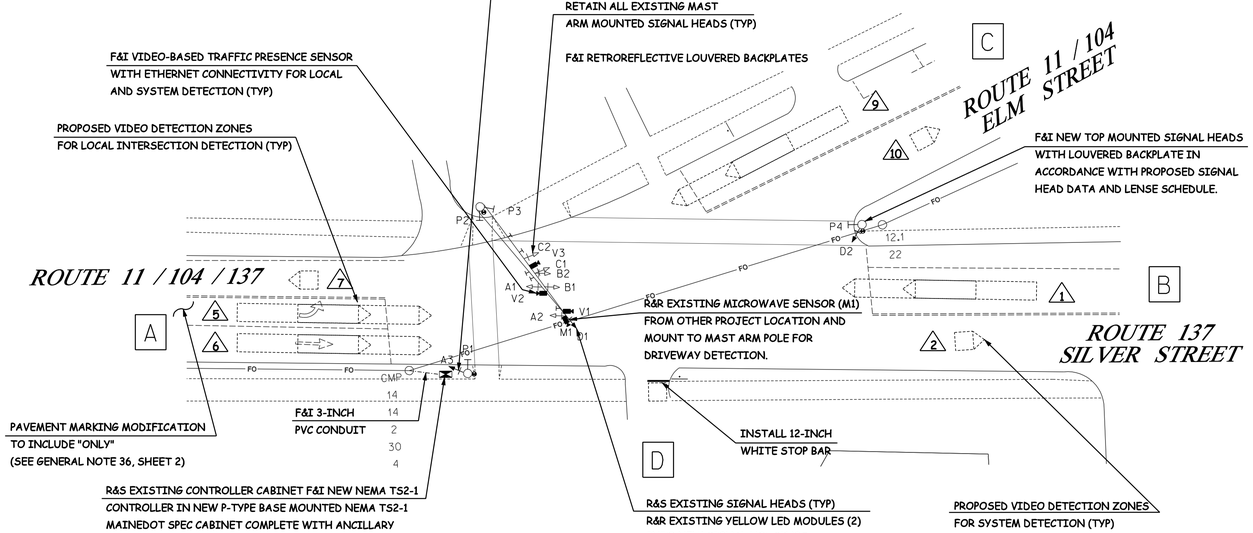


NOTE: Ø5 LEADS
* = NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN

L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1				1	*	1				
A2	1	*	1							
A3	1	1	1							
B1	*	*	*							
B2	*	*	*							
C1	*								*	*
C2	*								*	*
D1	1	1	1							
D2	1	1	1							
TOTAL	4	3	4	1	0	1	0	0	0	0

NOTES: * = EXISTING LENSES TO REMAIN
R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW



SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL	5	10	4	5		10		
PASSAGE TIME	2	2	1	1		2		
MAXIMUM 1	15	25	7	5		40		
MAXIMUM 2	70	40	7	30		95		
YELLOW	3.5	3.5	3.5	3.5		3.5		
ALL RED	3.5	3.5	1.5	1.5		3.5		
PEDESTRIAN WALK				4				
PEDESTRIAN CLEARANCE				26				
RECALL	S	O	O	O		S		
DETECTOR OPERATION	PR	PR	PR			PR		
PREEMPTION PRIORITY	3	2				1		
FLASH ~	R	Y	R	D		Y		
DUAL ENTRY	OFF	ON	OFF	OFF		ON		

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED
D = DARK
~ PED. SIGNALS SHALL BE DARK DURING FLASHING OPERATIONS.

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	50	100	110	120	150	150	
OFFSET (END GRN)	23	83	1	118	75	5	
COORDINATED Ø	1	1	1	1	1	1	
SPLIT TIME Ø1	20	29	35	42	75	75	
SPLIT TIME Ø2	19	25	29	30	27	27	
SPLIT TIME Ø3	10	10	10	12	12	12	
SPLIT TIME Ø4	1	36	36	36	36	36	
SPLIT TIME Ø5	0	0	0	0	0	0	
SPLIT TIME Ø6	39	54	64	72	102	102	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	11	46	46	48	48	48	

FLOATING FORCE-OFF

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 16A 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.

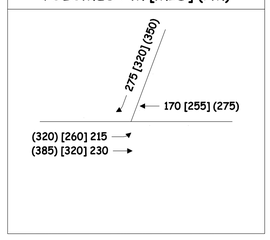
DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD			
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO	DETECTOR NO	CHANNEL
CAMERA V1	1	SILVER STREET	WESTBOUND	LEFT-THRU-RIGHT	2	VIDEO PRESENCE	2	1/1	1
	2	SILVER STREET	EASTBOUND	THRU (SYSTEM)	C	VIDEO PRESENCE	2	1/2	2
	(3)	SPARE						1/3	3
	(4)	SPARE						1/4	4
CAMERA V2	5	SILVER STREET	EASTBOUND	LEFT	1	VIDEO PRESENCE	4	2/1	1
	6	SILVER STREET	EASTBOUND	THRU-RIGHT	6	VIDEO PRESENCE	4	2/2	2
	7	SILVER STREET	WESTBOUND	THRU (SYSTEM)	C	VIDEO PRESENCE	4	2/3	3
	(8)	SPARE						2/4	4
CAMERA V3	9	ELM STREET	SOUTHBOUND	RIGHT	1	VIDEO PRESENCE	6	3/1	1
	10	ELM STREET	NORTHBOUND	THRU (SYSTEM)	C	VIDEO PRESENCE	6	3/2	2
	(11)	SPARE						3/3	3
	(12)	SPARE						3/4	4
MICRO-WAVE	13	DRIVEWAY	NORTHBOUND	LEFT-THRU-RIGHT	3	MICROWAVE			
	(14)								
	(15)								
	(16)								

DETECTOR NOTES:
C = COUNTING LOOP
ALL DETECTION SHOULD BE INITIALLY SET TO NONLOCKING OPERATIONS.

INTERSECTION:
ROUTE 11/104/137 (SILVER ST) AND ROUTE 11/104 (ELM ST)
SIGNAL GROUP:
2
LOCATION:
12

SYSTEM DESIGN VOLUMES AM [MID] (PM)



PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
PIN 17288.00

	BY	DATE
PROJ. MANAGER		
DESIGN-DETAILED	J. BOBAY	7/16/10
CHECKED-REVIEWED	M. GRAHAM	8/13/10
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1	Address 98/ Comments	9/07/10
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
ROUTE 11/104/137 (SILVER ST) AND ROUTE 11/104 (ELM ST)

TRAFFIC SIGNAL PLAN

SHEET NUMBER
16
OF 54

Filename: ...\ts\planset\029_52068005G12.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH POST, POLE, AND MAST ARM MOUNTED FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS.	3
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON EXISTING AND PROPOSED SIGNAL HEADS	9
REMOVE AND RESET EXISTING YELLOW LED MODULES INTO NEW SIGNAL HEADS	2
FURNISH AND INSTALL NEW 12-INCH LED RED, YELLOW(3), AND GREEN LENSES INTO NEW AND EXISTING SIGNAL HEADS	13
FURNISH AND INSTALL ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	3
FURNISH AND INSTALL ONE-WAY, 16 X 18-INCH LED POST MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	4
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	3
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM AND POST MOUNTED SIGNS	5
CABLE TO NEW SIGNAL INSTALLATIONS AND RESET MICROWAVE DETECTOR	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	15 LF
FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
FURNISH AND INSTALL 12 INCH SOLID WHITE PAVEMENT MARKING LINE (ITEM 627.18)	10 LF
INSTALL WHITE "ONLY" PAVEMENT MARKING (ITEM 627.75)	22 SF
FURNISH AND INSTALL VIDEO BASED VEHICLE DETECTION SYSTEM, REQUIRING 3-DETECTION UNITS PLUS FIELD WIRING TO ANCILLARY CABINET MOUNTED DEVICES (ITEM 643.83)	1
FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 100 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1

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

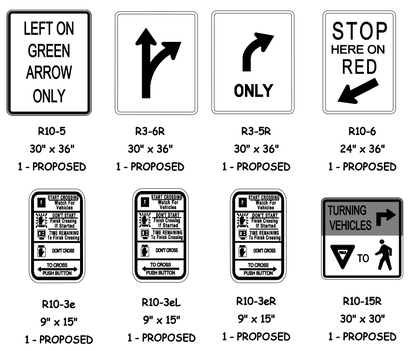
EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø6 & OLA
R2	4	2	Ø2
R3	5	3	Ø1
R4	6	NOT USED	

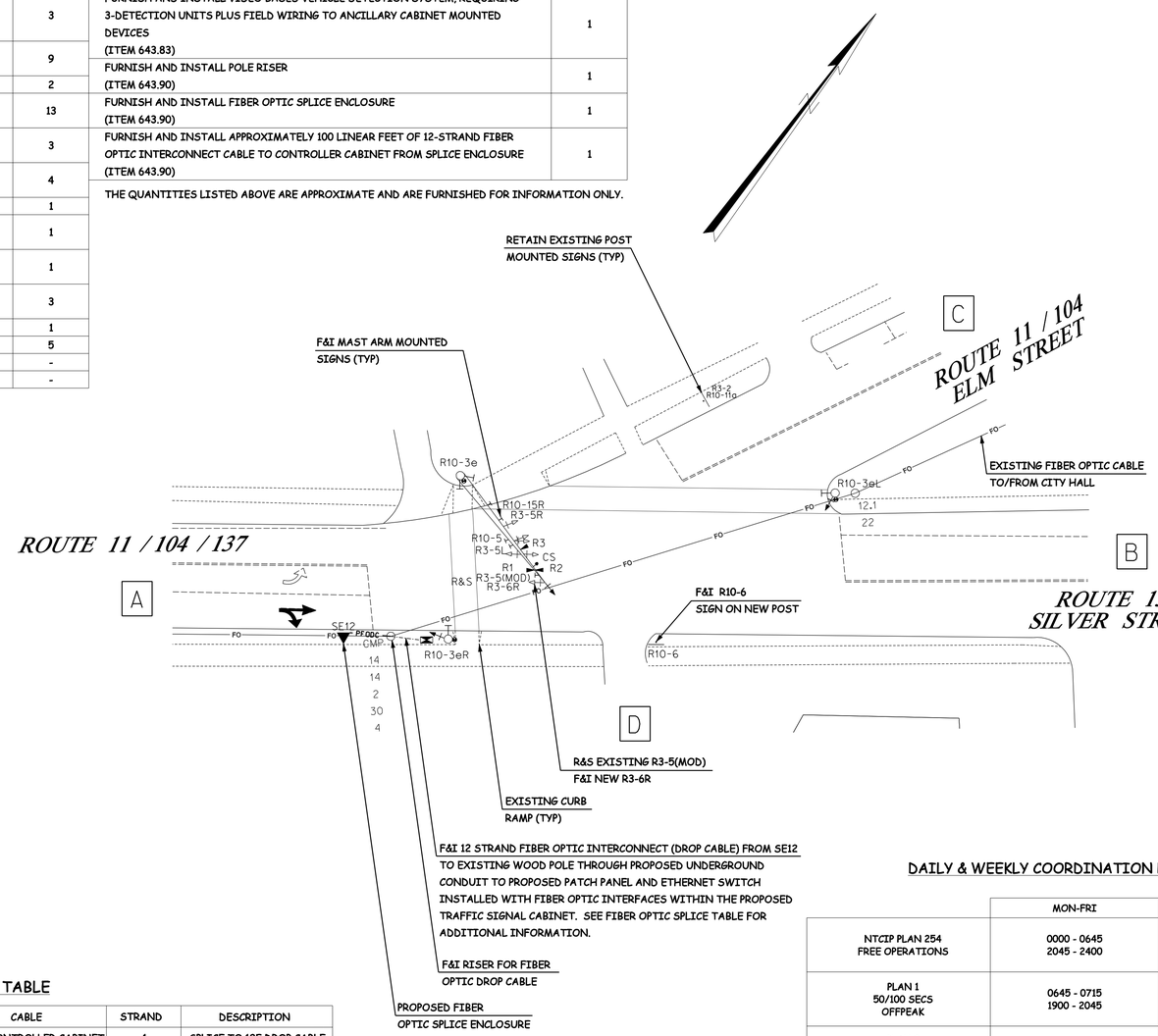
EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 3 = LOWEST)
3. 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 (3.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

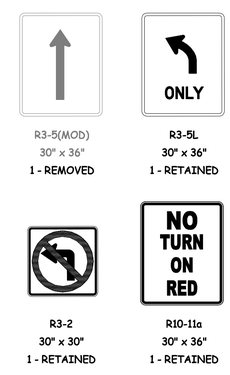
PROPOSED MAST ARM AND POLE MOUNTED SIGNS



R10-5 30" x 36" 1 - PROPOSED
R3-6R 30" x 36" 1 - PROPOSED
R3-5R 30" x 36" 1 - PROPOSED
R10-6 24" x 36" 1 - PROPOSED
R10-3e 9" x 15" 1 - PROPOSED
R10-3eL 9" x 15" 1 - PROPOSED
R10-3eR 9" x 15" 1 - PROPOSED
R10-15R 30" x 30" 1 - PROPOSED



EXISTING MAST ARM AND POST MOUNTED SIGNS



R3-5(MOD) 30" x 36" 1 - REMOVED
R3-5L 30" x 36" 1 - RETAINED
R3-2 30" x 30" 1 - RETAINED
R10-11a 30" x 36" 1 - RETAINED

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE12	BB-C (12F) TO SE13	1	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	BB-C (12F) TO SE13	2	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	BB-C (12F) TO SE13	3	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	BB-C (12F) TO SE13	4	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
	BB-C (12F)	5-12	THROUGH	BB-C (12F) TO ALTERNATIVE EDUCATION	5-12	BB-C (12F) FIBER OPTIC BACKBONE
PPP CONTROL CABINET	12F TO SE12	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE12	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE12	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE12	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE12	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
ROUTE 11/104/137 (SILVER ST) AND ROUTE 11/104 (ELM ST)
SIGNAL GROUP: 2
LOCATION: 12

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 50/100 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

	BY	DATE
PROJ. MANAGER	J. MANSIR	
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1	Address 98% Comments	9/07/10
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

ROUTE 11/104/137 (SILVER ST) AND ROUTE 11/104 (ELM ST)

TRAFFIC SIGNAL PLAN

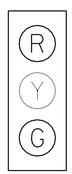
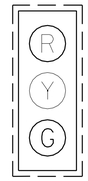
SHEET NUMBER

16A

OF 54

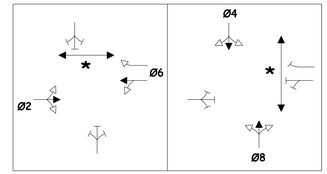
Filename: ...\plansel\030_5206800SG12A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

PROPOSED		
A1,B1,C1,D1	A2,B2,C2,D2	P1-P4
		
12" LENS	12" LENS	16" x 18" PEDESTRIAN SIGNAL
COMBINED ASSEMBLY	WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES	

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RESET L.E.D. MODULES -
(SEE LED LENSE SCHEDULE)

PHASING SEQUENCE



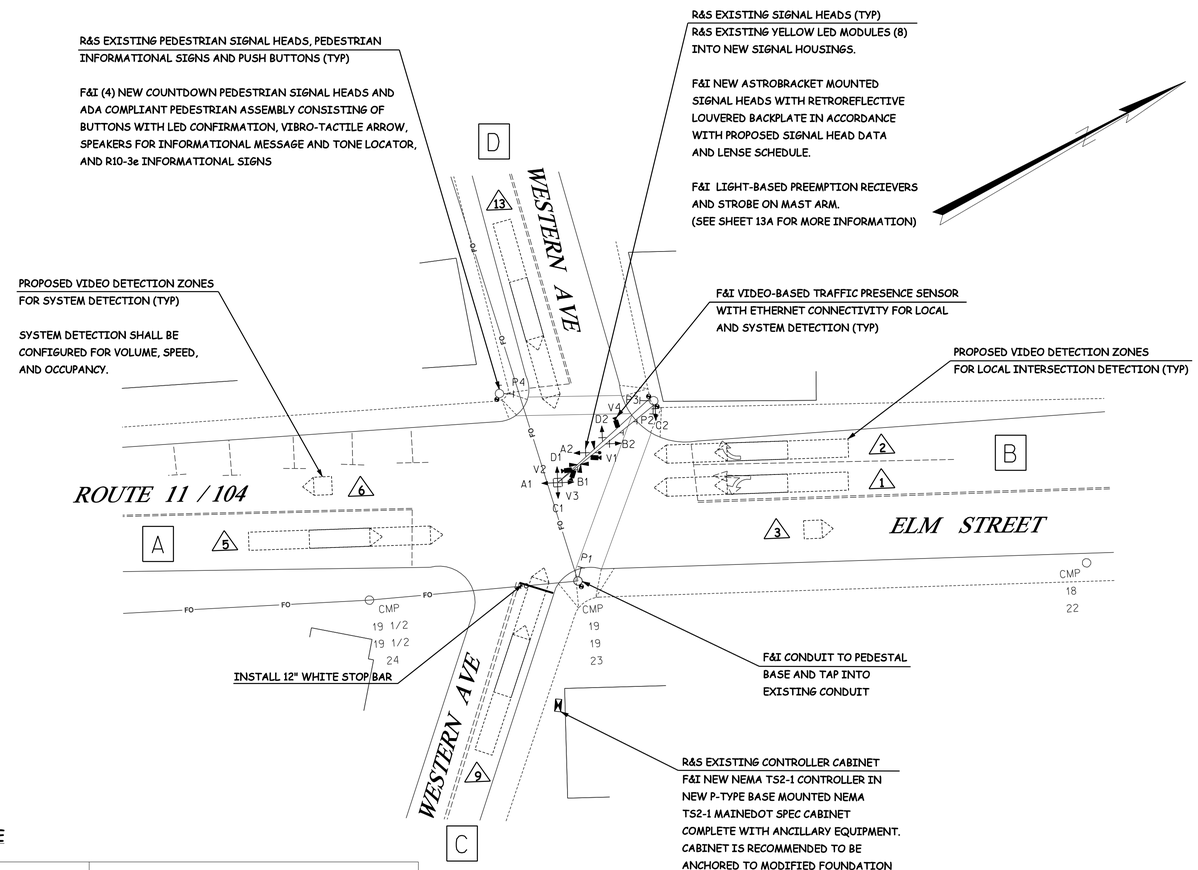
★ = NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN

L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1	1	*	1							
A2	1	*	1							
B1	1	*	1							
B2	1	*	1							
C1	1	*	1							
C2	1	*	1							
D1	1	*	1							
D2	1	*	1							
TOTAL	8	0	8	0	0	0	0	0	0	0

NOTES: * = EXISTING L.E.D. LENSES TO BE RESET

R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW



SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL		10		5		10		5
PASSAGE TIME		2		2		2		2
MAXIMUM 1		40		25		40		25
MAXIMUM 2		90		40		90		40
YELLOW		3.5		3.5		3.5		3.5
ALL RED		1.5		1.5		1.5		1.5
PEDESTRIAN WALK						7		7
PEDESTRIAN CLEARANCE						9		12
RECALL		S		O		S		O
DETECTOR OPERATION		PR		PR		PR		PR
PREEMPTION PRIORITY		2		4		1		3
FLASH		Y		R		Y		R
DUAL ENTRY		ON		ON		ON		ON

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED
~ PED. SIGNALS SHALL BE DARK DURING FLASHING OPERATIONS.

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	50	100	110	120	150	150	
OFFSET (END GRN)	37	33	49	30	125	125	
COORDINATED Ø	2	2	2	2	2	6	
SPLIT TIME Ø1	0	0	0	0	0	0	
SPLIT TIME Ø2	25	65	70	75	115	115	
SPLIT TIME Ø3	0	0	0	0	0	0	
SPLIT TIME Ø4	25	35	40	45	35	35	
SPLIT TIME Ø5	0	0	0	0	0	0	
SPLIT TIME Ø6	25	65	70	75	115	115	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	25	35	40	45	35	35	

FLOATING FORCE-OFF

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 17A FOR DAY PLAN SETTINGS).
3. TRAFFIC SIGNAL CONTROLLER SHALL BE SET FOR STOP TIME IN WALK TO ON.

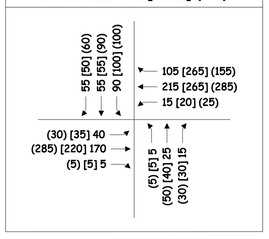
DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD			
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO	DETECTOR NO	CHANNEL
CAMERA V1	1	ELM STREET	WESTBOUND	LEFT-THRU	6	VIDEO PRESENCE	2	1/1	1
	2	ELM STREET	WESTBOUND	RIGHT	6	VIDEO PRESENCE	2	1/2	2
	3	ELM STREET	EASTBOUND	THRU (SYSTEM)	C	VIDEO PRESENCE	2	1/3	3
	(4)	SPARE						1/4	4
CAMERA V2	5	ELM STREET	EASTBOUND	LEFT-THRU-RIGHT	2	VIDEO PRESENCE	4	2/1	1
	6	ELM STREET	WESTBOUND	THRU (SYSTEM)	C	VIDEO PRESENCE	4	2/2	2
	(7)	SPARE						2/3	3
	(8)	SPARE						2/4	4
CAMERA V3	9	WESTERN AVENUE	NORTHBOUND	LEFT-THRU-RIGHT	8	VIDEO PRESENCE	6	3/1	1
	(10)	SPARE						3/2	2
	(11)	SPARE						3/3	3
	(12)	SPARE						3/4	4
CAMERA V4	13	WESTERN AVENUE	SOUTHBOUND	LEFT-THRU-RIGHT	4	VIDEO PRESENCE	8	4/1	1
	(14)	SPARE						4/2	2
	(15)	SPARE						4/3	3
	(16)	SPARE						4/4	4

DETECTOR NOTES:
C = COUNTING LOOP
ALL DETECTION SHOULD BE INITIALLY SET TO NONLOCKING OPERATIONS.

INTERSECTION:
ROUTE 11/104 (ELM ST) AND WESTERN AVE
SIGNAL GROUP:
2
LOCATION:
13

SYSTEM DESIGN VOLUMES AM [MID] (PM)



PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN
17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BIGGAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
ROUTE 11/104 (ELM ST) AND WESTERN AVE

TRAFFIC SIGNAL PLAN

SHEET NUMBER
17
OF 54

Filename: ...\1ts\planset\031_5206800SG13.dgn Division: Username: J ROBERT Date:9/7/2010

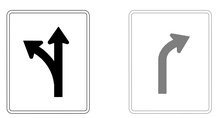
LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON POLES OR MAST ARMS WITH ASTRO-BRACKETS.	8
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON PROPOSED SIGNAL HEADS	4
REMOVE AND RESET EXISTING YELLOW LED MODULES INTO NEW SIGNAL HEADS	8
FURNISH AND INSTALL NEW 12-INCH LED RED AND GREEN LENSES INTO NEW SIGNAL HEADS	16
FURNISH AND INSTALL ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	4
FURNISH AND INSTALL ONE-WAY, 16 X 18-INCH LED POST MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	4
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	4
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM AND POST MOUNTED SIGNS	3
RECABLE INTERSECTION	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	5 LF
FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
FURNISH AND INSTALL 12 INCH SOLID WHITE PAVEMENT MARKING LINE (ITEM 627.18)	14 LF
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL VIDEO BASED VEHICLE DETECTION SYSTEM, REQUIRING 4-DETECTION UNITS PLUS FIELD WIRING TO ANCILLARY CABINET MOUNTED DEVICES (ITEM 643.83)	1
FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 140 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1

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

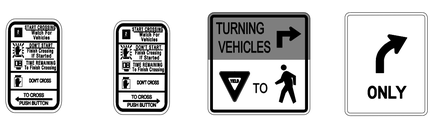
EXISTING MAST ARM MOUNTED SIGNS



R3-6L
30" x 36"
1 - RETAINED

R3-5R (MOD)
30" x 36"
1 - REMOVED

PROPOSED MAST ARM AND POLE MOUNTED SIGNS

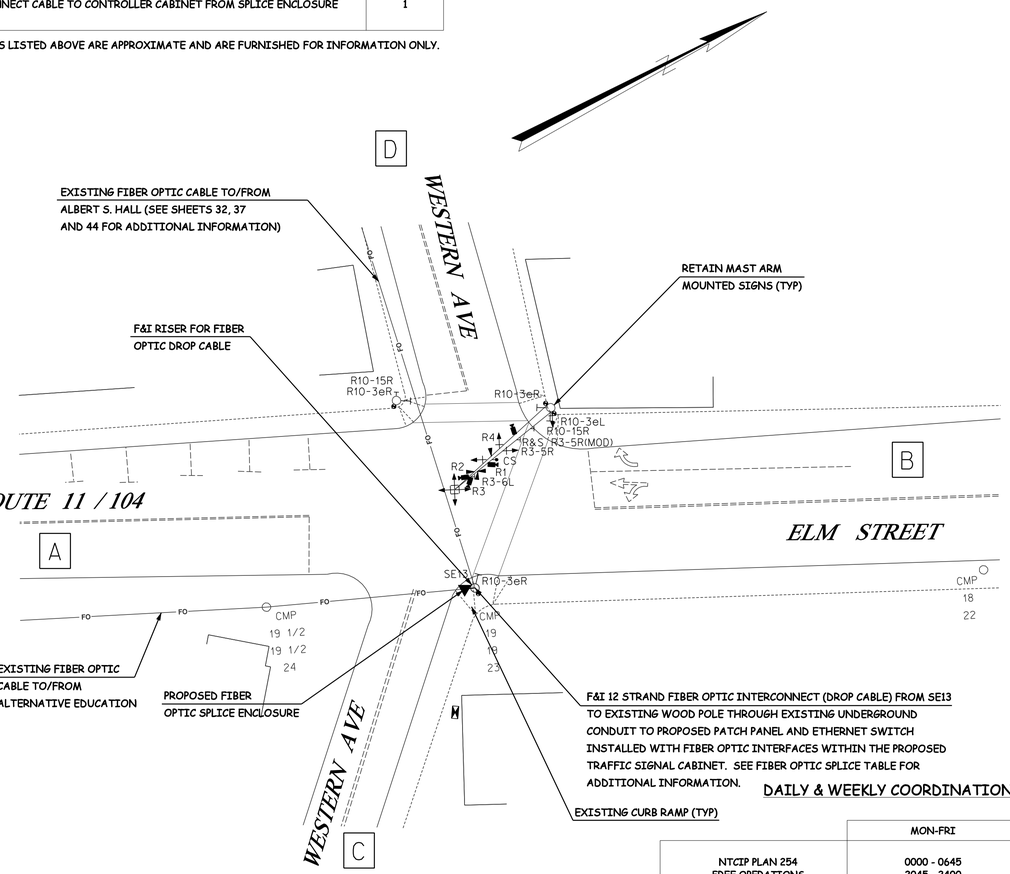


R10-3eL
9" x 15"
1 - PROPOSED

R10-3eR
9" x 15"
3 - PROPOSED

R10-15R
30" x 30"
2 - PROPOSED

R3-5R
30" x 36"
1 - PROPOSED



EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø6
R2	4	2	Ø2
R3	5	3	Ø8
R4	6	4	Ø4

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 4 = LOWEST)
3. 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 (3.5 SECONDS YELLOW AND 1.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE13	BB-C (12F) TO SE12	3	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	BB-C (12F) TO SE12	4	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	BB-C (12F) TO SE12	1-2, 5-12	THROUGH	BB-C (12F) TO HALL SCHOOL	1-2, 5-12	BB-C (12F) FIBER OPTIC BACKBONE
	BB-C (12F) TO HALL SCHOOL	3	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	BB-C (12F) TO HALL SCHOOL	4	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
PPP CONTROL CABINET	12F TO SE13	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE13	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE13	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE13	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE13	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
ROUTE 11/104 (ELM ST) AND WESTERN AVE
SIGNAL GROUP:
2
LOCATION:
13

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 50/100 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

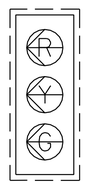
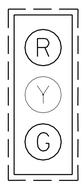
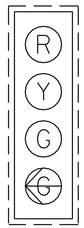
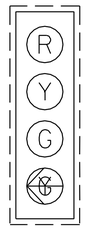
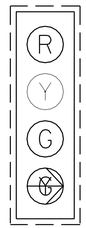
SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
ROUTE 11/104 (ELM ST) AND WESTERN AVE
TRAFFIC SIGNAL PLAN

SHEET NUMBER
17A
OF 54

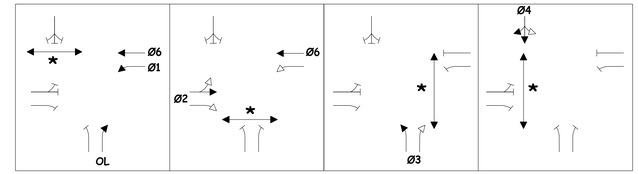
Filename: ...\planset\032_5206800SG13A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

PROPOSED					
C1	A2,B2,D2	D1	B1	A1,C2	P1-P10
			 (BIMODAL)	 (BIMODAL)	
12" LENS	12" LENS	12" LENS	12" LENS	12" LENS	16" x 18" PEDESTRIAN SIGNAL
WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES					

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RESET L.E.D. MODULES -
(SEE LED LENSE SCHEDULE)

PHASING SEQUENCE

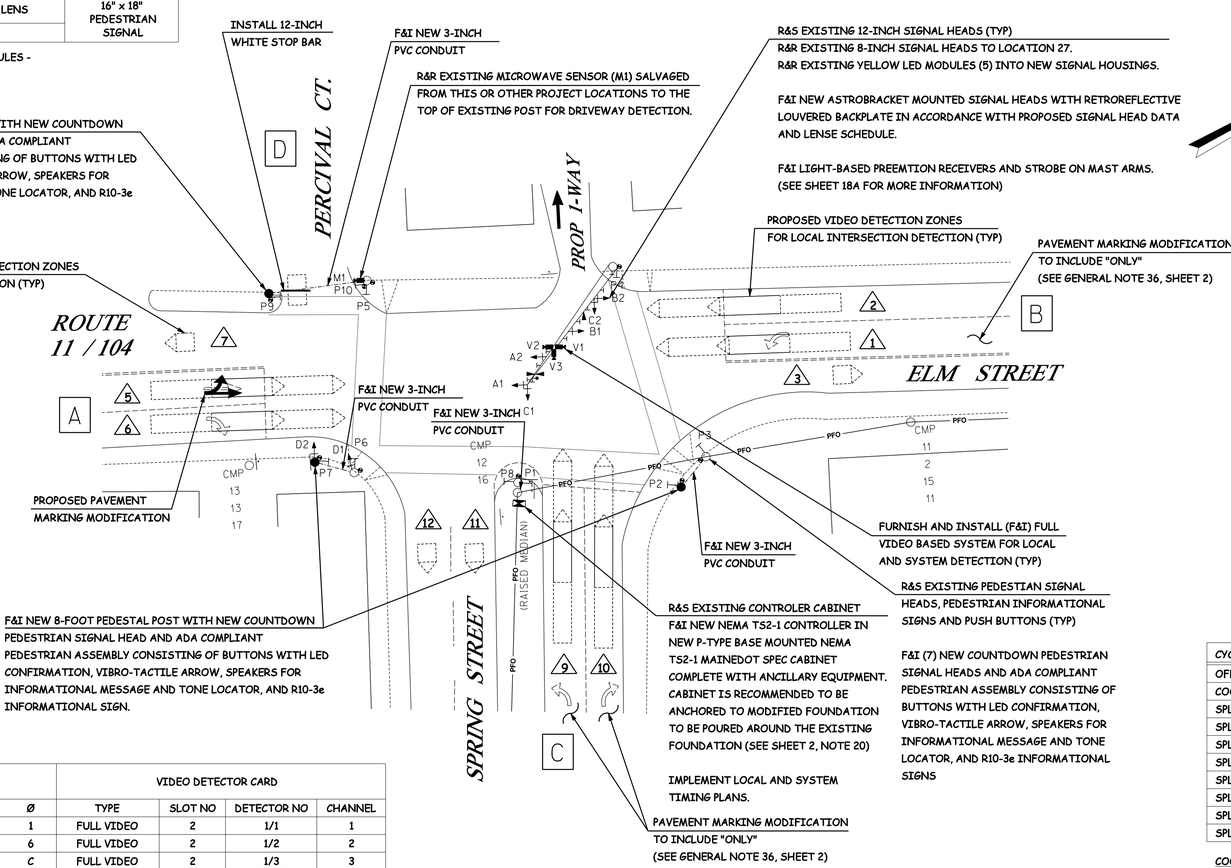


NOTE: Ø3 LAGS
★ = NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN

L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA	BIL	BIR
A1	1	*	1									1
A2	1	*	1									
B1	1	1	1								1	
B2	1	*	1									
C1				1	1	1						
C2	1	*	1									1
D1	1	1	1			1						
D2	1	*	1									
TOTAL	7	2	7	1	1	2	0	0	0	0	1	2

NOTES: * = EXISTING L.E.D. LENSES TO BE RESET
R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
BIL = BIMODAL YELLOW/GREEN LEFT ARROW
BIR = BIMODAL YELLOW/GREEN RIGHT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW



SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL	5	5	5	4		5		
PASSAGE TIME	2	2	2	1		2		
MAXIMUM 1	10	30	30	7		30		
MAXIMUM 2	20	70	30	10		90		
YELLOW	3.5	3.5	3.5	3.5		3.5		
ALL RED	3.5	3.5	3.5	3.5		3.5		
PEDESTRIAN WALK		7	7	7		7		
PEDESTRIAN CLEARANCE		15	13	11		15		
RECALL	O	S	O	O		S		
DETECTOR OPERATION	PR	PR	PR	PR		PR		
PREEMPTION PRIORITY	1	2	3			1		
FLASH ~	Y	Y	R	R		Y		
DUAL ENTRY	OFF	ON	OFF	OFF		ON		

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED
~ PED. SIGNALS SHALL BE DARK DURING FLASHING OPERATIONS.

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	100	100	110	120	150	150	
OFFSET (END GRN)	10	16	40	38	105	105	
COORDINATED Ø	2	2	2	2	2	6	
SPLIT TIME Ø1	17	14	17	17	27	27	
SPLIT TIME Ø2	30	33	40	50	70	70	
SPLIT TIME Ø3	27	27	27	27	27	27	
SPLIT TIME Ø4	26	26	26	26	26	26	
SPLIT TIME Ø5	0	0	0	0	0	0	FLOATING FORCE-OFF
SPLIT TIME Ø6	47	47	57	67	97	97	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	53	53	53	53	53	53	

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 18A 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.

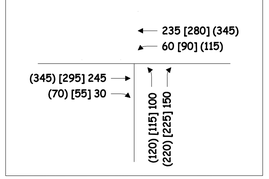
DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD			
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO	DETECTOR NO	CHANNEL
CAMERA V1	1	ELM STREET	WESTBOUND	LEFT	1	FULL VIDEO	2	1/1	1
	2	ELM STREET	WESTBOUND	THRU-RIGHT	6	FULL VIDEO	2	1/2	2
	3	ELM STREET	EASTBOUND	THRU (SYSTEM)	C	FULL VIDEO	2	1/3	3
	(4)	SPARE						1/4	4
CAMERA V2	5	ELM STREET	EASTBOUND	LEFT-THRU	2	FULL VIDEO	4	2/1	1
	6	ELM STREET	EASTBOUND	RIGHT	2	FULL VIDEO	4	2/2	2
	7	ELM STREET	WESTBOUND	THRU (SYSTEM)	C	FULL VIDEO	4	2/3	3
	(8)	SPARE						2/4	4
CAMERA V3	9	SPRING STREET	NORTHBOUND	LEFT	3	FULL VIDEO	6	3/1	1
	10	SPRING STREET	NORTHBOUND	RIGHT	3	FULL VIDEO	6	3/2	2
	11	SPRING STREET	SOUTHBOUND	MEDIAN SIDE (SYSTEM)	C	FULL VIDEO	6	3/3	3
	12	SPRING STREET	SOUTHBOUND	CURB SIDE (SYSTEM)	C	FULL VIDEO	6	3/4	4
MICRO-WAVE	13	PERCIVAL COURT	SOUTHBOUND	LEFT-THRU-RIGHT	4	MICROWAVE			
	(14)								
	(15)								
	(16)								

DETECTOR NOTES:
C = COUNTING LOOP
ALL DETECTION SHOULD BE INITIALLY SET TO NONLOCKING OPERATIONS.

INTERSECTION:
ROUTE 11/104 (ELM ST) AND SPRING STREET
SIGNAL GROUP:
2
LOCATION:
14

SYSTEM DESIGN VOLUMES AM [MID] (PM)



PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
PIN 17288.00

	BY	DATE
PROJ. MANAGER	J. MANSIR	
DESIGN-DETAILED	C. BIGBAY	J. ROBERT 7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR 8/13/10
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1	Address 98/ Comments	9/07/10
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
ROUTE 11/104 (ELM ST) AND SPRING STREET
TRAFFIC SIGNAL PLAN

SHEET NUMBER
18
OF 54

Filename: ...\ts\plonset\033_5206800SG14.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON POLES OR MAST ARMS WITH ASTRO-BRACKETS	4
FURNISH AND INSTALL ONE-WAY, 4-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON POLES OR MAST ARMS WITH ASTRO-BRACKETS	4
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON PROPOSED SIGNAL HEADS	8
REMOVE AND RESET EXISTING YELLOW LED MODULES INTO NEW SIGNAL HEADS	5
FURNISH AND INSTALL NEW 12-INCH LED RED, YELLOW(2), AND GREEN LENSES INTO NEW SIGNAL HEADS, INCLUDING 3-BIMODAL YELLOW/GREEN ARROWS	23
FURNISH AND INSTALL ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	9
FURNISH AND INSTALL ONE-WAY, 16 X 18-INCH LED POST MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	10
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1

EQUIPMENT AND WORK ITEMS 643.71 (CONT.)	QUANTITY
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	3
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM AND POST MOUNTED SIGNS	12
RECABLE INTERSECTION INCLUDING CABLE FOR RESET MICROWAVE DETECTOR	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	75 LF
FURNISH AND INSTALL 18-INCH FOUNDATION (ITEM 626.31)	3
FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
FURNISH AND INSTALL 12 INCH SOLID WHITE PAVEMENT MARKING LINE (ITEM 627.18)	12 LF
INSTALL WHITE "ONLY" AND COMBINATION ARROW PAVEMENT MARKINGS (ITEM 627.75)	95 LF
FURNISH AND INSTALL 2-CHANNEL / 4-OUTPUT CARD RACK MOUNT DATA AND PRESENCE VIDEO DETECTOR CARDS (ITEM 643.83)	2
FURNISH AND INSTALL CARD RACK MOUNT VIDEO COMMUNICATIONS BOARD (ITEM 643.83)	1
FURNISH AND INSTALL CARD RACK VIDEO POWER SUPPLY (ITEM 643.83)	1

EQUIPMENT AND WORK (ITEM XXX.YYZ) (CONT.)	QUANTITY
FURNISH AND INSTALL VIDEO DETECTION CAMERA (ITEM 643.83)	3
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 150 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 700 LINEAR FEET OF 72-STRAND FIBER OPTIC INTERCONNECT CABLE TO LOCATION 19 (SEE SHEET 23A) FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL (8-FOOT) PEDESTAL POLE (ITEM 643.92)	3

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

EXISTING MAST ARM MOUNTED SIGNS

R3-5L 30" x 36" 1 - RETAINED

R3-5a 30" x 36" 1 - REMOVED

PROPOSED MAST ARM MOUNTED SIGNS

R3-5L 30" x 36" 1 - PROPOSED

R3-5R 30" x 36" 2 - PROPOSED

R3-6L 30" x 36" 1 - PROPOSED

R10-12 24" x 30" 2 - PROPOSED

R10-15R 30" x 30" 1 - PROPOSED

R3-6R 30" x 36" 1 - PROPOSED

PROPOSED POST AND POLE MOUNTED SIGNS

R10-15L 30" x 30" 1 - PROPOSED

R10-6 24" x 36" 1 - PROPOSED

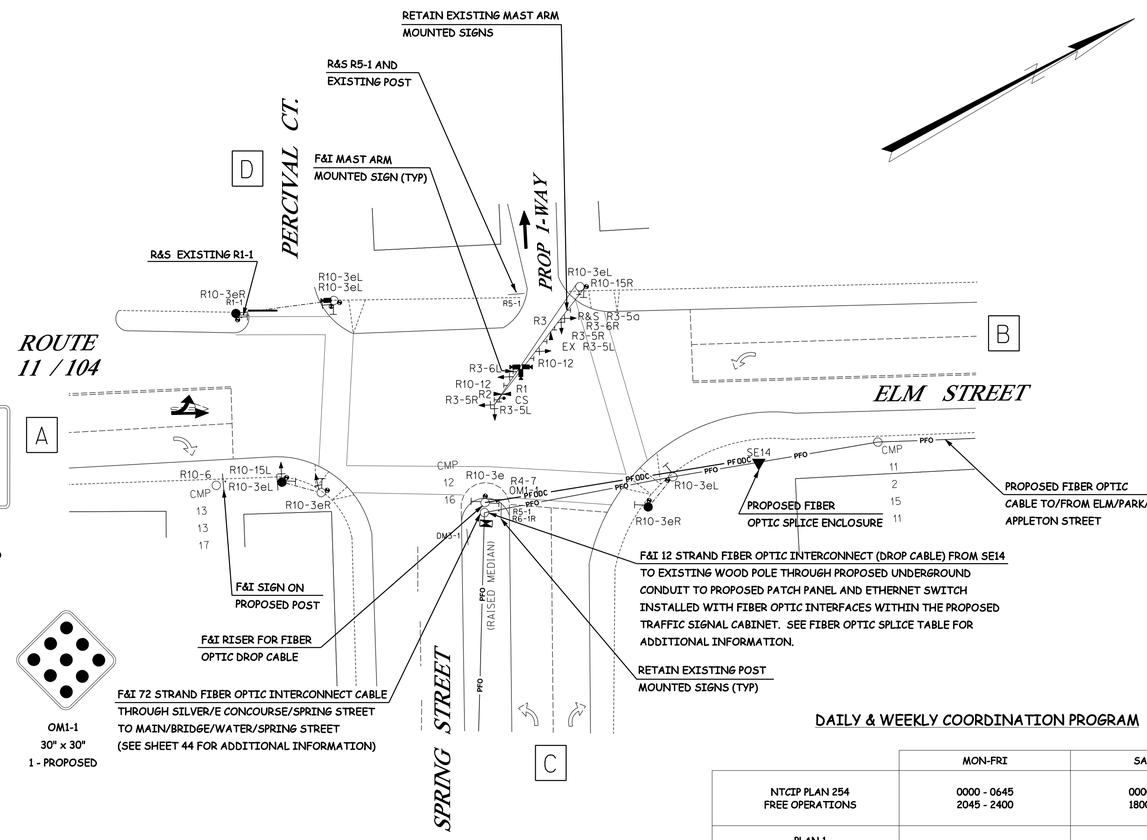
R10-3eL 9" x 15" 5 - PROPOSED

R10-3eR 9" x 15" 3 - PROPOSED

R10-3e 9" x 15" 1 - PROPOSED

R4-7 24" x 30" 1 - PROPOSED

OM1-1 30" x 30" 1 - PROPOSED



EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø6
R2	4	2	Ø2
R3	5	3	Ø8
R4	6	NOT USED	

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 3 = LOWEST)
3. 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 (3.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE14	72F TO SE19	1	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	72F TO SE19	2	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	72F TO SE15	3-72	THROUGH	72F TO SE19	3-72	72F FIBER BACKBONE
	72F TO SE15	1	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	72F TO SE15	2	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
PPP_CONTROL CABINET	12F TO SE14	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE14	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE14	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE14	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE14	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
ROUTE 11/104 (ELM ST) AND SPRING STREET
SIGNAL GROUP:
1
LOCATION:
14

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 50/100 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

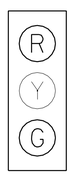
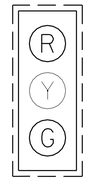
WATERVILLE-WINSLOW
ROUTE 11/104 (ELM ST) AND SPRING STREET

TRAFFIC SIGNAL PLAN

SHEET NUMBER
18A
OF 54

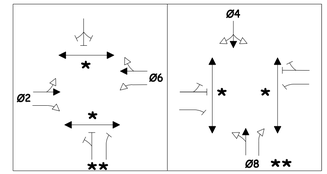
Filename: ...\planset\034_5206800SG14A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

PROPOSED		
A1,B1,C1,D1	A2,B2,C2,D2	P1-P8
		
12" LENS	12" LENS	16" x 18" PEDESTRIAN SIGNAL
COMBINED ASSEMBLY	WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES	

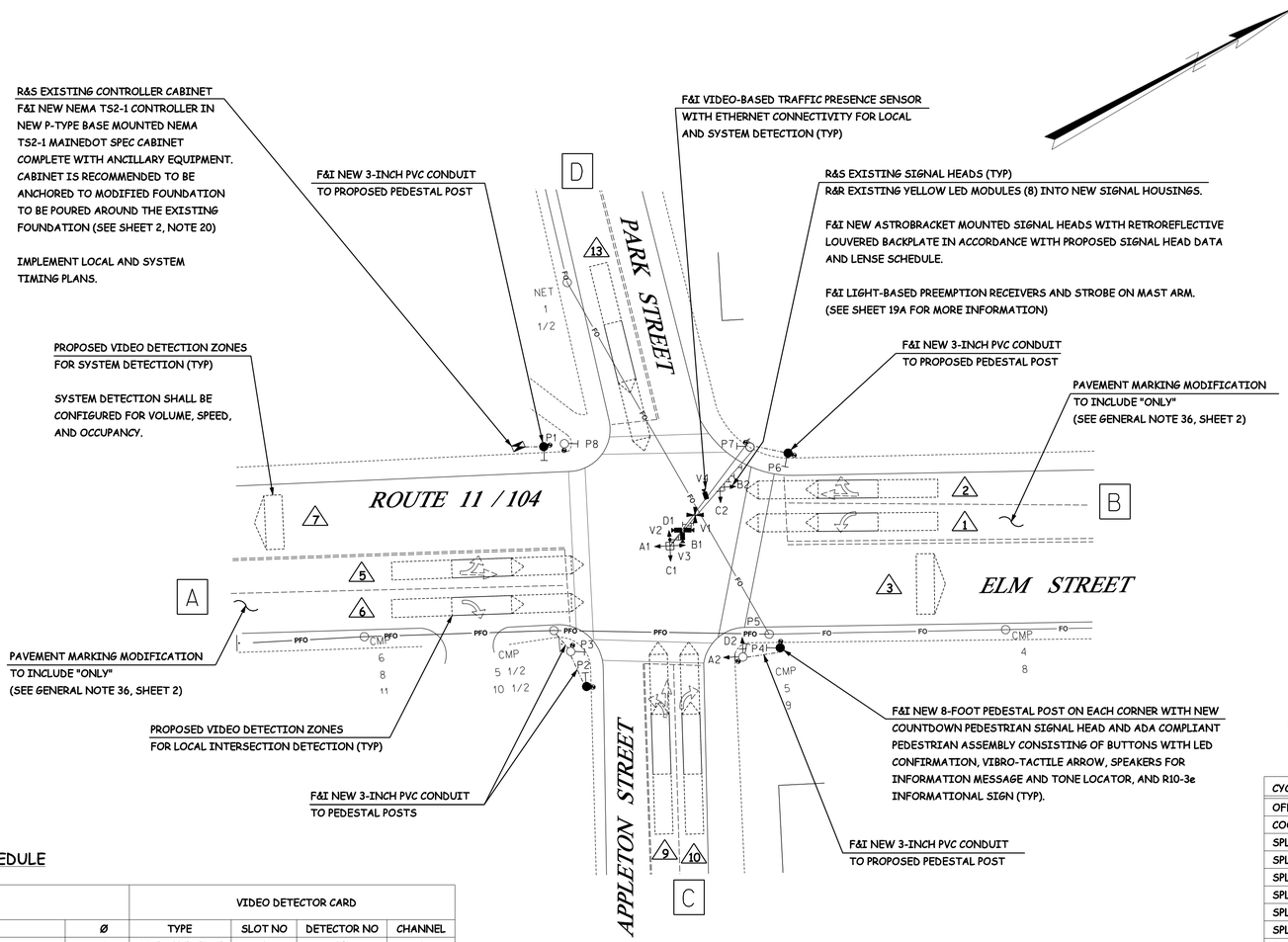
- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RESET L.E.D. MODULES -
(SEE LED LENSE SCHEDULE)

PHASING SEQUENCE



NOTE: Ø1 LEADS
* = NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN

*** * AT THE TIME OF THIS INTERSECTION DESIGN, THE APPLETON STREET APPROACH LANES WERE TEMPORARILY CLOSED TO TRAFFIC. THE CITY HAS CONSIDERED MAKING THIS A PERMANENT CLOSURE. IF AT THE TIME OF CONSTRUCTION THE APPLETON STREET MOVEMENT HAS BEEN PERMANENTLY ELIMINATED, AS DETERMINED BY THE CITY, THE CONTRACTOR SHALL REMOVE SIGNAL HEADS C1 AND C2, CAMERA V3, PREEMPTION RECEIVER R3, SIGNS R3-6L AND R3-5R, AND CABINET LOAD SWITCHES FROM THE INSTALLATION AND SALVAGE EQUIPMENT TO THE CITY OF WATERVILLE.**



L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1	1	*	1							
A2	1	*	1							
B1	1	*	1							
B2	1	*	1							
C1	1	*	1							
C2	1	*	1							
D1	1	*	1							
D2	1	*	1							
TOTAL	8	0	8	0	0	0	0	0	0	0

NOTES: * = EXISTING L.E.D. LENSES TO REMAIN
R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL		10		5		10		5
PASSAGE TIME		2		2		2		2
MAXIMUM 1		40		20		40		20
MAXIMUM 2		90		30		90		30
YELLOW		3.5		3.5		3.5		3.5
ALL RED		1.5		1.5		1.5		1.5
PEDESTRIAN WALK		7		7		7		7
PEDESTRIAN CLEARANCE		10		12		10		12
RECALL		S		O		S		O
DETECTOR OPERATION		PR		PR		PR		PR
PREEMPTION PRIORITY		2		4		1		3
FLASH ~		Y		R		Y		R
DUAL ENTRY		ON		ON		ON		ON

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED
~ PED. SIGNALS SHALL BE DARK DURING FLASHING OPERATIONS.

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	50	50	55	60	150	150	
OFFSET (END GRN)	37	40	48	47	124	124	
COORDINATED Ø	2	2	2	2	2	6	
SPLIT TIME Ø1	0	0	0	0	0	0	FLOATING FORCE-OFF
SPLIT TIME Ø2	25	25	30	35	120	120	
SPLIT TIME Ø3	0	0	0	0	0	0	
SPLIT TIME Ø4	25	25	25	25	30	30	
SPLIT TIME Ø5	0	0	0	0	0	0	
SPLIT TIME Ø6	25	25	30	35	120	120	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	25	25	25	25	30	30	

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 19A FOR DAY PLAN SETTINGS).
3. TRAFFIC SIGNAL CONTROLLER SHALL BE SET FOR STOP TIME IN WALK TO ON.

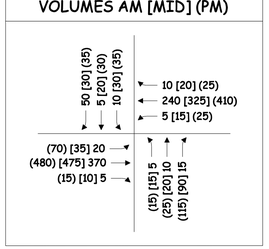
DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD			
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO	DETECTOR NO	CHANNEL
CAMERA V1	1	ELM STREET	WESTBOUND	LEFT	6	VIDEO PRESENCE	2	1/1	1
	2	ELM STREET	WESTBOUND	THRU-RIGHT	6	VIDEO PRESENCE	2	1/2	2
	3	ELM STREET	EASTBOUND	THRU (SYSTEM)	C	VIDEO PRESENCE	2	1/3	3
	(4)	SPARE						1/4	4
CAMERA V2	5	ELM STREET	EASTBOUND	LEFT-THRU	2	VIDEO PRESENCE	4	2/1	1
	6	ELM STREET	EASTBOUND	RIGHT	2	VIDEO PRESENCE	4	2/2	2
	7	ELM STREET	WESTBOUND	THRU (SYSTEM)	C	VIDEO PRESENCE	4	2/3	3
	(8)	SPARE						2/4	4
CAMERA V3	9	APPLETON STREET	NORTHBOUND	LEFT-THRU	8	VIDEO PRESENCE	6	3/1	1
	10	APPLETON STREET	NORTHBOUND	RIGHT	8D	VIDEO PRESENCE	6	3/2	2
	(11)	SPARE						3/3	3
	(12)	SPARE						3/4	4
CAMERA V4	13	PARK STREET	SOUTHBOUND	LEFT-THRU-RIGHT	4	VIDEO PRESENCE	8	4/1	1
	(14)	SPARE						4/2	2
	(15)	SPARE						4/3	3
	(16)	SPARE						4/4	4

DETECTOR NOTES:
C = COUNTING LOOP
ALL DETECTION SHOULD BE INITIALLY SET TO NONLOCKING OPERATIONS.
DETECTORS DESIGNATED FOR DELAY (8D) SHALL INCLUDE A 20 SECOND DELAY.

INTERSECTION:
ROUTE 11/104 (ELM ST) AND PARK STREET
SIGNAL GROUP:
2
LOCATION:
15

SYSTEM DESIGN VOLUMES AM [MID] (PM)



PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BIGGAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
ROUTE 11/104 (ELM ST) AND PARK STREET

TRAFFIC SIGNAL PLAN

SHEET NUMBER
19
OF 54

Filename: ...\ts\planset\035_5206800SG15.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON POLES OR MAST ARMS WITH ASTRO-BRACKETS.	8
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON PROPOSED SIGNAL HEADS	4
REMOVE AND RESET EXISTING YELLOW LED MODULES INTO NEW SIGNAL HEADS	8
FURNISH AND INSTALL NEW 12-INCH LED RED AND GREEN LENSES INTO NEW SIGNAL HEADS	16
FURNISH AND INSTALL ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	8
FURNISH AND INSTALL ONE-WAY, 16 X 18-INCH LED POST MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	8
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	4
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM AND POST MOUNTED SIGNS	6
RECABLE INTERSECTION	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	70 LF
FURNISH AND INSTALL 18-INCH FOUNDATION (ITEM 626.31)	4
FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
INSTALL WHITE "ONLY" PAVEMENT MARKING (ITEM 627.75)	44 SF
FURNISH AND INSTALL VIDEO BASED VEHICLE DETECTION SYSTEM, REQUIRING 4-DETECTION UNITS PLUS FIELD WIRING TO ANCILLARY CABINET MOUNTED DEVICES (ITEM 643.83)	1
FURNISH AND INSTALL (8-FOOT) PEDESTAL POLE (ITEM 643.92)	4

EQUIPMENT AND WORK (ITEM 643.90)	QUANTITY
FURNISH AND INSTALL APPROXIMATELY 800 LINEAR FEET OF 72-STRAND FIBER OPTIC INTERCONNECT CABLE TO LOCATION 14 (SEE SHEET 18A)	1
FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 220 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1

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

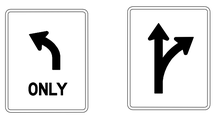
EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø6
R2	4	2	Ø2
R3	5	3	Ø8
R4	6	4	Ø4

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 4 = LOWEST)
3. 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 (3.5 SECONDS YELLOW AND 1.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

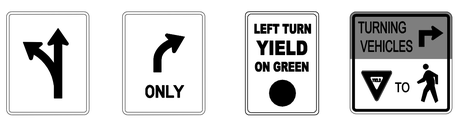
EXISTING MAST ARM MOUNTED SIGNS



R3-5L
30" x 36"
1 - RETAINED

R3-6R
30" x 36"
1 - RETAINED

PROPOSED MAST ARM MOUNTED SIGNS



R3-6L
30" x 36"
1 - PROPOSED

R3-5R
30" x 36"
1 - PROPOSED

R10-12
30" x 36"
2 - PROPOSED

R10-15R
30" x 30"
1- PROPOSED

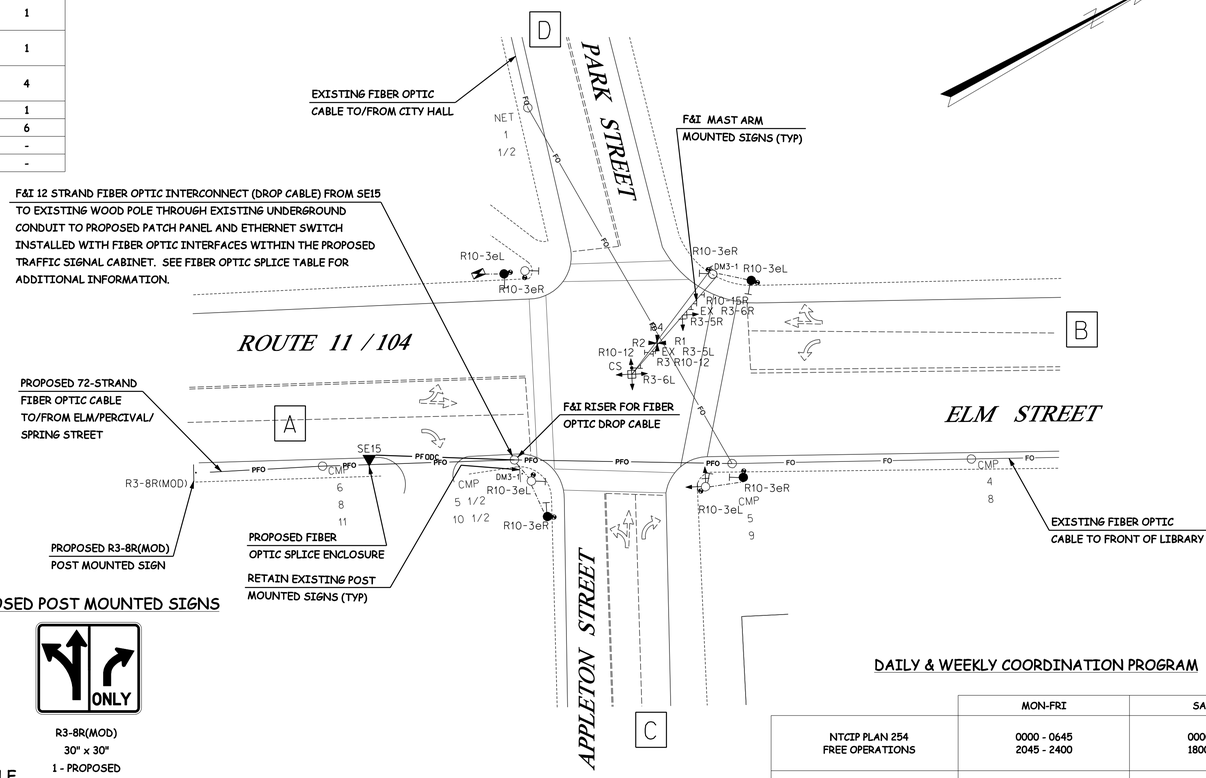
PROPOSED POLE MOUNTED SIGNS

R10-3eL
9" x 15"
4 - PROPOSED

R10-3eR
9" x 15"
4 - PROPOSED

PROPOSED POST MOUNTED SIGNS

R3-8R(MOD)
30" x 30"
1 - PROPOSED



FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE15	72F TO SE14	1	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	72F TO SE14	2	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	72F TO SE14	3-72	UNTERMINATED	-	-	END OF CABLE
	BB-D (12F) TO CITY HALL	3-12	THROUGH	BB-D (12F) TO LIBRARY	3-12	BB-D (12F) FIBER OPTIC BACKBONE
	BB-D (12F) TO CITY HALL	1	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	BB-D (12F) TO CITY HALL	2	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
PPP CONTROL CABINET	12F TO SE15	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE15	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE15	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE15	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE15	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
ROUTE 11/104 (ELM ST) AND PARK STREET
SIGNAL GROUP:
2
LOCATION:
15

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 50/100 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN
17288.00

	BY	DATE
PROJ. MANAGER	J. MANSIR	
DESIGN-DETAILED	C. BOBAY	7/16/10
CHECKED-REVIEWED	M. GRAHAM	8/13/10
DESIGN2-DETAILED2		
DESIGN3-DETAILED3	Address 98/ Comments	9/07/10
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

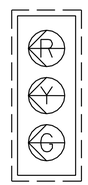
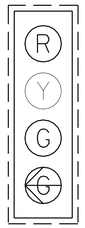
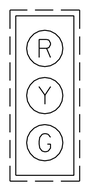
WATERVILLE-WINSLOW
ROUTE 11/104 (ELM ST) AND PARK STREET

TRAFFIC SIGNAL PLAN

SHEET NUMBER
19A
OF 54

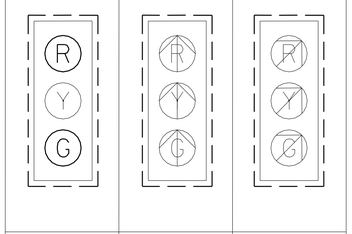
Filename: ...\planset\036_5206800SG15A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

PROPOSED			
A1,B1	B2	A2,A3,D1,D2,B3	P7
			
12" LENS	12" LENS	12" LENS	16" x 18" PEDESTRIAN SIGNAL
WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES			

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RESET L.E.D. MODULES -
(SEE LED LENSE SCHEDULE)

SIGNAL HEAD DATA

EXISTING		
E1,E2	C1,C2	C3
		
12" LENS	12" LENS	12" LENS
WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES		

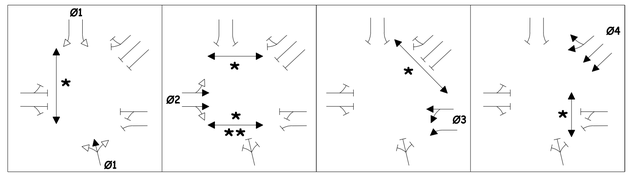
L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1				1	1	1				
A2	1	*	1							
A3	1	*	1							
B1				1	1	1				
B2	1	*	1				1			
B3	1	1	1							
C1				*	*		*			
C2				*	*		*			
C3							*	*	*	
D1	1	1	1							
D2	1	1	1							
E1	1	*	1							
E2	1	*	1							
TOTAL	8	3	8	2	2	2	1	0	0	0

NOTES: * = EXISTING L.E.D. LENSES TO BE RESET

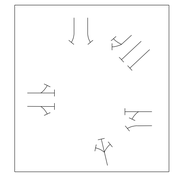
R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

PHASING SEQUENCE



NOTE: Ø1 LAGS
★ = NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN
★★ = BLANK OUT ON W/ PEDESTRIAN ACTUATION

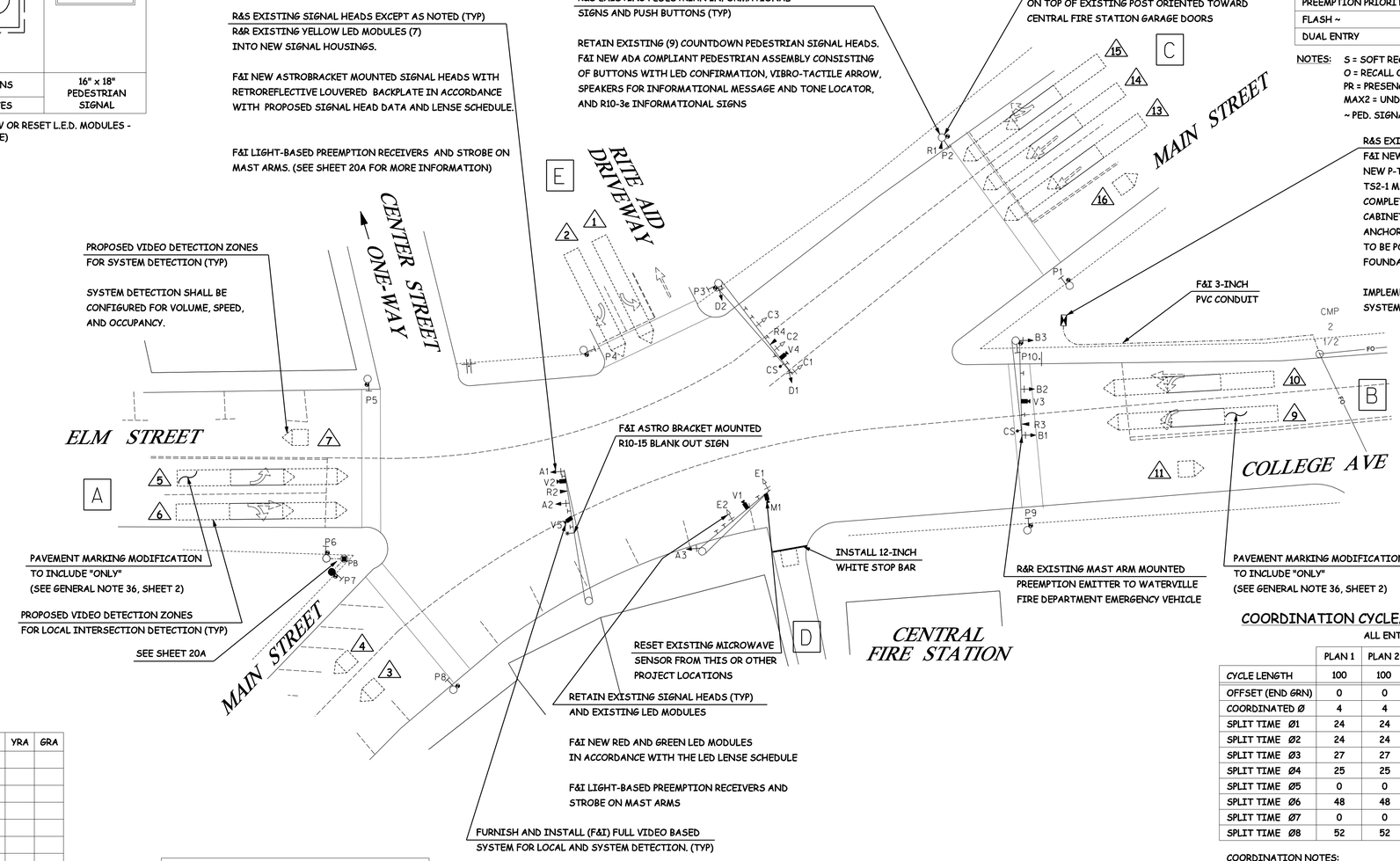
HARDWIRE FIRE PREEMPTION PROGRAM



SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL	5	7	7	7				
PASSAGE TIME	2	2	2	2				
MAXIMUM 1	18	30	20	27				
MAXIMUM 2	12	35	35	40				
YELLOW	3.5	3.5	3.5	3.5				
ALL RED	3.5	3.5	4.5	5.5				
PEDESTRIAN WALK	4	4	4	4				
PEDESTRIAN CLEARANCE	13	13	14	12				
RECALL	O	O	O	S				
DETECTOR OPERATION	PR	PR	PR	PR				
PREEMPTION PRIORITY		2	3	4				
FLASH ~	R	R	R	R				
DUAL ENTRY	OFF	OFF	OFF	OFF				

NOTES:
S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
~ PED. SIGNALS SHALL BE DARK DURING FLASHING OPERATIONS.
Y = YELLOW
R = RED



COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

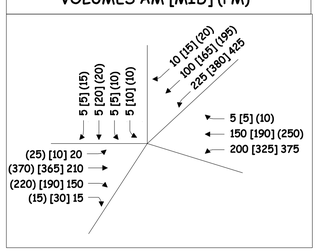
ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	100	100	110	120	150	150	
OFFSET (END GRN)	0	0	0	0	138	0	
COORDINATED Ø	4	4	4	4	2	3	
SPLIT TIME Ø1	24	24	24	24	24	24	
SPLIT TIME Ø2	24	24	34	39	70	36	
SPLIT TIME Ø3	27	27	27	28	29	29	
SPLIT TIME Ø4	25	25	25	29	27	61	
SPLIT TIME Ø5	0	0	0	0	0	0	
SPLIT TIME Ø6	48	48	58	63	94	60	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	52	52	52	57	56	90	

FLOATING FORCE-OFF

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY
(SEE SHEET 20B 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.

SYSTEM DESIGN VOLUMES AM [MID] (PM)



INTERSECTION:
ROUTE 11/104 (ELM ST) AND
ROUTE 104 (MAIN ST) AND
ROUTE 100/US 201 (COLLEGE AVE)
SIGNAL GROUP:
2
LOCATION:
16

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN
17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
ROUTE 104 (MAIN ST) AND ELM ST / COLLEGE AVE

TRAFFIC SIGNAL PLAN

SHEET NUMBER
20
OF 54

Filename: ...\ts\planset\037_5206800SG16.dgn Division: Username: J ROBERT Date:9/8/2010

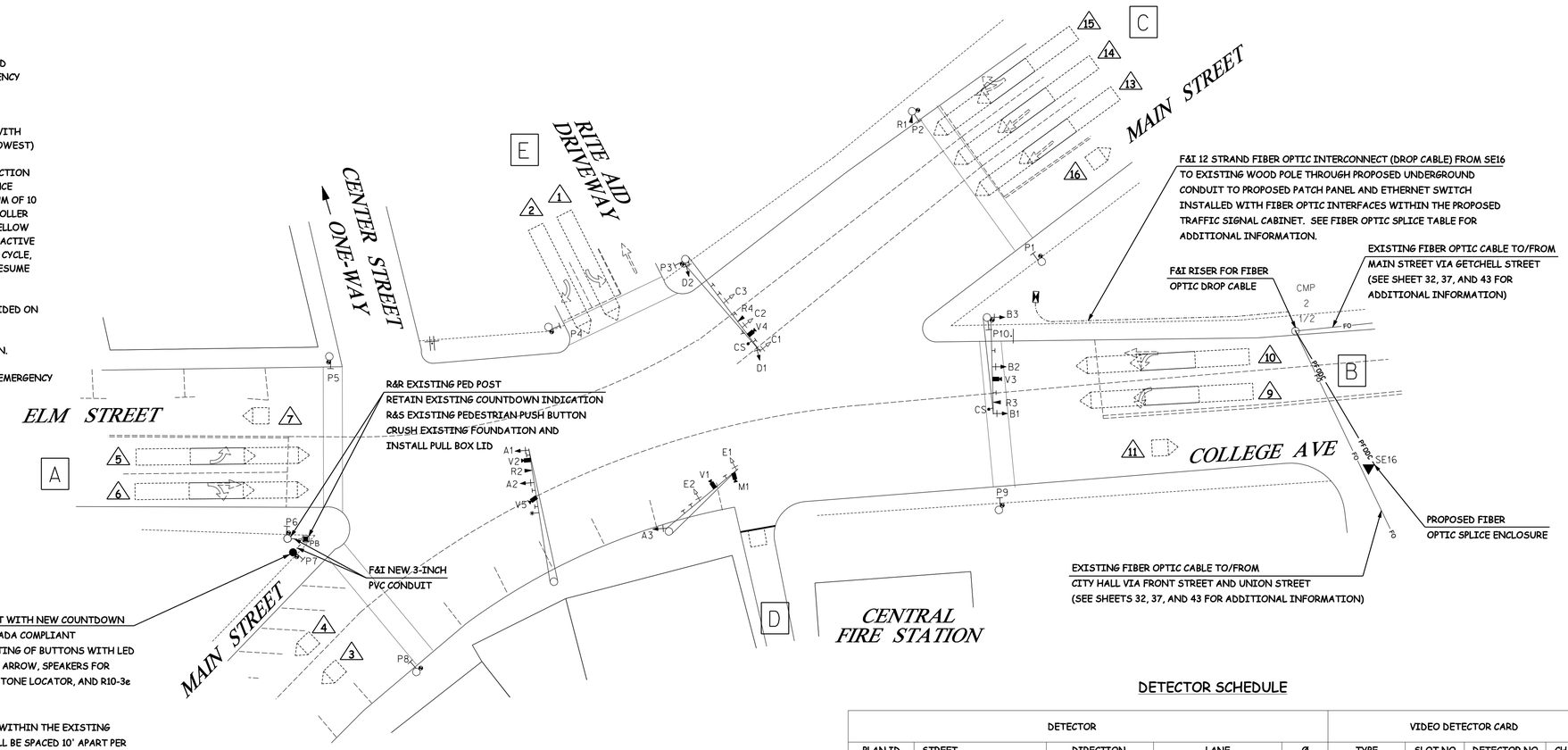
EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1/HARDWARE★	3	1★	NONE
R2	4	2	Ø2
R3	5	NOT USED	Ø3
R4	6	NOT USED	Ø4

★ EXISTING HARDWARE PREEMPTION (TO BE RETAINED) CALLED WITH PUSH BUTTON ACTIVATION FROM CENTRAL FIRESTATION.

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 5 = LOWEST)
3. 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 (3.5 SECONDS YELLOW AND 5.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.
7. HARDWIRE PREEMPTION SHALL OVERRIDE OPTICAL DETECTION.



FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE16	BB-A (48F) TO SE6/P	25	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE6/P	26	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE6/P	1-24, 27-48	THROUGH	BB-A (48F) TO SE18	1-24, 27-48	BBA (48F) FIBER OPTIC BACKBONE
	BB-A (48F) TO SE18	25	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE18	26	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
PPP, CONTROL CABINET	12F TO SE16	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE16	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE16	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE16	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE16	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
ROUTE 11/104 (ELM ST) AND
ROUTE 104 (MAIN ST) AND
ROUTE 100/US 201 (COLLEGE AVE)
SIGNAL GROUP:
2
LOCATION:
16

DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD			
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO	DETECTOR NO	CHANNEL
CAMERA V1	1	RITE AID DRIVEWAY	EASTBOUND	LEFT	1	FULL VIDEO	2	1/1	1
	2	RITE AID DRIVEWAY	EASTBOUND	RIGHT	1	FULL VIDEO	2	1/2	2
CAMERA V5	3	MAIN STREET	SOUTHBOUND	LEFT (SYSTEM)	C	FULL VIDEO	2	1/3	3
	4	MAIN STREET	SOUTHBOUND	RIGHT (SYSTEM)	C	FULL VIDEO	2	1/4	4
CAMERA V2	5	ELM STREET	NORTHEASTBOUND	LEFT	2	FULL VIDEO	4	2/1	1
	6	ELM STREET	NORTHEASTBOUND	THRU-RIGHT	2	FULL VIDEO	4	2/2	2
	7	ELM STREET	SOUTHWESTBOUND	THRU (SYSTEM)	C	FULL VIDEO	4	2/3	3
MICROWAVE	8	ALLEYWAY	WESTBOUND	LEFT-THRU-RIGHT	1	MICROWAVE			
CAMERA V3	9	COLLEGE AVENUE	SOUTHWESTBOUND	LEFT	3	FULL VIDEO	6	3/1	1
	10	COLLEGE AVENUE	SOUTHWESTBOUND	LEFT-THRU	3	FULL VIDEO	6	3/2	2
	11	COLLEGE AVENUE	NORTHEASTBOUND	THRU (SYSTEM)	C	FULL VIDEO	6	3/3	3
	(12)	SPARE						3/4	4
CAMERA V4	13	MAIN STREET	SOUTHBOUND	THRU (MEDIAN SIDE)	4	FULL VIDEO	8	4/1	1
	14	MAIN STREET	SOUTHBOUND	THRU (CENTER LANE)	4	FULL VIDEO	8	4/2	2
	15	MAIN STREET	SOUTHBOUND	RIGHT	4	FULL VIDEO	8	4/3	3
	16	MAIN STREET	NORTHBOUND	THRU (SYSTEM)	C	FULL VIDEO	8	4/4	4

DETECTOR NOTES:
C = COUNTING LOOP
ALL DETECTION SHOULD BE INITIALLY SET TO NONLOCKING OPERATIONS.
M1 SHALL BE USED FOR ALLEYWAY DETECTION AND CALL Ø1

PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
ROUTE 104 (MAIN ST) AND ELM ST / COLLEGE AVE

TRAFFIC SIGNAL PLAN

SHEET NUMBER
20A
OF 54

Filename: ...\planset\038_5206800SG16A.dgn Division: Username: J ROBERT Date:9/7/2010

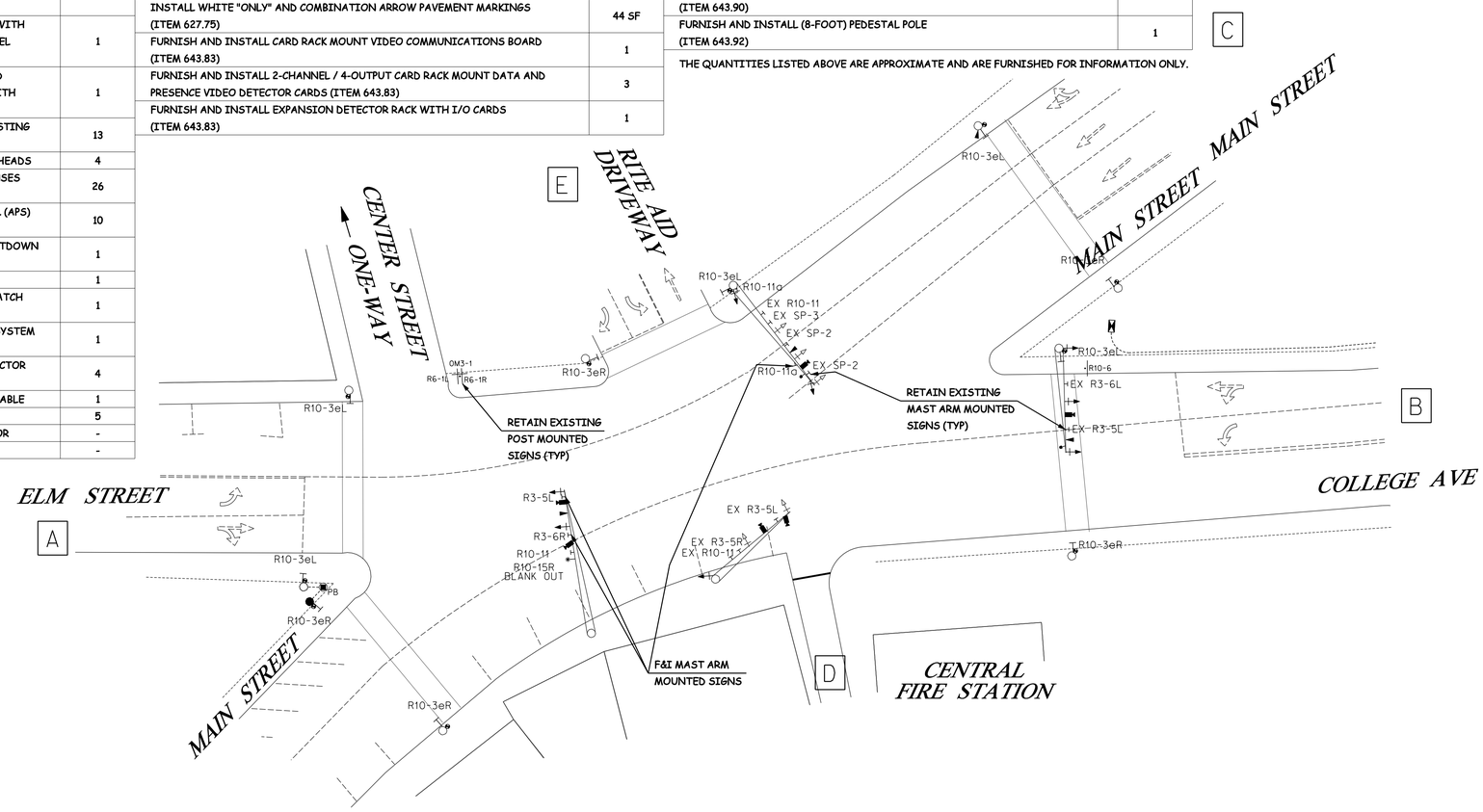
LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS	7
FURNISH AND INSTALL ONE-WAY, 4-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS	1
FURNISH AND INSTALL 30" x 36" R10-15R "RIGHT TURNING VEHICLES YIELD TO PEDESTRIANS IN THE CROSSWALK" BLANK OUT SIGN ON MAST ARM WITH ASTRO-BRACKET	1
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON EXISTING AND PROPOSED SIGNAL HEADS	13
REMOVE AND RESET EXISTING YELLOW LED MODULES INTO NEW SIGNAL HEADS	4
FURNISH AND INSTALL NEW 12-INCH LED RED, YELLOW(5), AND GREEN LENSES INTO NEW SIGNAL HEADS	26
FURNISH AND INSTALL ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	10
FURNISH AND INSTALL ONE-WAY, 16 X 18-INCH LED POST MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	1
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	4
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM MOUNTED SIGNS	5
CABLE TO NEW SIGNAL INSTALLATIONS AND RESET MICROWAVE DETECTOR	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL PRECAST CONCRETE JUNCTION BOX (ITEM 626.11)	1
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	200 LF
FURNISH AND INSTALL 18-INCH FOUNDATION (ITEM 626.31)	2
FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
FURNISH AND INSTALL 12 INCH SOLID WHITE PAVEMENT MARKING LINE (ITEM 627.18)	14 LF
INSTALL WHITE "ONLY" AND COMBINATION ARROW PAVEMENT MARKINGS (ITEM 627.75)	44 SF
FURNISH AND INSTALL CARD RACK MOUNT VIDEO COMMUNICATIONS BOARD (ITEM 643.83)	1
FURNISH AND INSTALL 2-CHANNEL / 4-OUTPUT CARD RACK MOUNT DATA AND PRESENCE VIDEO DETECTOR CARDS (ITEM 643.83)	3
FURNISH AND INSTALL EXPANSION DETECTOR RACK WITH I/O CARDS (ITEM 643.83)	1

EQUIPMENT AND WORK (ITEM XXX.YYZ)(CONT.)	QUANTITY
FURNISH AND INSTALL CARD RACK VIDEO POWER SUPPLY (ITEM 643.83)	1
FURNISH AND INSTALL VIDEO DETECTION CAMERA (ITEM 643.83)	5
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 320 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL (8-FOOT) PEDESTAL POLE (ITEM 643.92)	1

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



EXISTING MAST ARM MOUNTED SIGNS

R3-6L 30" x 36" 1 - RETAINED
R3-5L 30" x 36" 2 - RETAINED
SP-2 30" x 36" 2 - RETAINED

R-5R 30" x 36" 1 - RETAINED
R10-11 30" x 36" 2 - RETAINED
SP-3 30" x 36" 1 - RETAINED

PROPOSED MAST ARM AND POST MOUNTED SIGNS

R10-11a 30" x 36" 2 - PROPOSED
R3-6R 30" x 36" 1 - PROPOSED
R3-5L 30" x 36" 1 - PROPOSED
R10-3eL 9" x 15" 5 - PROPOSED
R10-3eR 9" x 15" 5 - PROPOSED
R10-11 30" x 36" 1 - PROPOSED

PROPOSED MAST ARM MOUNTED BLANK OUT SIGNS

R10-15R 30" x 30" 1 - PROPOSED "BLANK OUT"

NOTE:
CONTRACTOR MAY SUBMIT VARIATION ON BLANK OUT SIGN LEGEND AS LONG AS "YIELD TO PEDESTRIAN /PEDESTRIANS IN THE CROSSWALK" MESSAGE IS CONVEYED IN ACCORDANCE WITH MUTCD GUIDELINES WHEN CONCURRENT Ø2 PED IS ACTIVE.

INTERSECTION:
ROUTE 11/104 (ELM ST) AND
ROUTE 104 (MAIN ST) AND
ROUTE 100/US 201 (COLLEGE AVE)
SIGNAL GROUP:
2
LOCATION:
16

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 50/100 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

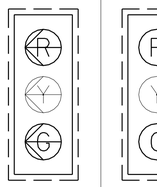
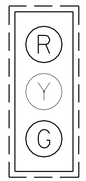
SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
ROUTE 104 (MAIN ST) AND ELM ST / COLLEGE AVE
TRAFFIC SIGNAL PLAN

SHEET NUMBER
20B
OF 54

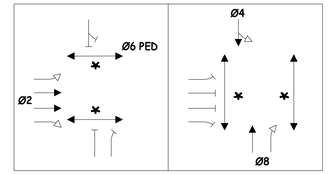
Filename: ...\planset\039_5206800SG16B.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

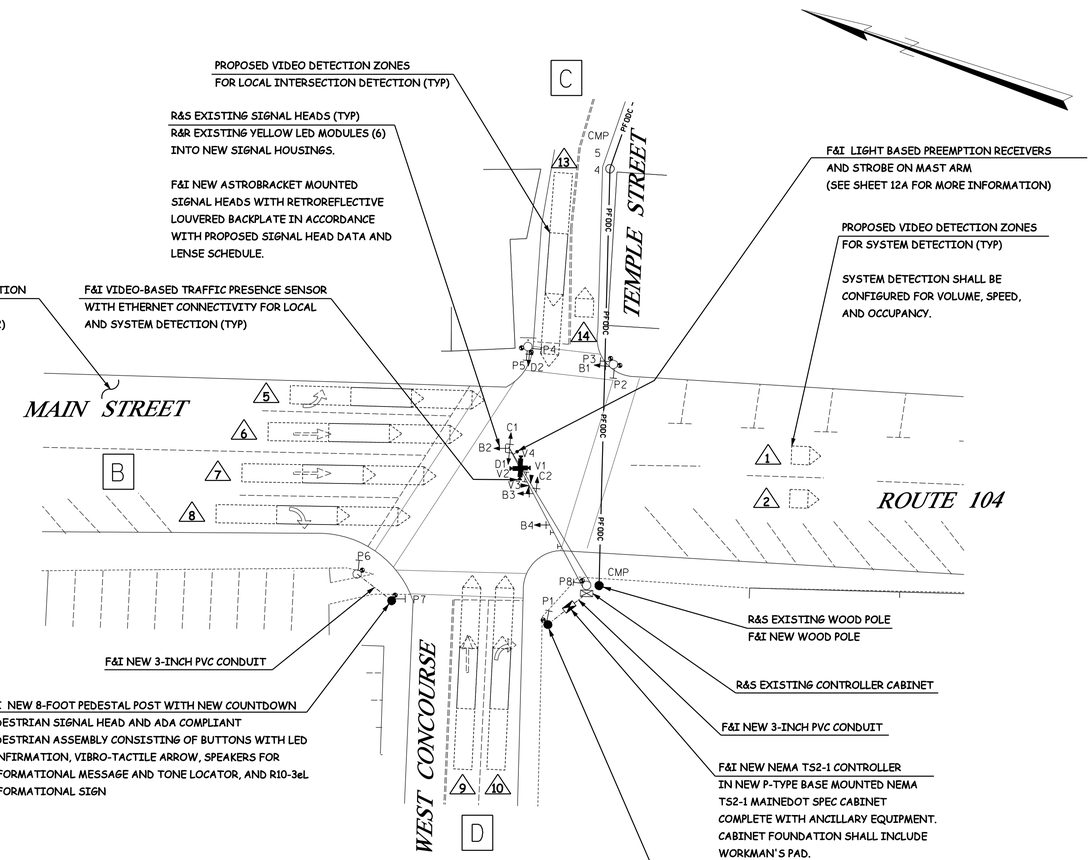
PROPOSED		
B1	B2,B3,B4,C1 C2,D1,D2	P1-P8
		
12" LENS	12" LENS	16" x 18" PEDESTRIAN SIGNAL
WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES		

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RESET L.E.D. MODULES - (SEE LED LENSE SCHEDULE)

PHASING SEQUENCE



★ = NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN



L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
B1				1	1	1				
B2	1	*	1							
B3	1	*	1							
B4	1	1	1							
C1	1	*	1							
C2	1	*	1							
D1	1	*	1							
D2	1	*	1							
TOTAL	7	1	7	1	1	1	0	0	0	0

NOTES: * = EXISTING L.E.D. LENSES TO BE RESET

R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL		5		5		5		5
PASSAGE TIME		2		2		2		2
MAXIMUM 1		30		30		30		30
MAXIMUM 2		45		30		45		30
YELLOW		3.5		3.5		3.5		3.5
ALL RED		1.5		2.5		1.5		2.5
PEDESTRIAN WALK		6		6		6		6
PEDESTRIAN CLEARANCE		10		17		10		17
RECALL		S		O		O		O
DETECTOR OPERATION		PR		PR		*		PR
PREEMPTION PRIORITY		1		3				2
FLASH ~		Y		R		D		R
DUAL ENTRY		OFF		ON		OFF		ON

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED
D = DARK
~ PED. SIGNALS SHALL BE DARK DURING FLASHING OPERATIONS.

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	50	50	55	60	75	75	
OFFSET (END GRN)	24	30	30	32	59	46	FLOATING FORCE-OFF
COORDINATED Ø	2	2	2	2	2	2	FLOATING FORCE-OFF
SPLIT TIME Ø1	0	0	0	0	0	0	FLOATING FORCE-OFF
SPLIT TIME Ø2	21	21	26	31	45	45	FLOATING FORCE-OFF
SPLIT TIME Ø3	0	0	0	0	0	0	FLOATING FORCE-OFF
SPLIT TIME Ø4	29	29	29	29	30	30	FLOATING FORCE-OFF
SPLIT TIME Ø5	0	0	0	0	0	0	FLOATING FORCE-OFF
SPLIT TIME Ø6	21	21	26	31	45	45	FLOATING FORCE-OFF
SPLIT TIME Ø7	0	0	0	0	0	0	FLOATING FORCE-OFF
SPLIT TIME Ø8	29	29	29	29	30	30	FLOATING FORCE-OFF

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 21A FOR DAY PLAN SETTINGS).
3. TRAFFIC SIGNAL CONTROLLER SHALL BE SET FOR STOP TIME IN WALK TO ON.

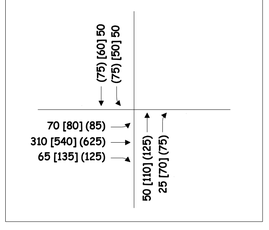
DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD			
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO	DETECTOR NO	CHANNEL
CAMERA V1	1	MAIN STREET	SOUTHBOUND	THRU (SYSTEM)	C	VIDEO PRESENCE	2	1/1	1
	2	MAIN STREET	SOUTHBOUND	THRU (SYSTEM)	C	VIDEO PRESENCE	2	1/2	2
	(3)	SPARE						1/3	3
	(4)	SPARE						1/4	4
CAMERA V2	5	MAIN STREET	SOUTHBOUND	LEFT	2	VIDEO PRESENCE	4	2/1	1
	6	MAIN STREET	SOUTHBOUND	THRU (LEFT CENTER)	2	VIDEO PRESENCE	4	2/2	2
	7	MAIN STREET	SOUTHBOUND	THRU (RIGHT CENTER)	2	VIDEO PRESENCE	4	2/3	3
	8	MAIN STREET	SOUTHBOUND	RIGHT	2	VIDEO PRESENCE	4	2/4	4
CAMERA V3	9	WEST CONCOURSE	EASTBOUND	THRU	8	VIDEO PRESENCE	6	3/1	1
	10	WEST CONCOURSE	EASTBOUND	RIGHT	8D	VIDEO PRESENCE	6	3/2	2
	(11)	SPARE						3/3	3
	(12)	SPARE						3/4	4
CAMERA V4	13	TEMPLE STREET	WESTBOUND	LEFT-THRU	4	VIDEO PRESENCE	8	4/1	1
	14	TEMPLE STREET	EASTBOUND	THRU (SYSTEM)	C	VIDEO PRESENCE	8	4/2	2
	(15)	SPARE						4/3	3
	(16)	SPARE						4/4	4

DETECTOR NOTES:
C = COUNTING LOOP
ALL DETECTION SHOULD BE INITIALLY SET TO NONLOCKING OPERATIONS.
DETECTORS DESIGNATED FOR DELAY (8D) SHALL INCLUDE A 5 SECOND DELAY.

INTERSECTION:
ROUTE 104 (MAIN ST) AND EAST CONCOURSE/TEMPLE ST
SIGNAL GROUP: 2
LOCATION: 17

SYSTEM DESIGN VOLUMES AM [MID] (PM)



PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSER		
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

ROUTE 104 (MAIN ST) AND WEST CONCOURSE/TEMPLE ST

TRAFFIC SIGNAL PLAN

SHEET NUMBER

21

OF 54

Filename: ...\ts\planset\040_5206800SG17.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

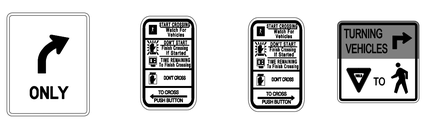
EQUIPMENT AND WORK ITEMS 643.71	QUANTITY	EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1	FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	50 LF
		FURNISH AND INSTALL 18-INCH FOUNDATION (ITEM 626.31)	2
		FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1	INSTALL WHITE "ONLY" PAVEMENT MARKING (ITEM 627.75)	22 SF
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON POLES OR MAST ARMS WITH ASTRO-BRACKETS.	8	FURNISH AND INSTALL VIDEO BASED VEHICLE DETECTION SYSTEM, REQUIRING 4-DETECTION UNITS PLUS FIELD WIRING TO ANCILLARY CABINET MOUNTED DEVICES (ITEM 643.83)	1
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON PROPOSED SIGNAL HEADS	8	FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
REMOVE AND RESET EXISTING YELLOW LED MODULES INTO NEW SIGNAL HEADS	6	FURNISH AND INSTALL APPROXIMATELY 700 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL NEW 12-INCH LED RED, YELLOW(1), AND GREEN LENSES INTO NEW SIGNAL HEADS	18		
FURNISH AND INSTALL ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	8	FURNISH AND INSTALL (8-FOOT) PEDESTAL POLE (ITEM 643.92)	2
FURNISH AND INSTALL ONE-WAY, 16 X 18-INCH LED POST MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	8	FURNISH AND INSTALL DUAL PURPOSE POLE (ITEM 643.94)	1
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1	THE QUANTITIES LISTED ABOVE ARE APPROXIMATE AND ARE FURNISHED FOR INFORMATION ONLY.	
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1		
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1		
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	3		
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1		
FURNISH AND INSTALL MAST ARM MOUNTED SIGNS	2		
RECABLE INTERSECTION	-		
IMPLEMENT LOCAL AND SYSTEM TIMING	-		

EXISTING MAST ARM MOUNTED SIGNS

R6-1R 36" x 12" 1 - RETAINED

R6-1L 36" x 12" 1 - RETAINED

PROPOSED MAST ARM, POST AND POLE MOUNTED SIGNS

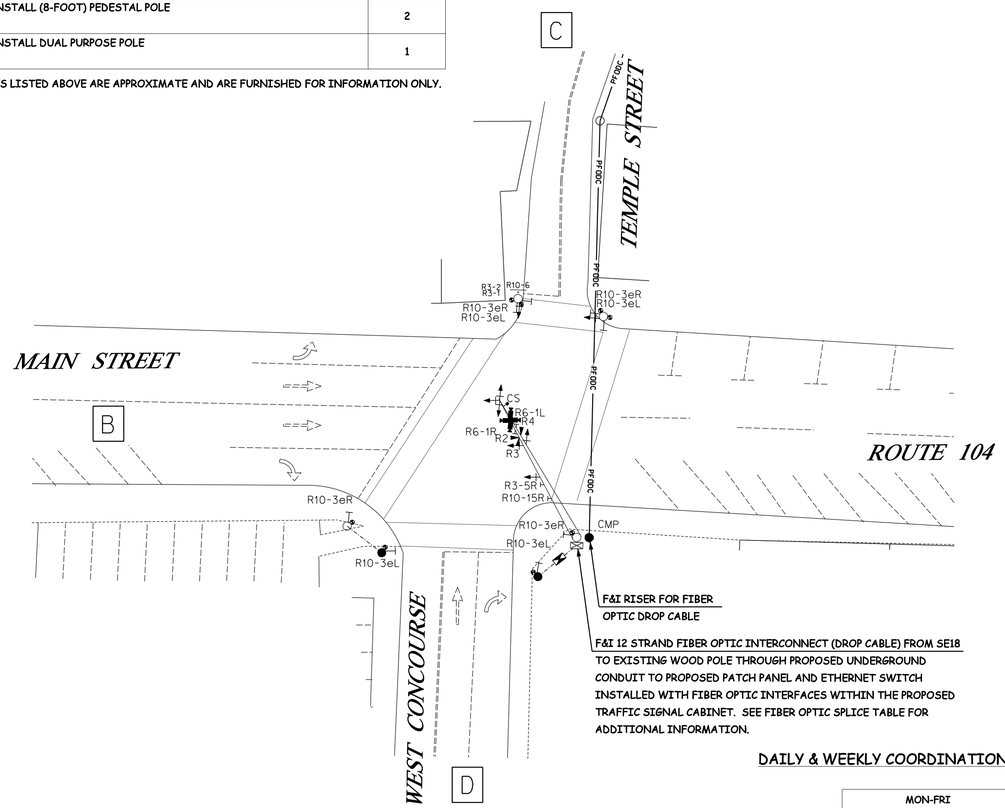


R3-5R 30" x 36" 1 - PROPOSED

R10-3eL 9" x 15" 4 - PROPOSED

R10-3eR 9" x 15" 4 - PROPOSED

R10-15R 30" x 30" 1 - PROPOSED



EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
	3	NOT USED	
R2	4	2	Ø2
R3	5	3	Ø8
R4	6	4	Ø4

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 3 = LOWEST)
3. 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 (3.5 SECONDS YELLOW AND 2.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE18	BB-A (48F) TO SE16	25	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE16	26	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE16	1-24, 27-48	THROUGH	BB-A (48F) TO CITY HALL	1-24, 27-48	BBA (48F) FIBER OPTIC BACKBONE
	BB-A (48F) TO CITY HALL	25	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO CITY HALL	26	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
PP, CONTROL CABINET	12F TO SE18	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE18	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE18	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE18	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE18	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.
3. IF BID ALTERNATE NO. 3 IS ACCEPTED, CONTACT THE ENGINEER FOR REPLACEMENT FIBER OPTIC SPLICE TABLE.

INTERSECTION:
ROUTE 104 (MAIN ST) AND EAST CONCOURSE/TEMPLE ST
SIGNAL GROUP:
2
LOCATION:
17

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 50/100 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
ROUTE 104 (MAIN ST) AND WEST CONCOURSE/TEMPLE ST

TRAFFIC SIGNAL PLAN

SHEET NUMBER
21A
OF 54

Filename: ...\planset\041_5206800SG17A.dgn Division: Username: J ROBERT Date:9/7/2010

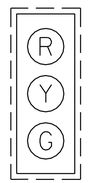
BID ALTERNATE NO. 3

NEW SIGNALIZED INTERSECTION WITH SINGLE MAST ARM

THIS SIGNALIZED INTERSECTION HAS BEEN ENGINEERED TO ACCOMMODATE A FUTURE TRAFFIC PATTERN MODIFICATION TO PROVIDE 2-WAY TRAFFIC ALONG FRONT STREET.

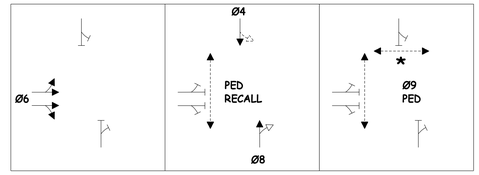
SEE ALSO SHEET 22A.

SIGNAL HEAD DATA

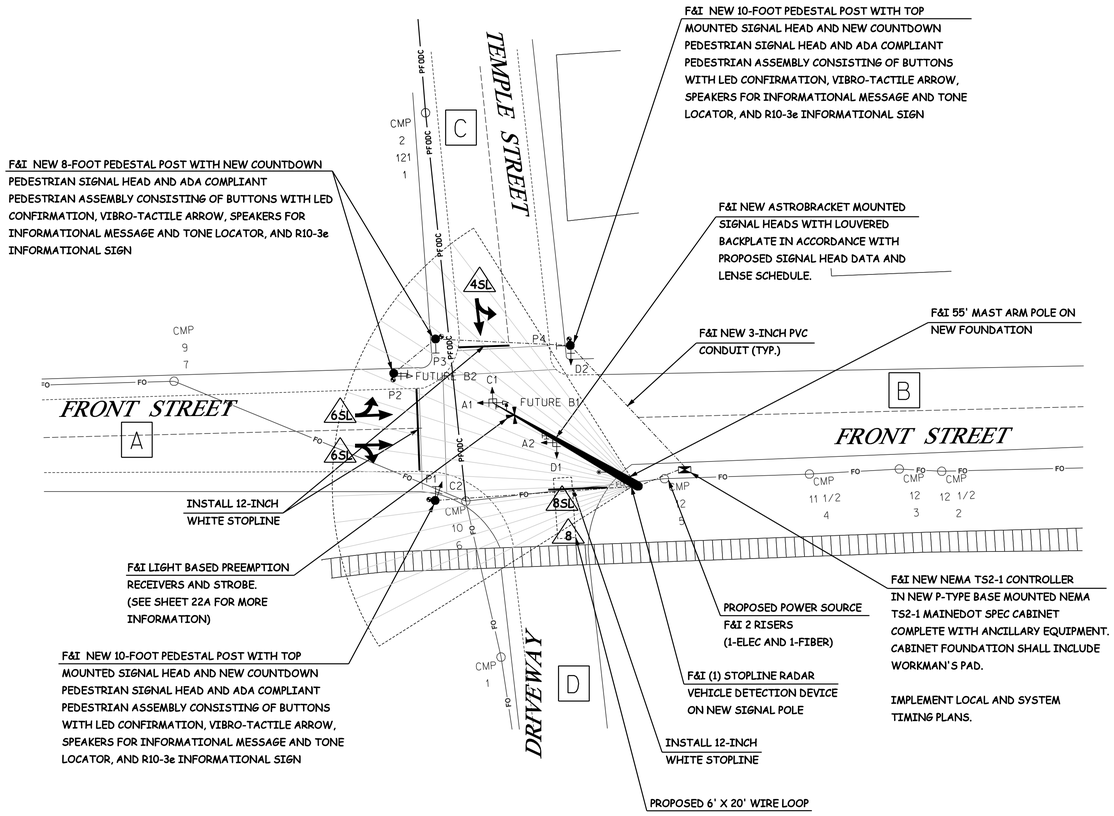
PROPOSED		FUTURE
A1,A2,C1 C2,D1,D2	P1-P4	B1, B2
		
12" LENS WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES	16" x 18" PEDESTRIAN SIGNAL	12" LENS WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW L.E.D. MODULES - (SEE LED LENSE SCHEDULE)

PHASING SEQUENCE



★ = NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN



SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8	9
MINIMUM INITIAL				5		5		5	
PASSAGE TIME				2		2		2	
MAXIMUM 1				30		30		30	
MAXIMUM 2				30		50		30	
YELLOW				3.5		3.5		3.5	3.0
ALL RED				1.5		1.5		1.5	1.0
PEDESTRIAN WALK									7
PEDESTRIAN CLEARANCE									8
RECALL				PED		S		O	
DETECTOR OPERATION				PR		PR		PR	
PREEMPTION PRIORITY				4		2		3	
FLASH ~									D
DUAL ENTRY				ON		OFF		ON	

NOTES:
S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED
D = DARK
~ PED. SIGNALS SHALL BE DARK DURING FLASHING OPERATIONS.

L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1	1	1	1							
A2	1	1	1							
C1	1	1	1							
C2	1	1	1							
D1	1	1	1							
D2	1	1	1							
TOTAL	6	6	6	0	0	0	0	0	0	0

NOTES:
R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	50	50	55	60	75	75	FLOATING FORCE-OFF
OFFSET (END GRN)	46	0	0	54	14	0	
COORDINATED Ø	4	4	4	4	4	4	
SPLIT TIME Ø1	0	0	0	0	0	0	
SPLIT TIME Ø2	15	15	19	22	33	33	
SPLIT TIME Ø3	0	0	0	0	0	0	
SPLIT TIME Ø4	15	15	16	18	22	22	
SPLIT TIME Ø5	0	0	0	0	0	0	
SPLIT TIME Ø6	15	15	19	22	33	33	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	15	15	16	18	22	22	
SPLIT TIME Ø9	20	20	20	20	20	20	

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 22A FOR DAY PLAN SETTINGS).
3. TRAFFIC SIGNAL CONTROLLER SHALL BE SET FOR STOP TIME IN WALK TO ON.
4. PHASE 2 IS A DUMMY PHASE TO BE SET WITH SPLIT TIMES FOR NTCIP COMPLIANCE.

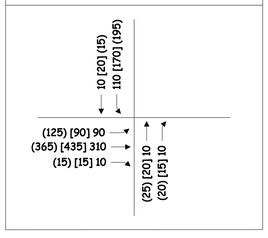
DETECTOR SCHEDULE

	DETECTOR					SETTING				
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	DETECTOR NO.			
MR 1	4SL	TEMPLE STREET	EASTBOUND	LEFT-THRU	4	RADAR	4			
	6SL	FRONT STREET	NORTHBOUND	LEFT-THRU / THRU-RIGHT	6	RADAR	6	INDUCTANCE	CONTINUITY	RESISTANCE LOOP TO GROUND
	8SL	DRIVEWAY	WESTBOUND	THRU-RIGHT	8	RADAR	8			
	8	DRIVEWAY	WESTBOUND	THRU-RIGHT	8	WIRE LOOP	8			

DETECTOR NOTES:
ALL DETECTION SHOULD BE SET TO NONLOCKING OPERATIONS.

INTERSECTION:
FRONT STREET AND TEMPLE STREET
SIGNAL GROUP:
2
LOCATION:
18

SYSTEM DESIGN VOLUMES AM [MID] (PM)



PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

	BY	DATE
PROJ. MANAGER	J. MANSIR	
DESIGN-DETAILED	C. BOBAY	J. ROBERT 7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR 8/13/10
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1	Address 98/ Comments	9/07/10
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
FRONT STREET AND TEMPLE STREET

TRAFFIC SIGNAL PLAN

SHEET NUMBER
22
OF 54

Filename: ...\ts\planset\042_52068005G18.dgn Division: Username: J ROBERT Date:9/7/2010

BID ALTERNATE NO. 3

NEW SIGNALIZED INTERSECTION SIGNS AND PREEMPT LAYOUT

THIS SIGNALIZED INTERSECTION HAS BEEN ENGINEERED TO ACCOMMODATE A FUTURE TRAFFIC PATTERN MODIFICATION TO PROVIDE 2-WAY TRAFFIC ALONG FRONT STREET.

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.80	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS.	6
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON PROPOSED SIGNAL HEADS	6
FURNISH AND INSTALL NEW 12-INCH LED RED, YELLLOW, AND GREEN LENSES INTO NEW SIGNAL HEADS	18
FURNISH AND INSTALL ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	4
FURNISH AND INSTALL ONE-WAY, 16 X 18-INCH LED POST MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	4
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	3
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM MOUNTED SIGNS	4
FURNISH AND INSTALL RADAR BASED VEHICLE DETECTION SYSTEM (1-DETECTION UNIT PLUS FIELD WIRING TO ANCILLARY CABINET MOUNTED DEVICES)	1
FURNISH AND INSTALL 30" x 36" R3-1 "NO RIGHT TURN" BLANK OUT SIGN ON MAST ARM WITH ASTRO-BRACKET	1
INTERSECTION CABLE AND ELECTRICAL SERVICE HOOK UP	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL (2-INCH) METALLIC CONDUIT (ITEM 626.21)	10 LF
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	225 LF
FURNISH AND INSTALL 18-INCH FOUNDATION (ITEM 626.31)	4
FURNISH AND INSTALL 36-INCH FOUNDATION FOR MAST ARM POLES (ITEM 626.331)	1
FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
FURNISH AND INSTALL 12 INCH SOLID WHITE PAVEMENT MARKING LINE (ITEM 627.18)	66 LF
INSTALL WHITE COMBINATION ARROW PAVEMENT MARKINGS (ITEM 627.75)	87 SF
FURNISH AND INSTALL POLE RISERS (ITEM 643.90)	2
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 100 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL 55' GALVANIZED STEEL MAST ARM POLE (ITEM 643.91)	1
FURNISH AND INSTALL (8-FOOT) PEDESTAL POLE (ITEM 643.92)	2
FURNISH AND INSTALL (10-FOOT) PEDESTAL POLE (ITEM 643.92)	2

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

PROPOSED MAST ARM MOUNTED SIGNS

R3-6L 30" x 36" 1 - PROPOSED

R3-6R 30" x 36" 1 - PROPOSED

R3-2 30" x 30" 1 - PROPOSED

R10-15L 30" x 30" 1 - PROPOSED

R10-3eL 9" x 15" 2 - PROPOSED

R10-3eR 9" x 15" 2 - PROPOSED

PROPOSED MAST ARM MOUNTED BLANK OUT SIGNS

BLANK OUT SIGN SHALL ILLUMINATE WHEN RR1 PREEMPTION IS ACTIVE

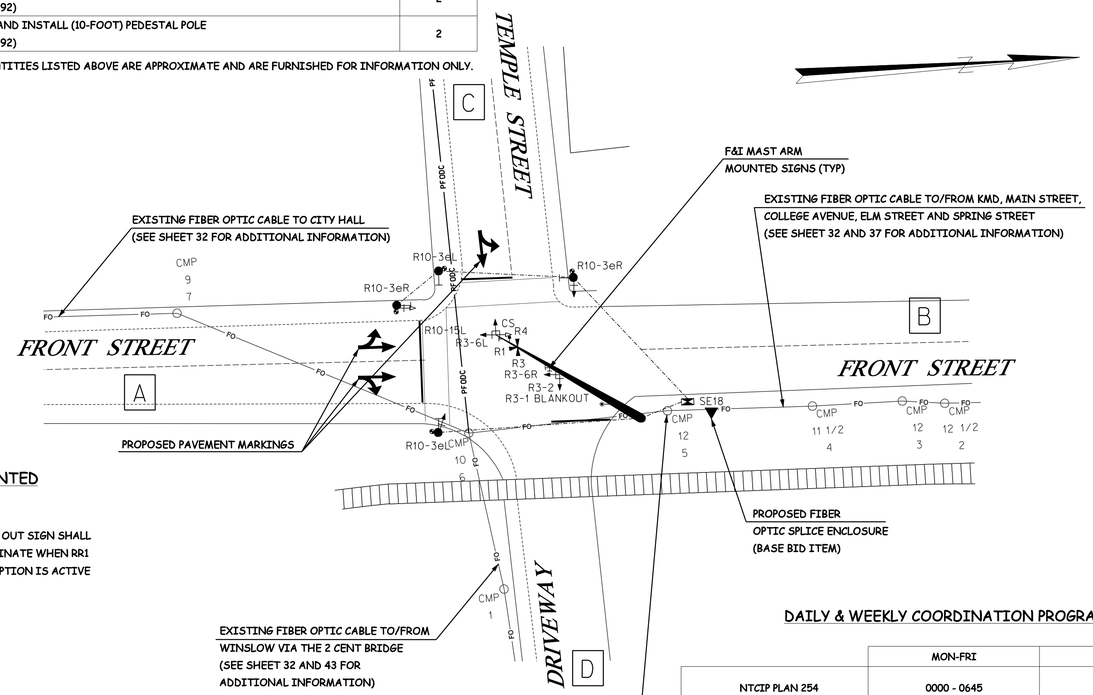
R3-1 30" x 30" 1 - PROPOSED

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE18	12F TO SE18	3	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	12F TO SE18	4	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
	12F TO SE18	1-2, 5-12	UNTERMINATED	-	-	END OF CABLE
	BB-A (48F) TO CITY HALL	25	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO CITY HALL	26	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
PPP, CONTROL CABINET	12F TO SE18	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE18	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE18	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE18	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE18	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.



F&I 12 STRAND FIBER OPTIC INTERCONNECT (DROP CABLE) FROM SE18 TO EXISTING WOOD POLE THROUGH PROPOSED UNDERGROUND CONDUIT TO PROPOSED PATCH PANEL AND ETHERNET SWITCH INSTALLED WITH FIBER OPTIC INTERFACES WITHIN THE PROPOSED TRAFFIC SIGNAL CABINET. SEE FIBER OPTIC SPLICE TABLE FOR ADDITIONAL INFORMATION.

IF BID ALTERNATE 3 IS NOT INITIATED, AERIALLY COIL 100 FEET OF 12 STRAND DROP CABLE FOR INSTALLATION

INTERSECTION:
FRONT STREET AND TEMPLE STREET
SIGNAL GROUP:
2
LOCATION:
18

EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
RR1	1	1	FUTURE Ø6 W/BLANKOUT
RR2	2	NOT USED / RESERVED	
R1	3	2	Ø6
	4	NOT USED	(FUTURE Ø2)
R3	5	3	Ø8
R4	6	4	Ø4

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 4 = LOWEST)
3. 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 (3.5 SECONDS YELLOW AND 1.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 50/100 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MAKSIR	BY	DATE
DESIGN-DETAILED	C. BUBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
FRONT STREET AND TEMPLE STREET

TRAFFIC SIGNAL PLAN

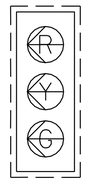
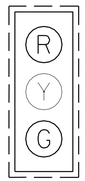
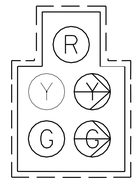
SHEET NUMBER

22A

OF 54

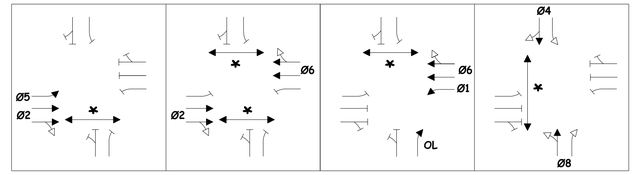
Filename: ...\planset\043_5206800SG18A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

PROPOSED			
A1,B1	A2,A3,B2,B3 C1,C2,D1	D2	P1-P6
			
12" LENS	12" LENS	12" LENS	16" x 18" PEDESTRIAN SIGNAL
WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES			

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RESET L.E.D. MODULES - (SEE LED LENSE SCHEDULE)

PHASING SEQUENCE

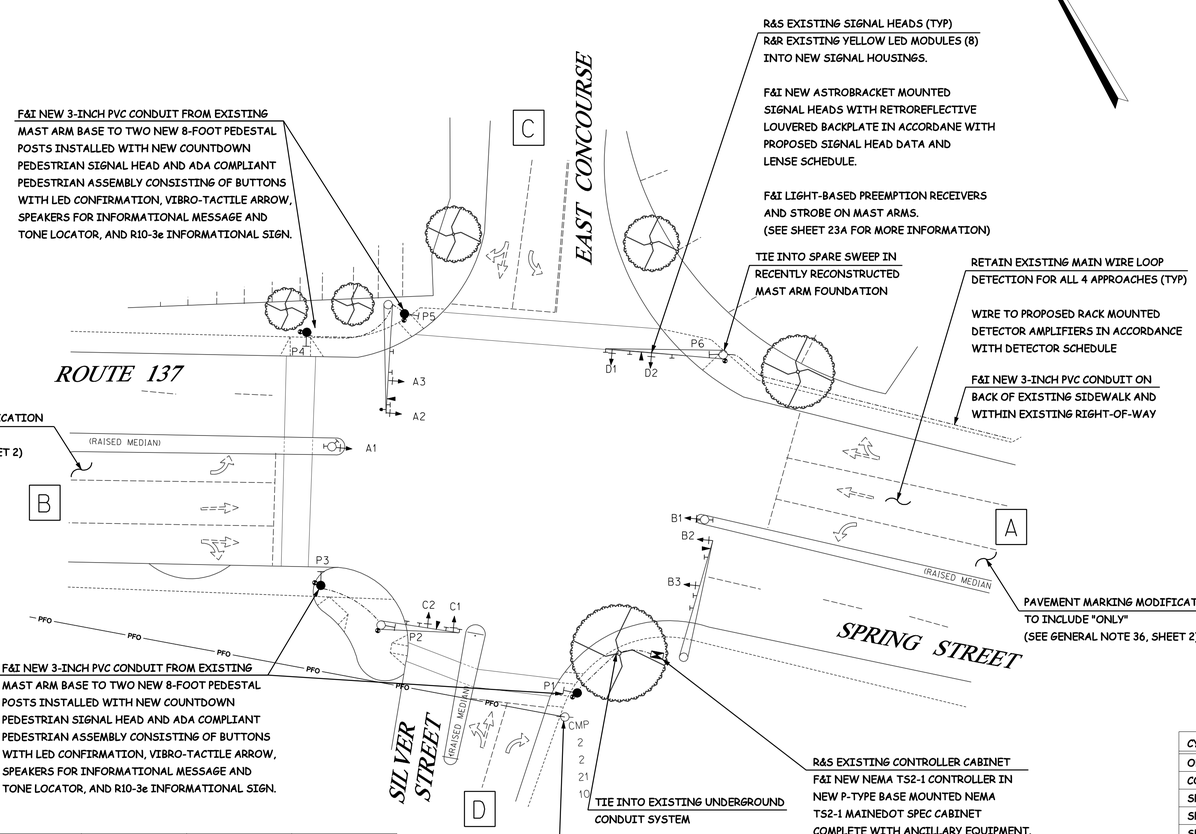


NOTE: Ø5 LEADS AND Ø1 LAGS
★ = NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN

L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1				1	1	1				
A2	1	★	1							
A3	1	★	1							
B1				1	1	1				
B2	1	★	1							
B3	1	★	1							
C1	1	★	1							
C2	1	★	1							
D1	1	★	1							
D2	1	★	1						1	1
TOTAL	8	0	8	2	2	2	0	0	1	1

NOTES: * = EXISTING L.E.D. LENSES TO BE RESET
R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW



SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL	5	10		5	5	10		5
PASSAGE TIME	3	3		3	3	3		3
MAXIMUM 1	25	30		30	15	40		30
MAXIMUM 2	30	50		35	20	60		35
YELLOW	3.5	3.5		3.5	3.5	3.5		3.5
ALL RED	3.5	3.5		3.5	3.5	3.5		3.5
PEDESTRIAN WALK		7		7		7		
PEDESTRIAN CLEARANCE		20		17		20		
RECALL	O	S		O	O	S		O
DETECTOR OPERATION	PR	PR		PR	PR	PR		PR
PREEMPTION PRIORITY	1	2		4	2	1		3
FLASH ~	R	Y		R	R	Y		R
DUAL ENTRY	OFF	ON		ON	OFF	ON		ON

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED
~ PED. SIGNALS SHALL BE DARK DURING FLASHING OPERATIONS.

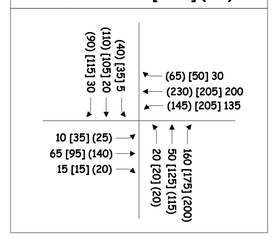
DETECTOR SCHEDULE

DETECTOR				AMPLIFIER				INDUCTANCE		CONTINUITY		RESISTANCE LOOP TO GROUND	
STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO.	DETECTOR NO.	CHANNEL	PRIOR	PRESENT	PRIOR	PRESENT	PRIOR	PRESENT
SPRING STREET	WESTBOUND	LEFT	1C	PRESENCE	1	(3)							
SPRING STREET	WESTBOUND	LEFT	1	PRESENCE	2	1	1	199µh		1.2Ω		∞	
SPRING STREET	EASTBOUND	LEFT	5C	PRESENCE	1	(4)							
SPRING STREET	EASTBOUND	LEFT	5	PRESENCE	2	2	2	201µh		1.7Ω		∞	
SPRING STREET	EASTBOUND	THRU / THRU-RIGHT	2C	PRESENCE	3	(7)							
SPRING STREET	EASTBOUND	THRU / THRU-RIGHT	2	PRESENCE	4	5	1	228µh		1.7Ω		∞	
SPRING STREET	WESTBOUND	THRU / THRU-RIGHT	6C	PRESENCE	3	(8)							
SPRING STREET	WESTBOUND	THRU / THRU-RIGHT	6	PRESENCE	4	6	2	190µh		1.8Ω		∞	
EAST CONCOURSE	SOUTHBOUND	LEFT / THRU-RIGHT	4C	PRESENCE	5	(11)							
EAST CONCOURSE	SOUTHBOUND	LEFT / THRU-RIGHT	4	PRESENCE	6	9	1	346µh		2.3Ω		∞	
				SPARE	5	(12)							
				SPARE	6	10	2						
SILVER STREET	NORTHBOUND	LEFT-THRU / RIGHT	8C	PRESENCE	7	(15)							
SILVER STREET	NORTHBOUND	LEFT-THRU / RIGHT	8	PRESENCE	8	13	1	105µh		0.7Ω		∞	
				SPARE	7	(16)							
				SPARE	8	14	2						

DETECTOR NOTES:
C = COUNTING LOOP.
PRIOR = FIELD MEASUREMENTS CONDUCTED NOVEMBER 19, 2009.
PRESENT = FIELD MEASUREMENTS TO BE CONDUITED UPON NEW CABINET INSTALLATION.
( ) = SLOT IN DETECTOR RACK TO BE WIRED FOR STOPLINE COUNTING PURPOSES.

INTERSECTION:
ROUTE 137 (SILVER STREET) AND EAST CONCOURSE AND ROUTE 137(SPRING ST)
SIGNAL GROUP:
2
LOCATION:
19

SYSTEM DESIGN VOLUMES AM [MID] (PM)



COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	100	100	110	120	150	150	
OFFSET (END GRN)	94	85	26	20	0	0	
COORDINATED Ø	2	2	2	2	(Free)	(Free)	
SPLIT TIME Ø1	27	31	35	30	0	0	FLOATING FORCE-OFF
SPLIT TIME Ø2	42	38	40	50	0	0	
SPLIT TIME Ø3	0	0	0	0	0	0	
SPLIT TIME Ø4	31	31	35	40	0	0	
SPLIT TIME Ø5	22	17	22	22	0	0	
SPLIT TIME Ø6	47	52	53	58	0	0	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	31	31	35	40	0	0	

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 23A FOR DAY PLAN SETTINGS).
3. TRAFFIC SIGNAL CONTROLLER SHALL BE SET FOR STOP TIME IN WALK TO ON.

PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
PIN 17288.00

PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BIGBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3		Address 98/ Comments	9/07/10
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
SILVER ST AND EAST CONCOURSE AND SPRING ST

TRAFFIC SIGNAL PLAN

SHEET NUMBER
23
OF 54

Filename: ...\ts\planset\044_52068005G19.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON TOP OF POLE AND/OR MAST ARMS WITH ASTRO-BRACKETS.	9
FURNISH AND INSTALL ONE-WAY, 5-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS.	1
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON PROPOSED SIGNAL HEADS	10
REMOVE AND RESET EXISTING YELLOW LED MODULES INTO NEW SIGNAL HEADS	8
FURNISH AND INSTALL NEW 12-INCH LED RED, YELLOW(3), AND GREEN LENSES INTO NEW SIGNAL HEADS	24
FURNISH AND INSTALL 2-CHANNEL CARD RACK MOUNT LOOP DETECTOR AMPLIFIER	4
FURNISH AND INSTALL ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	6
FURNISH AND INSTALL ONE-WAY, 16 X 18-INCH LED POST MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	6
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	4
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM OR POLE MOUNTED SIGNS	14
RECABLE INTERSECTION	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	760 LF
FURNISH AND INSTALL 18-INCH FOUNDATION (ITEM 626.31)	4
FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
INSTALL WHITE "ONLY" PAVEMENT MARKING (ITEM 627.75)	44 SF
FURNISH AND INSTALL APPROXIMATELY 180 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 1025 LINEAR FEET OF 72-STRAND FIBER OPTIC INTERCONNECT CABLE TO LOCATION 20 (SEE SHEET 24A) FROM CMP POLE 2/2/21/10 (ITEM 643.90)	1
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL (8-FOOT) PEDESTAL POLE (ITEM 643.92)	4

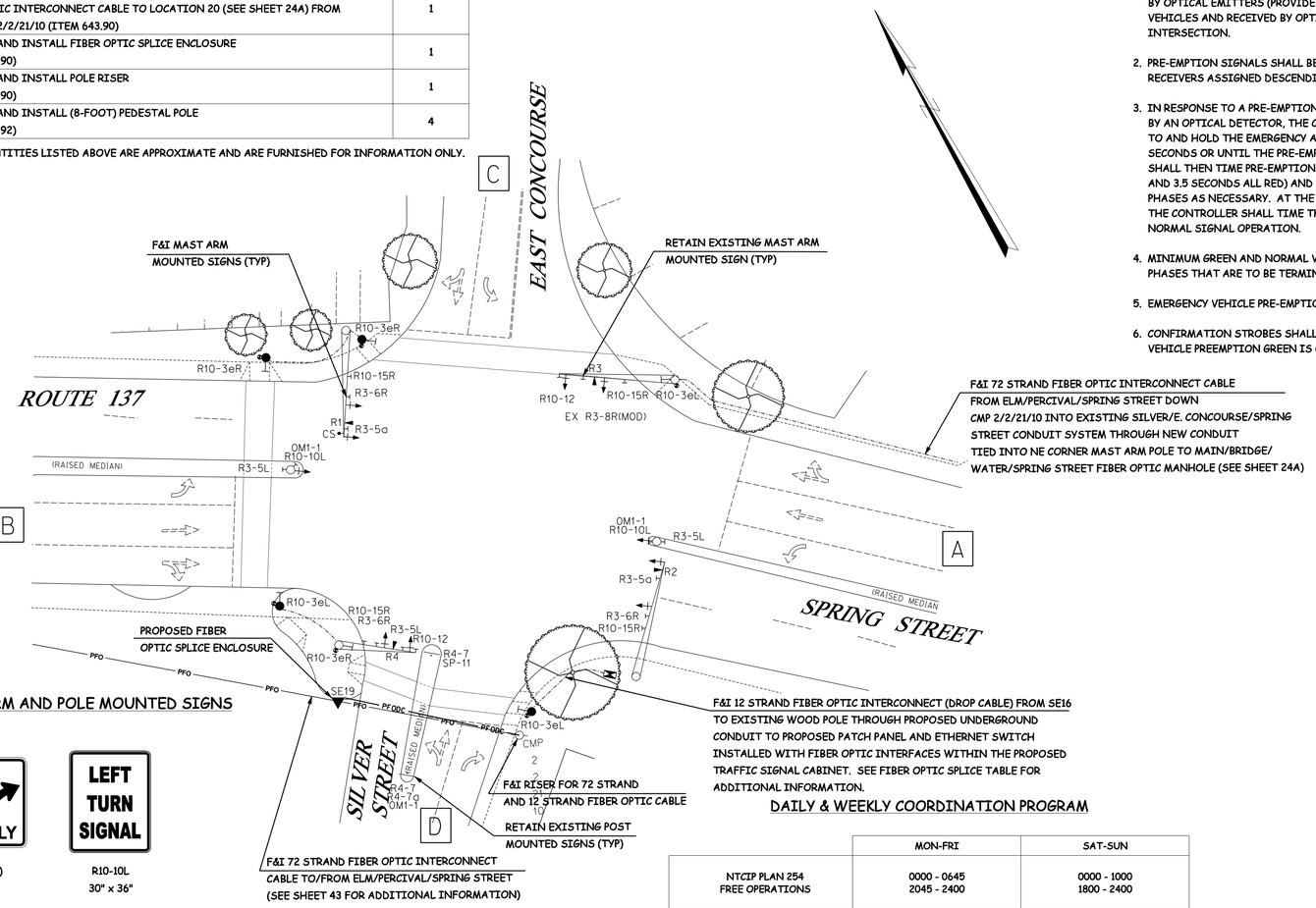
THE QUANTITIES LISTED ABOVE ARE APPROXIMATE AND ARE FURNISHED FOR INFORMATION ONLY.

EMERGENCY VEHICLE PRE-EMPTION OPERATION

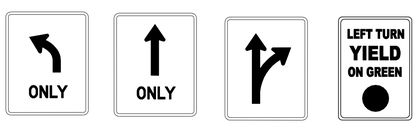
ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø1 & Ø6
R2	4	2	Ø2 & Ø5
R3	5	3	Ø8
R4	6	4	Ø4

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 4 = LOWEST)
3. 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 (3.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.



PROPOSED MAST ARM AND POLE MOUNTED SIGNS



R3-5L 30" x 36" 3 - PROPOSED
R3-5a 30" x 36" 2 - PROPOSED
R3-6R 30" x 36" 3 - PROPOSED
R10-12 30" x 36" 2 - PROPOSED

R10-3eL 9" x 15" 3 - PROPOSED
R10-3eR 9" x 15" 3 - PROPOSED
R10-15R 30" x 30" 4 - PROPOSED

EXISTING MAST ARM AND POLE MOUNTED SIGNS

R3-8R(MOD) 30" x 30"
R10-10L 30" x 36"

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 50/100 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE19	72F TO SE20	1	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	72F TO SE20	2	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	72F TO SE20	3-72	THROUGH	72F TO SE14	3-72	72F FIBER BACKBONE
	72F TO SE14	1	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	72F TO SE14	2	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
PPP CONTROL CABINET	12F TO SE19	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE19	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE19	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE19	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE19	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
ROUTE 137 (SILVER STREET) AND EAST CONCOURSE AND ROUTE 137(SPRING ST)
SIGNAL GROUP:
2
LOCATION:
19

PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

	BY	DATE
PROJ. MANAGER	J. MANSIR	
DESIGN-DETAILED	C. BOBAY	7/16/10
CHECKED-REVIEWED	M. GRAHAM	8/13/10
DESIGN2-DETAILED2		
DESIGN3-DETAILED3	Address 98/ Comments	9/07/10
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE
P.E. NUMBER
DATE

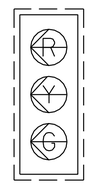
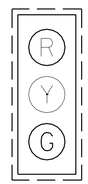
WATERVILLE-WINSLOW
SILVER ST AND EAST CONCOURSE AND SPRING ST

TRAFFIC SIGNAL PLAN

SHEET NUMBER
23A
OF 54

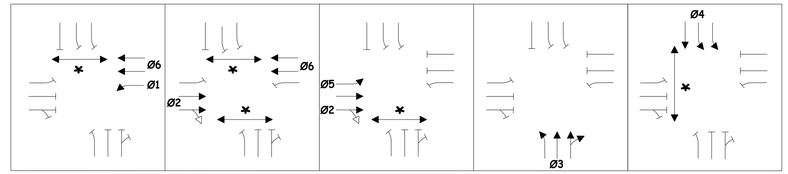
Filename: ...\planset\045_5206800SG19A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

PROPOSED			EXISTING
A1,B1,C1,C2,D1	A2,A3,B2,B3, C3,C4,D2,D3	P1-P5	P6
			
12" LENS	12" LENS	16" x 18" PEDESTRIAN SIGNAL	16" x 18" PEDESTRIAN SIGNAL
WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES			

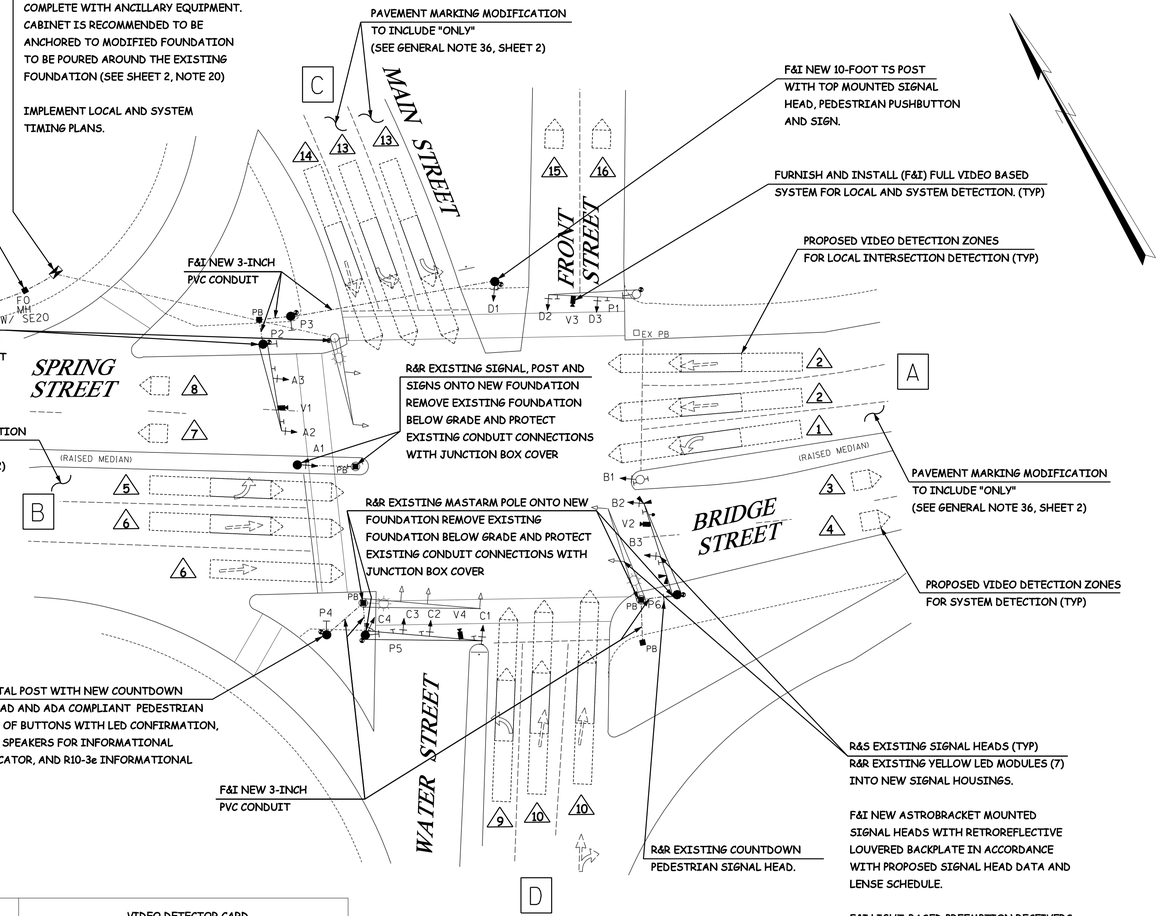
- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH RELOCATED L.E.D. MODULES -

PHASING SEQUENCE



NOTE: Ø1 LEADS & Ø5 LAGS
★ = NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN

NE, SE, AND SW TRAFFIC SIGNAL MAST ARM POLES HAVE BEEN RELOCATED TO CONFORM TO CONCEPT B2 OF THE WILBUR SMITH ASSOCIATES PEDESTRIAN CONNECTOR FEASIBILITY STUDY DATED JUNE 2009.



L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1				1	1	1				
A2	1	★	1							
A3	1	★	1							
B1				1	1	1				
B2	1	★	1							
B3	1	★	1							
C1				1	1	1				
C2				1	1	1				
C3	1	★	1							
C4	1	1	1							
D1				1	1	1				
D2	1	★	1							
D3	1	★	1							
TOTAL	8	1	8	5	5	5	0	0	0	0

NOTES: * = EXISTING L.E.D. LENSES TO BE RESET
R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL	5	7	7	7	5	7		
PASSAGE TIME	2	2	2	2	2	2		
MAXIMUM 1	15	30	30	30	15	30		
MAXIMUM 2	20	40	30	30	20	40		
YELLOW	3.5	3.5	3.5	3.5	3.5	3.5		
ALL RED	3.5	3.5	3.5	3.5	3.5	3.5		
PEDESTRIAN WALK		6		6		6		
PEDESTRIAN CLEARANCE		21		18		21		
RECALL	O	S	O	O	O	S		
DETECTOR OPERATION	PR	PR	PR	PR	PR	PR		
PREEMPTION PRIORITY	1	2	3	4	2	1		
FLASH ~	R	Y	R	R	R	Y		
DUAL ENTRY	OFF	ON	OFF	OFF	OFF	ON		

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED
~ PED. SIGNALS SHALL BE DARK DURING FLASHING OPERATIONS.

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	100	100	110	120	150	150	
OFFSET (END GRN)	0	99	26	32	0	0	
COORDINATED Ø	(Free)	6	6	6	(Free)	(Free)	
SPLIT TIME Ø1	0	13	17	19	0	0	FIXED FORCE-OFF
SPLIT TIME Ø2	0	34	35	35	0	0	
SPLIT TIME Ø3	0	22	27	31	0	0	
SPLIT TIME Ø4	0	31	31	35	0	0	
SPLIT TIME Ø5	0	13	17	20	0	0	
SPLIT TIME Ø6	0	34	35	34	0	0	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	0	53	58	66	0	0	

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 24A 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.

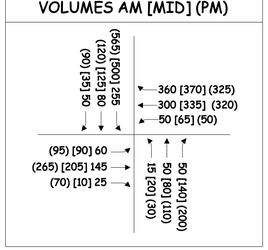
DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD			
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO	DETECTOR NO	CHANNEL
CAMERA V1	1	BRIDGE STREET	WESTBOUND	LEFT	1	FULL VIDEO	2	1/1	1
	2	BRIDGE STREET	WESTBOUND	THRU / THRU	6	FULL VIDEO	2	1/2	2
	3	BRIDGE STREET	EASTBOUND	MEDIAN SIDE (SYSTEM)	C	FULL VIDEO	2	1/3	3
	4	BRIDGE STREET	EASTBOUND	CURB SIDE (SYSTEM)	C	FULL VIDEO	2	1/4	4
CAMERA V2	5	SPRING STREET	EASTBOUND	LEFT	5	FULL VIDEO	4	2/1	1
	6	SPRING STREET	EASTBOUND	THRU / THRU	2	FULL VIDEO	4	2/2	2
	7	SPRING STREET	WESTBOUND	MEDIAN SIDE (SYSTEM)	C	FULL VIDEO	4	2/3	3
	8	SPRING STREET	WESTBOUND	CURB SIDE (SYSTEM)	C	FULL VIDEO	4	2/4	4
CAMERA V3	9	WATER STREET	NORTHBOUND	LEFT	3	FULL VIDEO	6	3/1	1
	10	WATER STREET	NORTHBOUND	THRU (CENTER LANE)	3	FULL VIDEO	6	3/2	2
	11	WATER STREET	NORTHBOUND	THRU (RIGHT LANE)	3	FULL VIDEO	6	3/3	3
	(12)	SPARE						3/4	4
CAMERA V4	13	MAIN STREET	SOUTHBOUND	LEFT-LEFT	4	FULL VIDEO	8	4/1	1
	14	MAIN STREET	SOUTHBOUND	THRU	4	FULL VIDEO	8	4/2	2
	15	FRONT STREET	NORTHBOUND	MEDIAN SIDE (SYSTEM)	C	FULL VIDEO	8	4/3	3
	16	FRONT STREET	NORTHBOUND	CURB SIDE (SYSTEM)	C	FULL VIDEO	8	4/4	4

DETECTOR NOTES:
C = COUNTING LOOP
ALL DETECTION SHOULD BE INITIALLY SET TO NONLOCKING OPERATIONS.

INTERSECTION:
ROUTE 137 (SPRING ST), ROUTE 100/137/US 201 (BRIDGE ST), ROUTE 104 (MAIN ST), AND WATER ST
SIGNAL GROUP:
2
LOCATION:
20

SYSTEM DESIGN VOLUMES AM [MID] (PM)



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

	BY	DATE
PROJ. MANAGER	J. MANSIR	
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
SPRING ST, BRIDGE ST, MAIN ST, AND WATER ST

TRAFFIC SIGNAL PLAN

PLAN

25 0 25 50

SCALE

SHEET NUMBER
24
OF 54

Date:9/7/2010
Username: J ROBERT
Division:
Filename: ...\ts\planset\046_5206800SG20.dgn

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
REMOVE AND RESET EXISTING MAST ARM POLE ON TO NEW FOUNDATION	3
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS	13
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON PROPOSED SIGNAL HEADS	13
REMOVE AND RESET EXISTING YELLOW LED MODULES INTO NEW SIGNAL HEADS	9
FURNISH AND INSTALL NEW 12-INCH LED RED, YELLOW(6), AND GREEN LENSES INTO NEW SIGNAL HEADS	32
FURNISH AND INSTALL ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	7
REMOVE AND RESET EXISTING 16 X 18 LED POLE MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	1
FURNISH AND INSTALL ONE-WAY, 16 X 18-INCH LED POLE MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	5
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	4
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM AND POLE MOUNTED SIGNS	15
RECABLED INTERSECTION	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL PRECAST CONCRETE JUNCTION BOX (ITEM 626.11)	4
FURNISH AND INSTALL FIBER OPTIC JUNCTION BOX 36-INCHES (ITEM 626.111)	1
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	185 LF
FURNISH AND INSTALL 18-INCH FOUNDATION (ITEM 626.31)	4
FURNISH AND INSTALL 36-INCH FOUNDATION FOR RELOCATED MAST ARM POLE (ITEM 626.331)	3
FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
REMOVE OR MODIFY CONCRETE (3-MAST ARM AND 1-POST) FOUNDATION (ITEM 626.36)	4

EQUIPMENT AND WORK (ITEM XXX.YYZ) (CONT.)	QUANTITY
INSTALL WHITE "ONLY" PAVEMENT MARKING (ITEM 627.75)	88 SF
FURNISH AND INSTALL CARD RACK MOUNT VIDEO COMMUNICATIONS BOARD (ITEM 643.83)	1
FURNISH AND INSTALL 2-CHANNEL/ 4-OUTPUT CARD RACK MOUNT DATA AND PRESENCE VIDEO DETECTOR CARDS (ITEM 643.83)	2
FURNISH AND INSTALL CARD RACK VIDEO POWER SUPPLY (ITEM 643.83)	1
FURNISH AND INSTALL VIDEO DETECTION CAMERA (ITEM 643.83)	4
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 50 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE IN FIBER OPTIC JUNCTION BOX (ITEM 643.90)	1
FURNISH AND INSTALL (8-FOOT) PEDESTAL POLE (ITEM 643.92)	2
FURNISH AND INSTALL (10-FOOT) PEDESTAL POLE (ITEM 643.92)	1

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

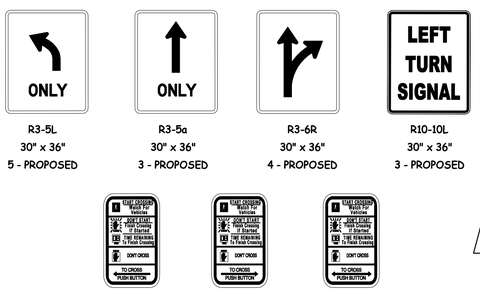
EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø1 & Ø6
R2	4	2	Ø2 & Ø5
R3	5	3	Ø8
R4	6	4	Ø4

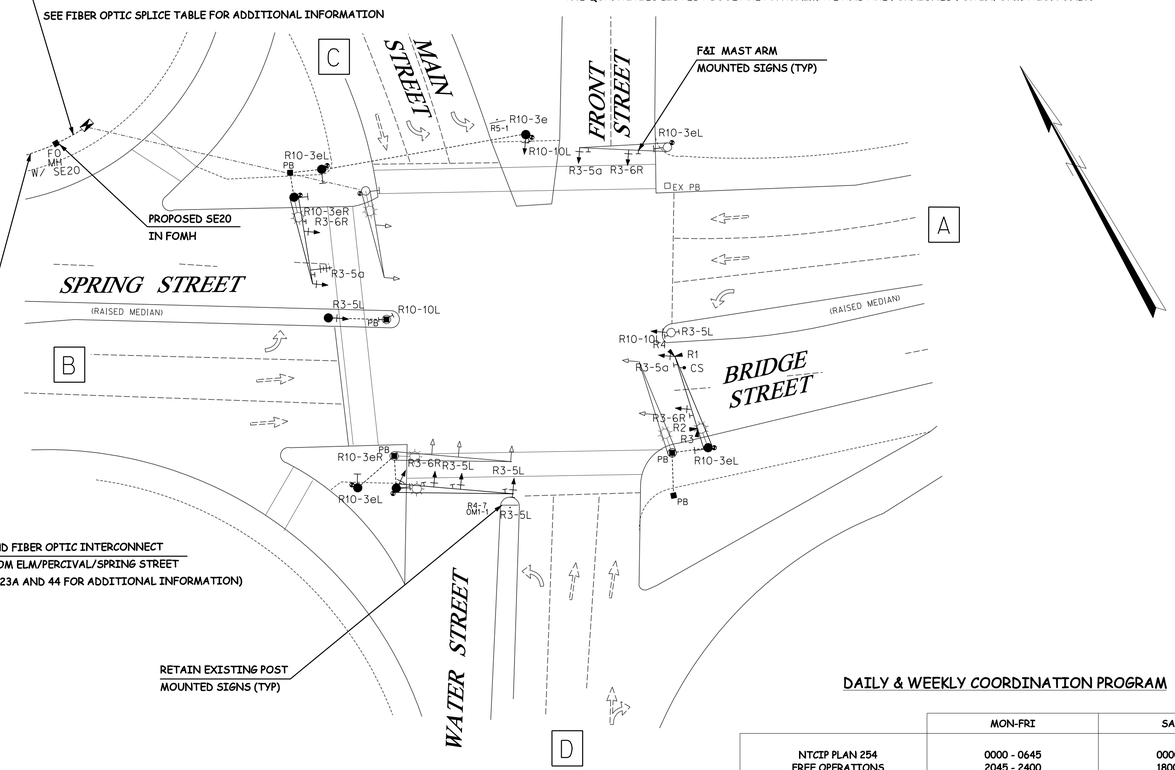
EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 4 = LOWEST)
3. 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 (3.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

PROPOSED MAST ARM AND POLE MOUNTED SIGNS



R3-5L 30" x 36" 5 - PROPOSED
R3-5a 30" x 36" 3 - PROPOSED
R3-6R 30" x 36" 4 - PROPOSED
R10-10L 30" x 36" 3 - PROPOSED
R10-3eL 9" x 15" 4 - PROPOSED
R10-3eR 9" x 15" 2 - PROPOSED
R10-3e 9" x 15" 1 - PROPOSED



DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 50/100 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE20	72F TO SE19	1	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	72F TO SE19	2	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
	72F TO SE19	3-72	UNTERMINATED	-	-	END OF CABLE
PPP, CONTROL CABINET	12F TO SE20	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE20	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE20	1-2, 5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP): PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
ROUTE 137 (SPRING ST), ROUTE 100/137/US 201 (BRIDGE ST), ROUTE 104 (MAIN ST), AND WATER ST
SIGNAL GROUP: 2
LOCATION: 20

PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BIGBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3		Address 98/ Comments	9/07/10
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

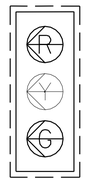
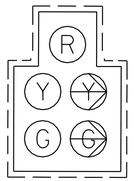
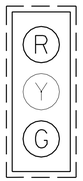
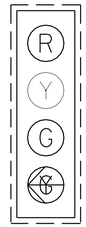
SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
SPRING ST, BRIDGE ST, MAIN ST, AND WATER ST
TRAFFIC SIGNAL PLAN

SHEET NUMBER
24A
OF 54

Filename: ...\planset\047_52068005G20A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

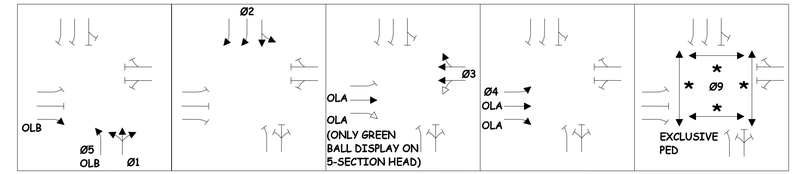
PROPOSED				
A1	A3	A2,B1,B2,C2 C3,D1,D2	C1	P1-P8
			 (BIMODAL)	
	12" LENS	12" LENS	12" LENS	16" x 18" PEDESTRIAN SIGNAL
WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES				

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RESET L.E.D. MODULES -
(SEE LED LENSE SCHEDULE)

RAIL ROAD SIGNAL HEAD DATA

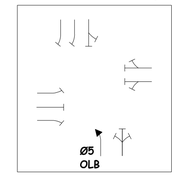
EXISTING TO BE RETAINED
RR1-RR9

NORMAL OPERATIONS SEQUENTIAL PHASING SEQUENCE

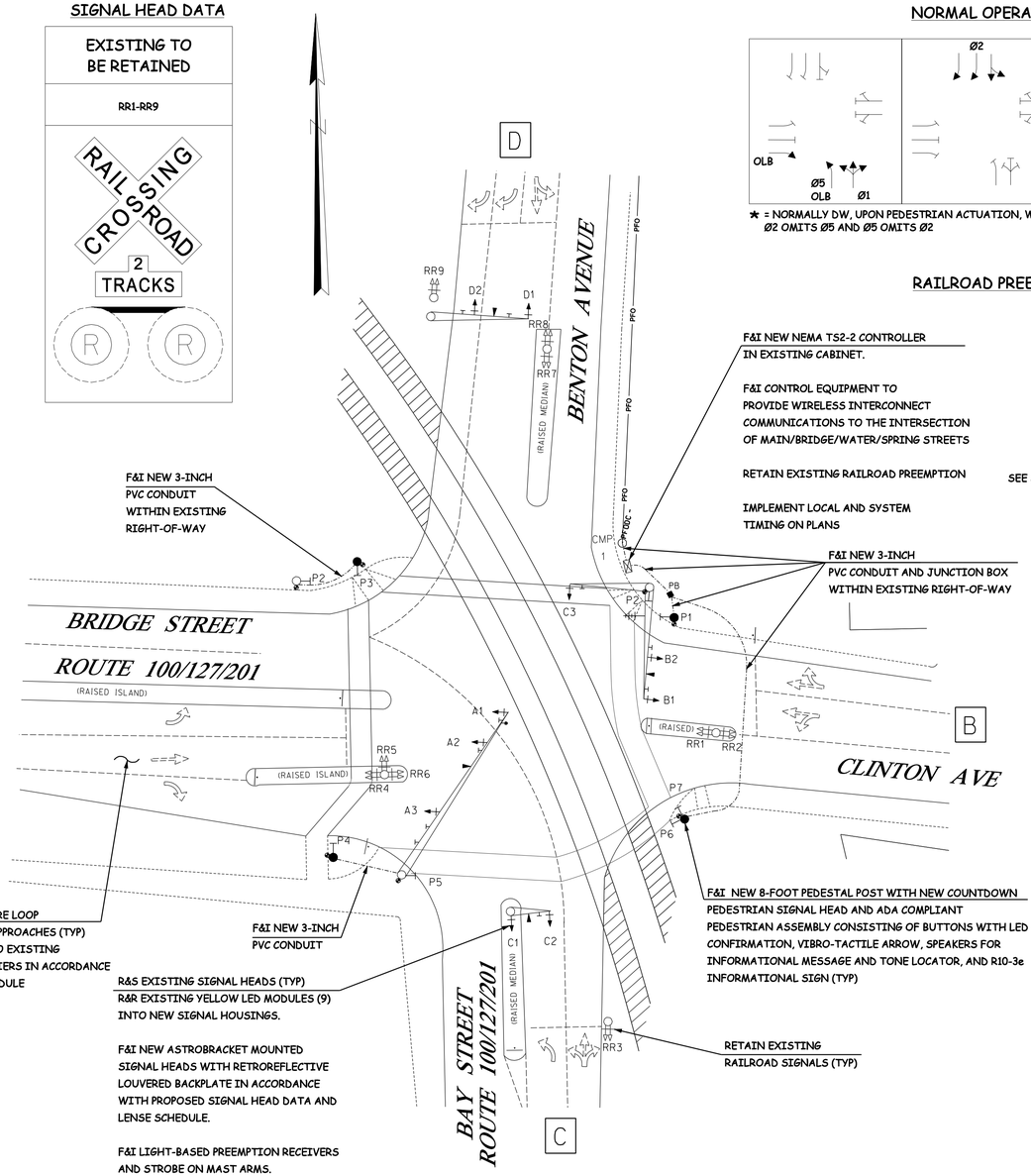


★ = NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN
Ø2 OMITS Ø5 AND Ø5 OMITS Ø2

RAILROAD PREEMPTION PROGRAM (EXISTING RETAINED)



SEE SHEET 25A FOR ADDITIONAL INFORMATION



L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA	BIL
A1				1	*	1					
A2	1	*	1								
A3	1	1	1						1	1	
B1	1	*	1								
B2	1	*	1								
C1	1	*	1								1
C2	1	*	1								
C3	1	*	1								
D1	1	*	1								
D2	1	*	1								
TOTAL	9	1	9	1	0	1	0	0	1	1	1

NOTES: * = EXISTING L.E.D. LENSES TO BE RESET

R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
BIL = BIMODAL YELLOW/GREEN LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8	9
MINIMUM INITIAL	5	5	5	5	5				
PASSAGE TIME	3	4	3	3	3				
MAXIMUM 1	60	40	60	35	60				
MAXIMUM 2	45	25	30	30	45				
YELLOW	3.5	3.5	3.5	3.5	3.5				3
ALL RED	4.5	4.5	3.5	3.5	4.5				0
PEDESTRIAN WALK									7
PEDESTRIAN CLEARANCE									23
RECALL	S	O	O	O	O				
DETECTOR OPERATION	PR	PR	PR	PR	PR				
PREEMPTION PRIORITY	1	2	3	4					
FLASH	R	R	R	R	R				D
DUAL ENTRY	OFF	OFF	OFF	OFF	OFF				

NOTES:
S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED
D = DARK
~ PED. SIGNALS SHALL BE DARK DURING FLASHING OPERATIONS.

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	100	100	110	120	150	150	FIXED FORCE-OFF
OFFSET (END GRN)	0	30	49	57	0	0	
COORDINATED Ø	(Free)	4	4	4	(Free)	(Free)	
SPLIT TIME Ø1	0	22	25	29	0	0	
SPLIT TIME Ø2	0	15	20	20	0	0	
SPLIT TIME Ø3	0	15	17	21	0	0	
SPLIT TIME Ø4	0	15	15	17	0	0	
SPLIT TIME Ø5	0	22	25	29	0	0	
SPLIT TIME Ø6	0	15	20	20	0	0	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	0	30	32	38	0	0	
SPLIT TIME Ø9	0	33	33	33	33	33	

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 25A 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.

PLAN

25 0 25 50

SCALE

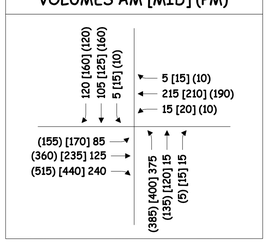
DETECTOR SCHEDULE

				AMPLIFIER				INDUCTANCE		CONTINUITY		RESISTANCE LOOP TO GROUND	
STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO.*	DETECTOR NO.	CHANNEL	PRIOR	PRESENT	PRIOR	PRESENT	PRIOR	PRESENT
BAY STREET	NORTHBOUND	ALL	1	PRESENCE	N/A	1	1	504µh		2.0Ω		100 MΩ	
BENTON AVENUE	SOUTHBOUND	ALL	2	PRESENCE	N/A	2	1	175µh		1.2 Ω		9 MΩ	
CLINTON AVENUE	WESTBOUND	LEFT-THRU	3	PRESENCE	N/A	3	1	393µh		1.8 Ω		5 MΩ	
CLINTON AVENUE	WESTBOUND	THRU-RIGHT	3	SPLICED	N/A	3	1	228µh		5.6Ω		34 MΩ	
BRIDGE STREET	EASTBOUND	ALL	4	PRESENCE	N/A	4	1	222µh		4.0Ω		5 MΩ	
								RECORD FIELD MEASUREMENTS HERE					

DETECTOR NOTES:
* = SINGLE CHANNEL SHELF MOUNT AMPLIFIERS
PRIOR = FIELD MEASUREMENTS CONDUCTED NOVEMBER 19, 2009.
PRESENT = FIELD MEASUREMENTS TO BE CONDUCTED UPON NEW CABINET INSTALLATION.

INTERSECTION:
ROUTE 100/127/US201 (BRIDGE ST), ROUTE 100/127/US201 (BAY ST), CLINTON AVENUE, AND BENTON AVENUE
SIGNAL GROUP:
2
LOCATION:
21

SYSTEM DESIGN VOLUMES AM [MID] (PM)



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

			SIGNATURE	DATE
PROJ. MANAGER	J. MANSIR	BY		
DESIGN-DETAILED	C. BIGBAY	J. ROBERT		7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR		8/13/10
DESIGN2-DETAILED2			P.E. NUMBER	
DESIGN3-DETAILED3		Address 98/ Comments		9/07/10
REVISIONS 1				
REVISIONS 2				
REVISIONS 3			DATE	
REVISIONS 4				
FIELD CHANGES				

WATERVILLE-WINSLOW
BRIDGE ST, BAY ST, CLINTON AVE, AND BENTON AVE

TRAFFIC SIGNAL PLAN

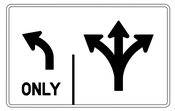
SHEET NUMBER
25
OF 54

Filename: ...\ts\planset\048_5206800SG21.dgn Division: Username: J ROBERT Date:9/7/2010

PROPOSED MAST ARM MOUNTED SIGNS

R3-6L
30" x 36"
1 - PROPOSED

R3-6R
30" x 36"
1 - PROPOSED

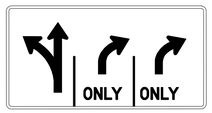


R3-8(MOD)
36" x 36"
1 - PROPOSED

R10-15R
30" x 30"
1 - PROPOSED

R3-5a
30" x 36"
1 - PROPOSED

R3-5L
30" x 36"
1 - PROPOSED



R3-8a(MOD)
60" x 36"
1 - PROPOSED

R10-17
24" x 30"
1 - PROPOSED

PROPOSED POST AND POLE MOUNTED SIGNS

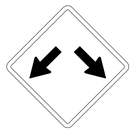
R10-3e
9" x 15"
1 - PROPOSED

R10-3eL
9" x 15"
3 - PROPOSED

R10-3eR
9" x 15"
3 - PROPOSED

OM1-1
30" x 30"
2 - PROPOSED

R4-7
24" x 30"
1 - PROPOSED



W12-1
30" x 30"
1 - PROPOSED

PRE-EMPTION OPERATION

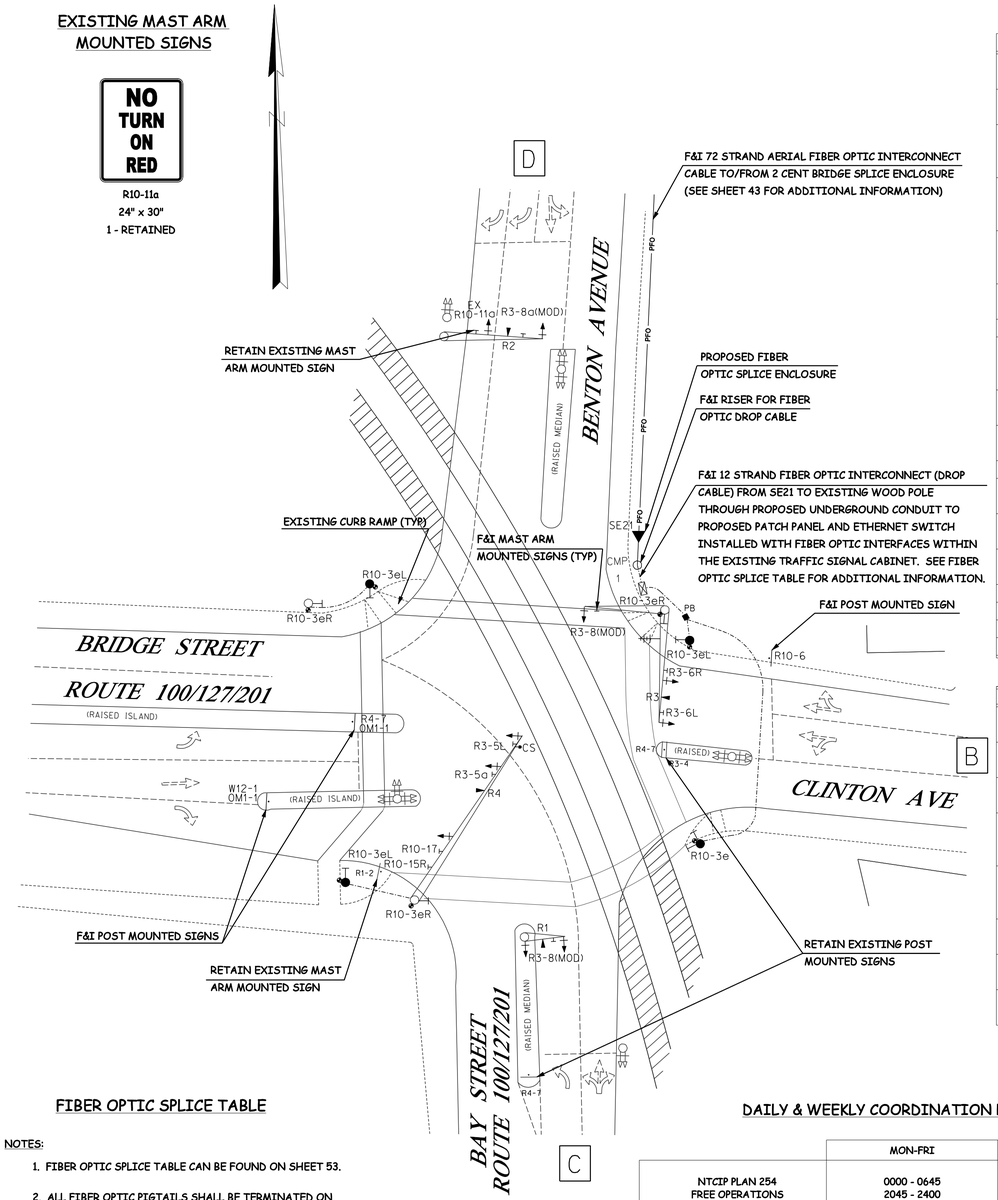
ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
RR1	1	1	5
RR2	2	2	RESERVED
R1	3	3	1
R2	4	4	2
R3	5	5	3
R4	6	6	4

PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 6 = LOWEST)
3. 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 (3.5 SECONDS YELLOW AND 4.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. RAILROAD PREEMPTION SHALL OVERRIDE EMERGENCY VEHICLE PREEMPTION AND COORDINATION.
7. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.
8. EXISTING RAILROAD PREEMPTION FUNCTIONALITY SHALL BE RETAINED. IN THE EVENT OF AN UNFORSEEN DISCREPANCY WITH PROPOSED SIGNAL OPERATIONS, THE MOST CONSERVATIVE APPROACH TO RESOLVE DISCREPANCY SHALL BE APPLIED.
9. RAILROAD PREEMPTION #1 (RR1) SHALL HOLD OR ADVANCE TO AND HOLD PHASE 5. AT THE COMPLETION OF THE PREEMPTION CYCLE, THE CONTROLLER SHALL RETURN TO PHASE 2.
10. RAILROAD PREEMPTION #2 (RR2) IS RESERVED FOR FUTURE PREEMPTION.

EXISTING MAST ARM MOUNTED SIGNS

R10-11a
24" x 30"
1 - RETAINED



FIBER OPTIC SPLICE TABLE

NOTES:

1. FIBER OPTIC SPLICE TABLE CAN BE FOUND ON SHEET 53.
2. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
3. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
ROUTE 100/127/US201 (BRIDGE ST), ROUTE 100/127/US201 (BAY ST), CLINTON AVENUE, AND BENTON AVENUE

SIGNAL GROUP:
2

LOCATION:
21

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 2 ETHERNET EQUIPPED CONTROLLER	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED CONFLICT MONITOR (CMU)	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS.	8
FURNISH AND INSTALL ONE-WAY, 4-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON SIDE OF POLE AND/OR MAST ARMS WITH ASTRO-BRACKETS.	1
FURNISH AND INSTALL ONE-WAY, 5-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS.	1
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON PROPOSED SIGNAL HEADS	10
REMOVE AND RESET EXISTING YELLOW LED MODULES INTO NEW SIGNAL HEADS	10
FURNISH AND INSTALL NEW 12-INCH LED RED, YELLOW (2), AND GREEN LENSES INTO NEW SIGNAL HEADS, INCLUDING 1-BIMODAL YELLOW/GREEN ARROWS	24
FURNISH AND INSTALL ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	7
FURNISH AND INSTALL ONE-WAY, 16 X 18-INCH LED POST MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	8
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS IN EXISTING CONTROLLER CABINET	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	4
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM OR POLE MOUNTED SIGNS	12
CABLE TO NEW PEDESTRIAN SIGNAL INSTALLATIONS	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL PRECAST CONCRETE JUNCTION BOX (ITEM 626.11)	1
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	200 LF
FURNISH AND INSTALL 18-INCH FOUNDATION (ITEM 626.31)	4
FURNISH AND INSTALL APPROXIMATELY 70 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 1400 LINEAR FEET OF 72-STRAND FIBER OPTIC INTERCONNECT CABLE TO LOCATION 20 (SEE SHEET 24A) FROM CMP POLE 2/2/21/10 (ITEM 643.90)	1
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	2
FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL (8-FOOT) PEDESTAL POLE (ITEM 643.92)	4

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

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 50/100 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN
17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

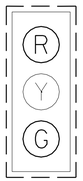
BRIDGE ST, BAY ST, CLINTON AVE, AND BENTON AVE

TRAFFIC SIGNAL PLAN

SHEET NUMBER
25A
OF 54

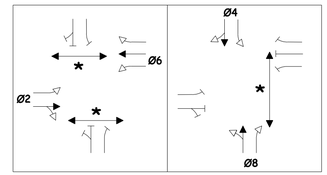
Filename: ...\planset\049_5206800SG21A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

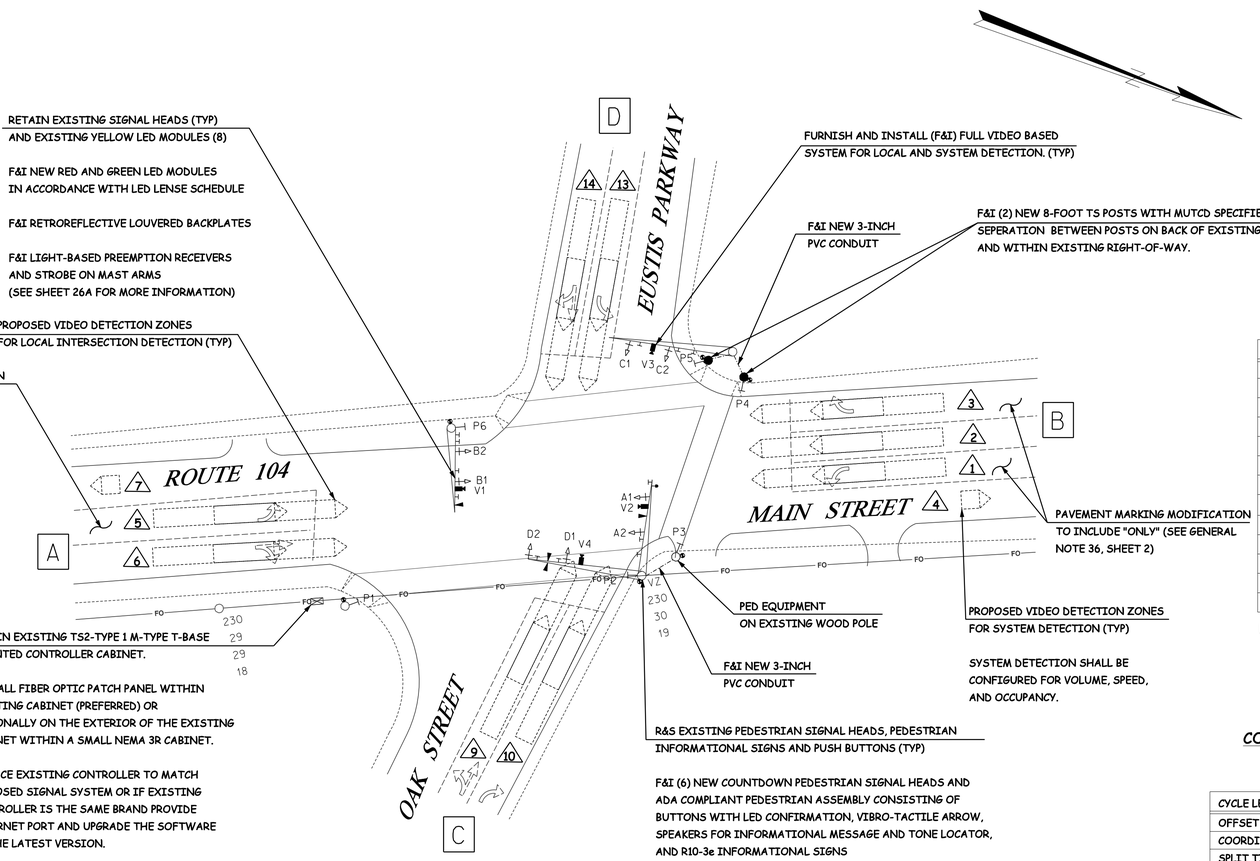
EXISTING	PROPOSED
A1,A2,B1,B2 C1,C2,D1,D2	P1-P6
	
12" LENS	16" x 18" PEDESTRIAN SIGNAL
ADD 5" RETROREFLECTIVE LOUVERED BACKPLATES	

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RETAINED L.E.D. MODULES - (SEE LED LENSE SCHEDULE)

PHASING SEQUENCE



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



L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1	1	*	1							
A2	1	*	1							
B1	1	*	1							
B2	1	*	1							
C1	1	*	1							
C2	1	*	1							
D1	1	*	1							
D2	1	*	1							
TOTAL	8	0	8	0	0	0	0	0	0	0

NOTES: * = EXISTING L.E.D. LENSES TO BE RETAINED

R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL		10		5		10		5
PASSAGE TIME		2		2		2		2
MAXIMUM 1		40		30		40		30
MAXIMUM 2		95		35		95		35
YELLOW		4.0		4.0		4.0		4.0
ALL RED		2.5		2.5		2.5		2.5
PEDESTRIAN WALK		4				4		4
PEDESTRIAN CLEARANCE		21				21		14
RECALL		S		O		S		O
DETECTOR OPERATION		PR		PR		PR		PR
PREEMPTION PRIORITY		2		4		1		3
FLASH ~		Y		R		Y		R
DUAL ENTRY		ON		ON		ON		ON

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED
~ PED. SIGNALS SHALL BE DARK DURING FLASHING OPERATIONS.

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	42	100	55	60	150	150	
OFFSET (END GRN)	34	42	18	33	115	27	
COORDINATED Ø	2	2	2	2	2	6	
SPLIT TIME Ø1	0	0	0	0	0	0	FLOATING FORCE-OFF
SPLIT TIME Ø2	18	63	31	35	113	113	
SPLIT TIME Ø3	0	0	0	0	0	0	
SPLIT TIME Ø4	24	37	24	25	37	37	
SPLIT TIME Ø5	0	0	0	0	0	0	
SPLIT TIME Ø6	18	63	31	35	113	113	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	24	37	24	25	37	37	

COORDINATION NOTES:

1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 26A FOR DAY PLAN SETTINGS).
3. TRAFFIC SIGNAL CONTROLLER SHALL BE SET FOR STOP TIME IN WALK TO ON.

DETECTOR SCHEDULE

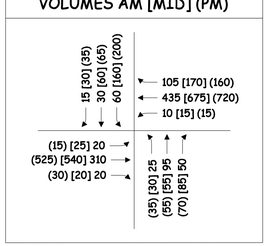
	DETECTOR					VIDEO DETECTOR CARD			
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO	DETECTOR NO	CHANNEL
CAMERA V1	1	MAIN STREET	SOUTHBOUND	LEFT	1	FULL VIDEO	2	1/1	1
	2	MAIN STREET	SOUTHBOUND	THRU	6	FULL VIDEO	2	1/2	2
	3	MAIN STREET	SOUTHBOUND	RIGHT	6D	FULL VIDEO	2	1/3	3
	4	MAIN STREET	NORTHBOUND	THRU (SYSTEM)	C	FULL VIDEO	2	1/4	4
CAMERA V2	5	MAIN STREET	EASTBOUND	LEFT	5	FULL VIDEO	4	2/1	1
	6	MAIN STREET	EASTBOUND	THRU-RIGHT	2	FULL VIDEO	4	2/2	2
	7	MAIN STREET	WESTBOUND	THRU (SYSTEM)	C	FULL VIDEO	4	2/3	3
	(8)	SPARE						2/4	4
CAMERA V3	9	OAK STREET	WESTBOUND	LEFT-THRU	8	FULL VIDEO	6	3/1	1
	10	OAK STREET	WESTBOUND	RIGHT	8D	FULL VIDEO	6	3/2	2
	(11)	SPARE						3/3	3
	(12)	SPARE						3/4	4
CAMERA V4	13	EUSTIS PARKWAY	EASTBOUND	LEFT	4	FULL VIDEO	8	4/1	1
	14	EUSTIS PARKWAY	EASTBOUND	THRU-RIGHT	4	FULL VIDEO	8	4/2	2
	(15)	SPARE						4/3	3
	(16)	SPARE						4/4	4

DETECTOR NOTES:

C = COUNTING LOOP
ALL DETECTION SHOULD BE INITIALLY SET TO NONLOCKING OPERATIONS.
DETECTORS DESIGNATED FOR DELAY (6D AND 8D) SHALL INCLUDE A 20 SECOND DELAY.

INTERSECTION:
ROUTE 104 (MAIN ST) AND EUSTIS PARKWAY/OAK ST
SIGNAL GROUP:
3
LOCATION:
22

SYSTEM DESIGN VOLUMES AM [MID] (PM)



PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3		Address 98/ Comments	9/07/10
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

ROUTE 104 (MAIN ST) AND EUSTIS PARKWAY/OAK ST

TRAFFIC SIGNAL PLAN

SHEET NUMBER

26

OF 54

Filename: ...\ts\planset\050_5206800SG22.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER	1
FURNISH AND INSTALL NEW 16 CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON EXISTING SIGNAL HEADS	8
FURNISH AND INSTALL NEW 12-INCH LED RED AND GREEN LENSES INTO NEW SIGNAL HEADS	16
FURNISH AND INSTALL ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	6
FURNISH AND INSTALL ONE-WAY, 16 X 18-INCH LED POST MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	6
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS IN EXISTING CONTROLLER CABINET	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	4
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM MOUNTED SIGNS	8
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	40 LF
FURNISH AND INSTALL 18-INCH FOUNDATION (ITEM 626.31)	2
INSTALL WHITE "ONLY" PAVEMENT MARKINGS (ITEM 627.75)	66 SF
FURNISH AND INSTALL CARD RACK MOUNT VIDEO COMMUNICATIONS BOARD (ITEM 643.83)	1
FURNISH AND INSTALL 2-CHANNEL/ 4-OUTPUT CARD RACK MOUNT DATA AND PRESENCE VIDEO DETECTOR CARDS (ITEM 643.83)	2
FURNISH AND INSTALL CARD RACK VIDEO POWER SUPPLY (ITEM 643.83)	1
FURNISH AND INSTALL VIDEO DETECTION CAMERA (ITEM 643.83)	4
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 200 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL (8-FOOT) PEDESTAL POLE (ITEM 643.92)	2

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

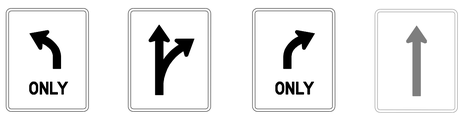
EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø6
R2	4	2	Ø2
R3	5	3	Ø8
R4	6	4	Ø4

EMERGENCY VEHICLE PRE-EMPTION NOTES:

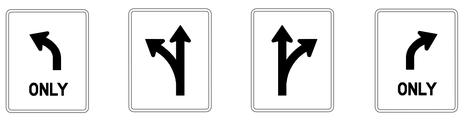
1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 4 = LOWEST)
3. 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 (4.0 SECONDS YELLOW AND 2.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

EXISTING MAST ARM MOUNTED SIGNS



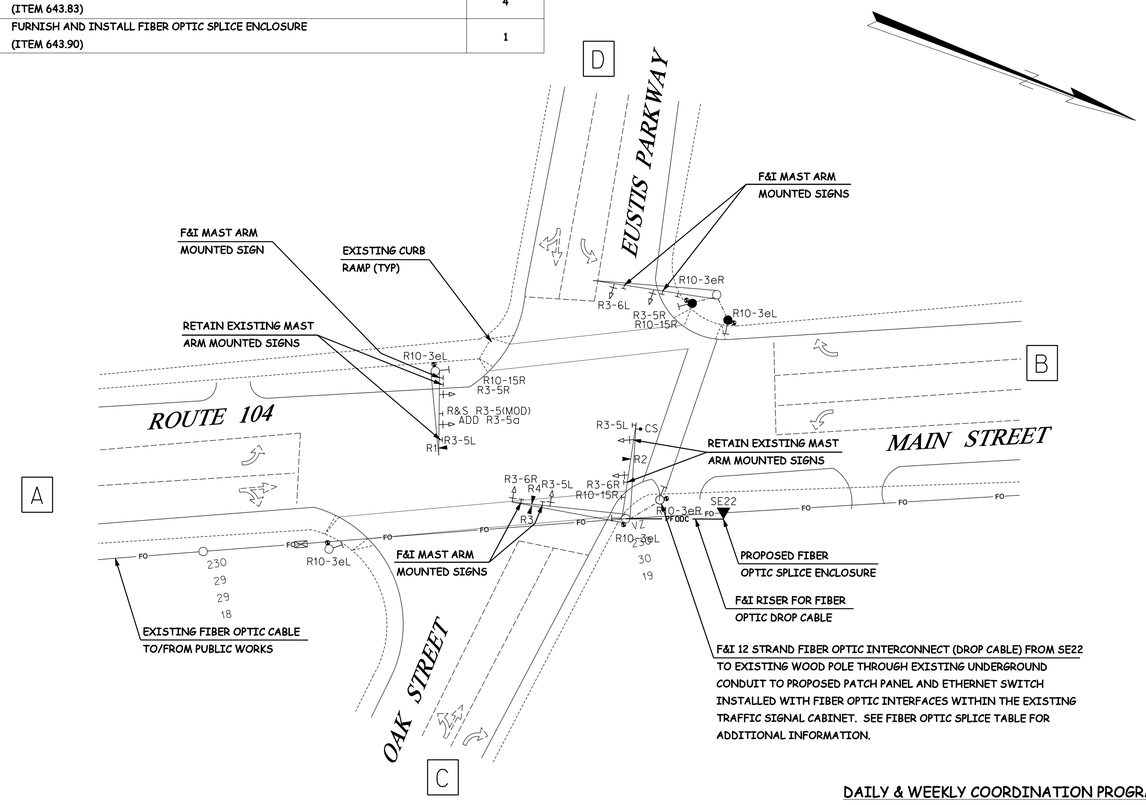
R3-5L	R3-6R	R3-5R	R3-5(MOD)
30" x 36"	30" x 36"	30" x 36"	30" x 36"
2 - RETAINED	1 - RETAINED	1 - RETAINED	1 - REMOVED

PROPOSED MAST ARM MOUNTED SIGNS



R3-5L	R3-6L	R3-6R	R3-5R
30" x 36"	30" x 36"	30" x 36"	30" x 36"
1 - PROPOSED	1 - PROPOSED	1 - PROPOSED	1 - PROPOSED

R3-5a	R10-3eL	R10-3eR	R10-15R
30" x 36"	9" x 15"	9" x 15"	30" x 30"
1 - PROPOSED	4 - PROPOSED	2 - PROPOSED	3 - PROPOSED



FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE22	BB-F (48F) TO PUBLIC WORKS	13	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	BB-F (48F) TO PUBLIC WORKS	14	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	BB-F (48F) TO PUBLIC WORKS	1-12, 15-48	THROUGH	BB-F (48F) TO SE23	1-12, 15-48	BB-F (48F) FIBER OPTIC BACKBONE
	BB-F (48F) TO SE23	13	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE23	14	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
PPP, CONTROL CABINET	12F TO SE22	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE22	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE22	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE22	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE22	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
ROUTE 104 (MAIN ST) AND EUSTIS PARKWAY/OAK ST
SIGNAL GROUP:
3
LOCATION:
22

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 42/84 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

ROUTE 104 (MAIN ST) AND EUSTIS PARKWAY/OAK ST

TRAFFIC SIGNAL PLAN

SHEET NUMBER

26A

OF 54

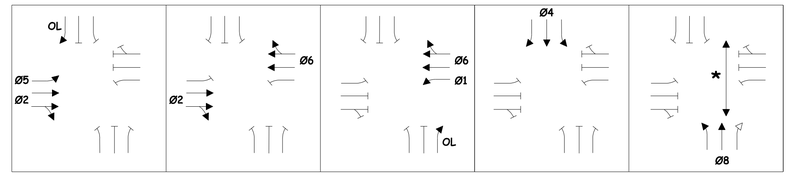
Filename: ...\planset\051_52068000SG22A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

EXISTING		PROPOSED			
A1,B1	A2,A3,B2,B3	C1,D1	C2,D2	C3,D3	P1-P2
12" LENS	12" LENS	12" LENS	12" LENS	12" LENS	16" x 18" PEDESTRIAN SIGNAL
WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES					

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW, RETAINED, AND/OR RESET L.E.D. MODULES - (SEE LED LENSE SCHEDULE)

PHASING SEQUENCE



NOTE: Ø5 LEADS & Ø1 LAGS
★ = NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN

RETAIN EXISTING SIGNAL HEADS (TYP) AND EXISTING YELLOW LED MODULES (8)

F&I NEW RED AND GREEN LED MODULES IN ACCORDANCE WITH LED LENSE SCHEDULE

F&I RETROREFLECTIVE LOUVERED BACKPLATES

F&I LIGHT-BASED PREEMPTION RECEIVERS AND STROBE ON MAST ARMS (SEE SHEET 27A FOR MORE INFORMATION)

RETAIN EXISTING MAIN ST. LEFT-TURN AND SIDE STREET LEFT AND THROUGH WIRE LOOP DETECTION AS WIRED IN THE EXISTING CONTROLLER CABINET

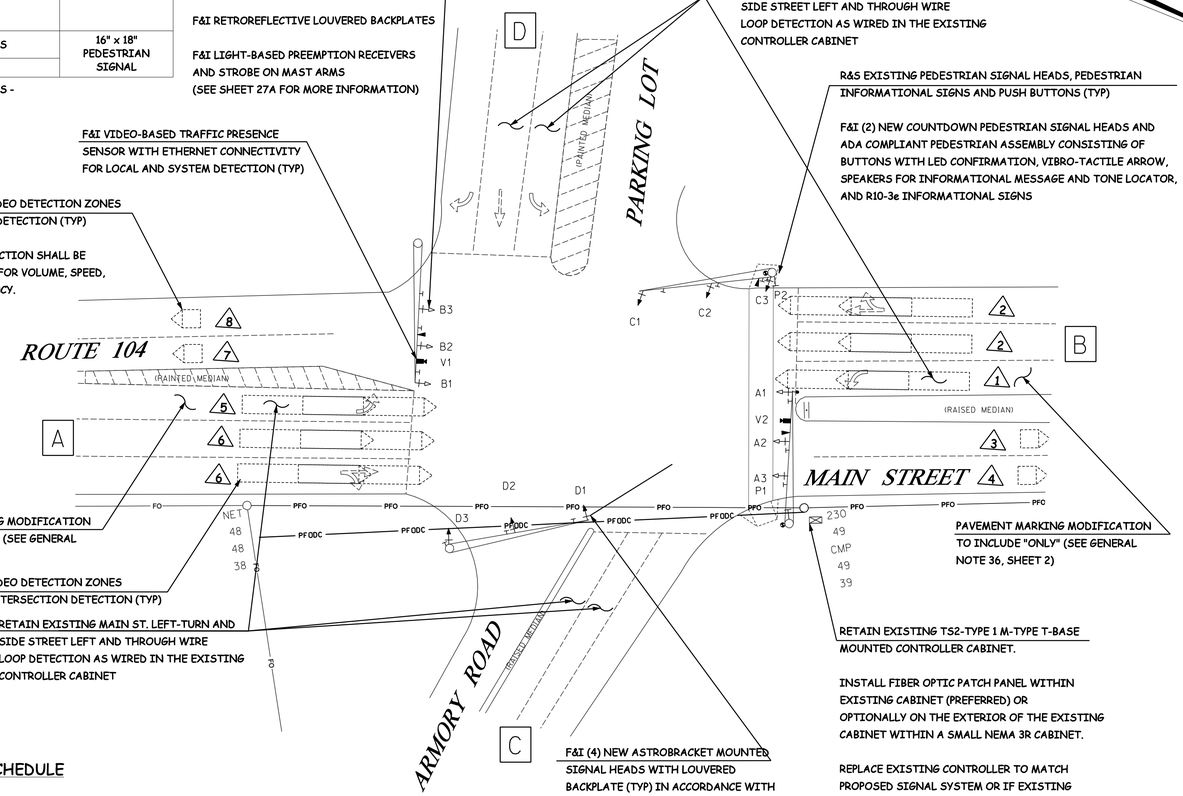
R&S EXISTING PEDESTRIAN SIGNAL HEADS, PEDESTRIAN INFORMATIONAL SIGNS AND PUSH BUTTONS (TYP)

F&I (2) NEW COUNTDOWN PEDESTRIAN SIGNAL HEADS AND ADA COMPLIANT PEDESTRIAN ASSEMBLY CONSISTING OF BUTTONS WITH LED CONFIRMATION, VIBRO-TACTILE ARROW, SPEAKERS FOR INFORMATIONAL MESSAGE AND TONE LOCATOR, AND R10-3e INFORMATIONAL SIGNS

F&I VIDEO-BASED TRAFFIC PRESENCE SENSOR WITH ETHERNET CONNECTIVITY FOR LOCAL AND SYSTEM DETECTION (TYP)

PROPOSED VIDEO DETECTION ZONES FOR SYSTEM DETECTION (TYP)

SYSTEM DETECTION SHALL BE CONFIGURED FOR VOLUME, SPEED, AND OCCUPANCY.



PAVEMENT MARKING MODIFICATION TO INCLUDE "ONLY" (SEE GENERAL NOTE 36, SHEET 2)

PROPOSED VIDEO DETECTION ZONES FOR LOCAL INTERSECTION DETECTION (TYP)

RETAIN EXISTING MAIN ST. LEFT-TURN AND SIDE STREET LEFT AND THROUGH WIRE LOOP DETECTION AS WIRED IN THE EXISTING CONTROLLER CABINET

F&I (4) NEW ASTROBRACKET MOUNTED SIGNAL HEADS WITH LOUVERED BACKPLATE (TYP) IN ACCORDANCE WITH PROPOSED SIGNAL HEAD DATA AND LED LENSE SCHEDULE

PAVEMENT MARKING MODIFICATION TO INCLUDE "ONLY" (SEE GENERAL NOTE 36, SHEET 2)

RETAIN EXISTING TS2-TYPE 1 M-TYPE T-BASE MOUNTED CONTROLLER CABINET.

INSTALL FIBER OPTIC PATCH PANEL WITHIN EXISTING CABINET (PREFERRED) OR OPTIONALLY ON THE EXTERIOR OF THE EXISTING CABINET WITHIN A SMALL NEMA 3R CABINET.

REPLACE EXISTING CONTROLLER TO MATCH PROPOSED SIGNAL SYSTEM OR IF EXISTING CONTROLLER IS THE SAME BRAND PROVIDE ETHERNET PORT AND UPGRADE THE SOFTWARE TO THE LATEST VERSION.

IMPLEMENT LOCAL AND SYSTEM TIMING PLANS.

L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1				1	*	1				
A2	1	*	1							
A3	1	*	1							
B1				1	*	1				
B2	1	*	1							
B3	1	*	1							
C1				1	1	1				
C2	1	*	1							
C3	1	1	1						1	1
D1				1	1	1				
D2	1	*	1							
D3	1	1	1						1	1
TOTAL	8	2	8	4	2	4	0	0	2	2

NOTES: * = EXISTING L.E.D. LENSES TO BE RETAINED AND/OR RESET
R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL	7	10		5	5	10		7
PASSAGE TIME	3	2		3	3	2		3
MAXIMUM 1	25	40		25	25	40		25
MAXIMUM 2	35	85		25	25	95		25
YELLOW	4.0	4.0		4.0	4.0	4.0		4.0
ALL RED	2.5	2.5		2.5	2.5	2.5		2.5
PEDESTRIAN WALK								4
PEDESTRIAN CLEARANCE								17
RECALL	O	S		O	O	S		O
DETECTOR OPERATION	PR	PR		PR	PR	PR		PR
PREEMPTION PRIORITY	1	2			2	1		3
FLASH ~	R	Y		R	R	Y		R
DUAL ENTRY	OFF	ON		OFF	OFF	ON		OFF

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED
~ PED. SIGNALS SHALL BE DARK DURING FLASHING OPERATIONS.

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	84	100	110	120	150	150	
OFFSET (END GRN)	22	40	53	75	122	76	
COORDINATED Ø	6	2	2	2	2	6	
SPLIT TIME Ø1	19	27	27	29	31	42	
SPLIT TIME Ø2	20	28	32	35	66	55	
SPLIT TIME Ø3	28	28	28	28	28	28	
SPLIT TIME Ø4	17	17	23	28	25	25	
SPLIT TIME Ø5	14	17	17	19	27	27	
SPLIT TIME Ø6	25	38	42	45	70	70	
SPLIT TIME Ø7	17	17	23	28	25	25	
SPLIT TIME Ø8	28	28	28	28	28	28	

FLOATING FORCE-OFF

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 27A FOR DAY PLAN SETTINGS).
3. TRAFFIC SIGNAL CONTROLLER SHALL BE SET FOR STOP TIME IN WALK TO ON.
4. PHASE 3 AND 7 IS A DUMMY PHASE TO BE SET WITH SPLIT TIMES FOR NTCIP COMPLIANCE.

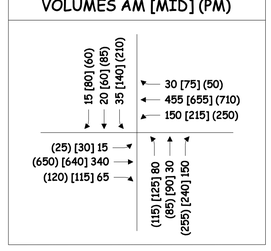
DETECTOR SCHEDULE

	DETECTOR					DETECTOR CARD IN VEHICLE DETECTION RACK OR MOUNTABLE INTERFACE MODULE (I.E., FOR CERTAIN TYPES OF VIDEO PRESENCE DETECTION) AS APPLICABLE				INDUCTANCE		CONTINUITY		RESISTANCE LOOP TO GROUND	
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO.	DETECTOR NO.	CHANNEL	PRIOR	PRESENT	PRIOR	PRESENT	PRIOR	PRESENT
CAMERA V1	1	MAIN STREET	SOUTHBOUND	LEFT	1	(VIDEO BACKUP)^	1 (6)	1/1	1	138µh		1.4Ω		426 MΩ	
	2	MAIN STREET	SOUTHBOUND	THRU/THRU-RIGHT	6	VIDEO	(6)	1/2	2	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	3	MAIN STREET	NORTHBOUND	MEDIAN SIDE (SYSTEM)	C	VIDEO	(6)	1/3	3	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	4	MAIN STREET	NORTHBOUND	CURB SIDE (SYSTEM)	5	VIDEO	(6)	1/4	4	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
CAMERA V2	5	MAIN STREET	NORTHBOUND	LEFT	2	(VIDEO BACKUP)^	1 (8)	2/1	2	194µh		3.7Ω		∞	
	6	MAIN STREET	NORTHBOUND	THRU/THRU-RIGHT	2	VIDEO	(8)	2/2	2	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	7	MAIN STREET	SOUTHBOUND	MEDIAN SIDE (SYSTEM)	C	VIDEO	(8)	2/3	3	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	8	MAIN STREET	SOUTHBOUND	CURB SIDE (SYSTEM)	C	VIDEO	(8)	2/4	4	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	9	PLAZA DRIVEWAY	EASTBOUND	LEFT	4	PRESENCE	2		1	200µh		3.8Ω		∞	
	10	PLAZA DRIVEWAY	EASTBOUND	THRU	4	PRESENCE	2		2	187µh		3.6Ω		∞	
	11	ARMORY STREET	WESTBOUND	LEFT	8	PRESENCE	3		1	195µh		1.8Ω		∞	
	12	ARMORY STREET	WESTBOUND	THRU	8	PRESENCE	3		2	243µh		2.1Ω		∞	
										RECORD FIELD MEASUREMENTS HERE					

DETECTOR NOTES:
C = COUNTING LOOP
PRIOR = FIELD MEASUREMENTS CONDUCTED NOVEMBER 18, 2009.
PRESENT = FIELD MEASUREMENTS TO BE CONDUCTED UPON NEW CABINET INSTALLATION.
^ = EXISTING MAIN STREET LEFT-TURN WIRE LOOPS SHALL BE RETAINED; HOWEVER, THESE LANES SHALL ALSO BE SETUP AS VIDEO DETECTION ZONES FOR EASE OF TRANSITION TO FULL MAIN STREET VIDEO DETECTION IN THE EVENT OF A WIRE LOOP FAILURE. IN THE INTERIM, THE MAIN STREET VIDEO DETECTED LEFT-TURN LANE SHALL BE SETUP FOR COUNTING ONLY PURPOSES.

INTERSECTION:
ROUTE 104 (MAIN ST) AND ARMORY ROAD
SIGNAL GROUP:
3
LOCATION:
23

SYSTEM DESIGN VOLUMES AM [MID] (PM)



STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BIGBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
ROUTE 104 (MAIN ST) AND ARMORY ROAD

TRAFFIC SIGNAL PLAN

PLAN
25 0 25 50
SCALE

SHEET NUMBER
27
OF 54

Filename: ...\ts\planset\052_52068005G23.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER	1
FURNISH AND INSTALL NEW 16 CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS	4
FURNISH AND INSTALL ONE-WAY, 5-SECTION, POLE MOUNTED 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS.	2
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON EXISTING AND PROPOSED SIGNAL HEADS	12
REMOVE AND RESET EXISTING YELLOW LED MODULES INTO NEW SIGNAL HEADS	2
FURNISH AND INSTALL NEW 12-INCH LED RED, YELLOW(2), AND GREEN LENSES INTO NEW AND EXISTING SIGNAL HEADS	32
FURNISH AND INSTALL ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	2
FURNISH AND INSTALL ONE-WAY, 16 X 18-INCH LED POST MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	2
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS IN EXISTING CONTROLLER CABINET	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	3
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM AND POLE MOUNTED SIGNS	4
CABLE TO NEW SIGNAL INSTALLATIONS	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
INSTALL WHITE "ONLY" PAVEMENT MARKINGS (ITEM 627.75)	44 SF
FURNISH AND INSTALL VIDEO BASED VEHICLE DETECTION SYSTEM, REQUIRING 2-DETECTION UNITS PLUS FIELD WIRING TO ANCILLARY CABINET MOUNTED DEVICES (ITEM 643.83)	1
FURNISH AND INSTALL APPROXIMATELY 250 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 585 LINEAR FEET OF 72-STRAND FIBER OPTIC INTERCONNECT CABLE TO LOCATION 24 (SEE SHEET 28A) FROM NET POLE 48/48/38 (ITEM 643.90)	1
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1

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

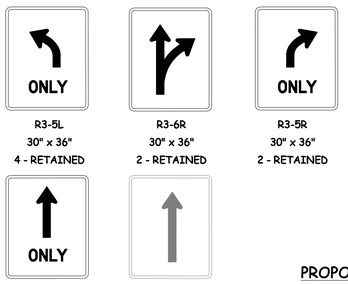
EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø1 & Ø6
R2	4	2	Ø2 & Ø6
R3	5	3	Ø8
R4	6	NOT USED	

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 3 = LOWEST)
3. 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 (4.0 SECONDS YELLOW AND 2.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

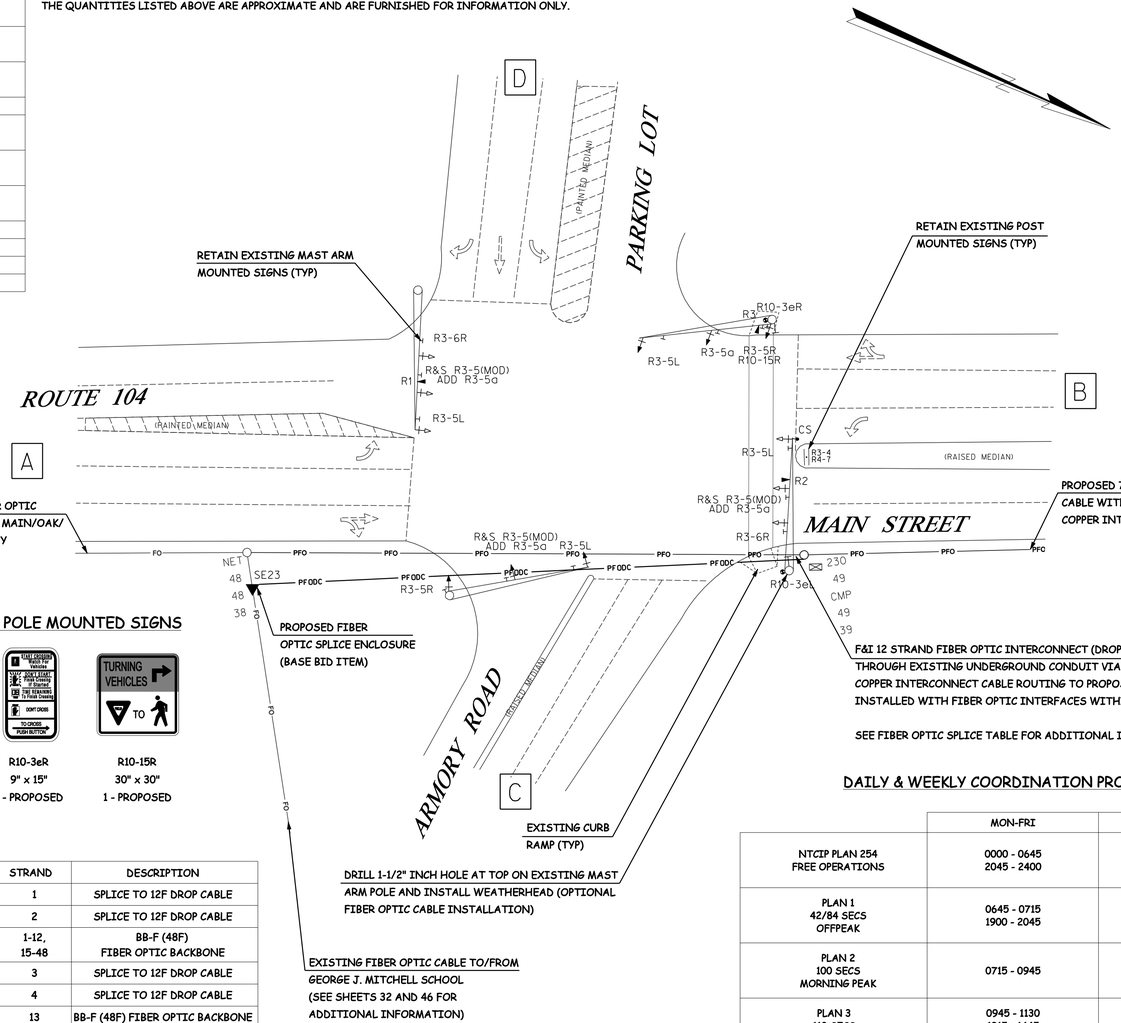
EXISTING MAST ARM MOUNTED SIGNS



R3-5L 30" x 36" 4 - RETAINED
R3-6R 30" x 36" 2 - RETAINED
R3-5R 30" x 36" 2 - RETAINED
R3-5a 30" x 36" 1 - RETAINED
R3-5(MOD) 30" x 36" 3 - REMOVED

PROPOSED MAST ARM AND POLE MOUNTED SIGNS

R3-5a 30" x 36" 3 - PROPOSED
R10-3eL 9" x 15" 1 - PROPOSED
R10-3eR 9" x 15" 1 - PROPOSED
R10-15R 30" x 30" 1 - PROPOSED



FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE23	BB-F (48F) TO SE22	13	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	BB-F (48F) TO SE22	14	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	BB-F (48F) TO SE22	1-12, 15-48	THROUGH	BB-F (48F) TO MITCHELL SCHOOL	1-12, 15-48	BB-F (48F) FIBER OPTIC BACKBONE
	72F TO SE24	1	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	72F TO SE24	2	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
	72F TO SE24	3	SPLICE	72F TO MITCHELL SCHOOL	13	BB-F (48F) FIBER OPTIC BACKBONE
	72F TO SE24	4	SPLICE	72F TO MITCHELL SCHOOL	14	BB-F (48F) FIBER OPTIC BACKBONE
	72F TO SE24	5-72	UNTERMINATED	-	-	END OF CABLE
PP, CONTROL CABINET	12F TO SE23	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE23	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE23	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE23	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE23	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
ROUTE 104 (MAIN ST) AND ARMORY ROAD
SIGNAL GROUP:
3
LOCATION:
23

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 42/84 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
PIN 17288.00

PROJ. MANAGER	J. MANSIR			
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10	
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10	
DESIGN2-DETAILED2				
DESIGN3-DETAILED3		Address 98/ Comments	9/07/10	
REVISIONS 1				
REVISIONS 2				
REVISIONS 3				
REVISIONS 4				
FIELD CHANGES				

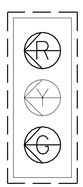
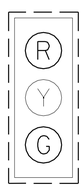
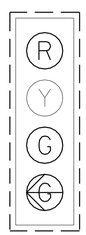
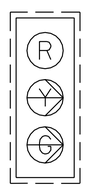
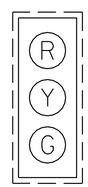
SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
ROUTE 104 (MAIN ST) AND ARMORY ROAD
TRAFFIC SIGNAL PLAN

SHEET NUMBER
27A
OF 54

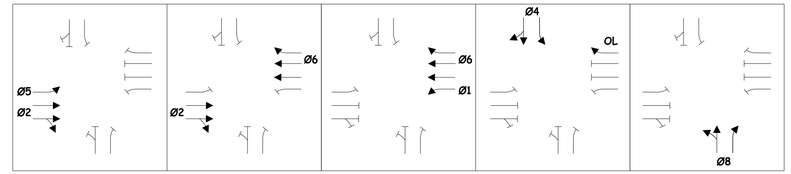
Filename: ...\planset\053_5206800SG23A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

EXISTING			PROPOSED	
A1,B1	A2,A3,B2,C2,D2	C1,D1	B4	B3
				
12" LENS	12" LENS	12" LENS	12" LENS	12" LENS
ADD 5" RETROREFLECTIVE LOUVERED BACKPLATES				

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RETAINED L.E.D. MODULES - (SEE LED LENSE SCHEDULE)

PHASING SEQUENCE



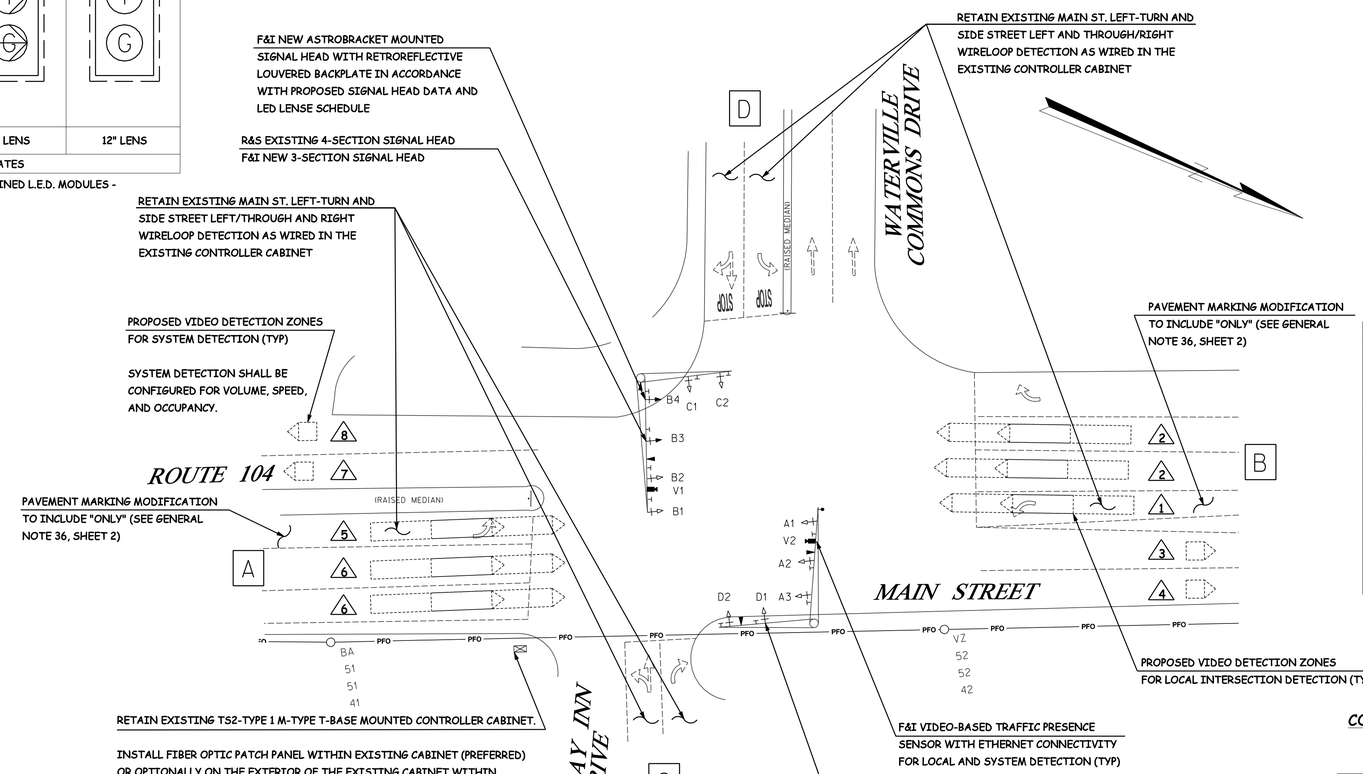
NOTE: Ø5 LEADS & Ø1 LAGS

L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1				1	*	1				
A2	1	*	1							
A3	1	*	1							
B1				1	*	1				
B2	1	*	1							
B3	1	*	1							
B4	1								1	1
C1	1	*	1			1				
C2	1	*	1							
D1	1	*	1			1				
D2	1	*	1							
TOTAL	9	0	8	2	0	4	0	0	1	1

NOTES: * = EXISTING L.E.D. LENSES TO BE RETAINED

R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW



SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL	5	10		7	7	10		5
PASSAGE TIME	3	2		3	3	2		3
MAXIMUM 1	15	40		25	25	40		15
MAXIMUM 2	15	95		30	50	60		12
YELLOW	4.0	4.0		4.0	4.0	4.0		4.0
ALL RED	2.5	2.5		1.5	2.5	2.5		1.5
PEDESTRIAN WALK								
PEDESTRIAN CLEARANCE								
RECALL	O	S		O	O	S		O
DETECTOR OPERATION	PR	PR		PR	PR	PR		PR
PREEMPTION PRIORITY	1	2		3	2	1		
FLASH	R	Y		R	R	Y		R
DUAL ENTRY	OFF	ON		OFF	OFF	ON		OFF

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED

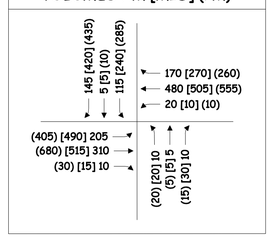
DETECTOR SCHEDULE

	DETECTOR					DETECTOR CARD IN VEHICLE DETECTION RACK OR MOUNTABLE INTERFACE MODULE (I.E., FOR CERTAIN TYPES OF VIDEO PRESENCE DETECTION) AS APPLICABLE				INDUCTANCE		CONTINUITY		RESISTANCE LOOP TO GROUND	
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO.	DETECTOR NO.	CHANNEL	PRIOR	PRESENT	PRIOR	PRESENT	PRIOR	PRESENT
CAMERA V1	1	MAIN STREET	SOUTHBOUND	LEFT	1	(VIDEO BACKUP)^	1 (6)	1/1	1	199µh		3.4Ω		100 MΩ	
	2	MAIN STREET	SOUTHBOUND	THRU/THRU-RIGHT	6	VIDEO	(6)	1/2	2	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	3	MAIN STREET	NORTHBOUND	MEDIAN SIDE (SYSTEM)	C	VIDEO	(6)	1/3	3	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	4	MAIN STREET	NORTHBOUND	CURB SIDE (SYSTEM)	C	VIDEO	(6)	1/4	4	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
CAMERA V2	5	MAIN STREET	NORTHBOUND	LEFT	5	(VIDEO BACKUP)^	1 (8)	2/1	2	135µh		0.4Ω		100 MΩ	
	6	MAIN STREET	NORTHBOUND	THRU/THRU-RIGHT	2	VIDEO	(8)	2/2	2	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	7	MAIN STREET	SOUTHBOUND	MEDIAN SIDE (SYSTEM)	C	VIDEO	(8)	2/3	3	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	8	MAIN STREET	SOUTHBOUND	CURB SIDE (SYSTEM)	C	VIDEO	(8)	2/4	4	NO EXISTING WIRE LOOPS - F&I VIDEO PRESENCE					
	9	PLAZA DRIVEWAY	EASTBOUND	LEFT	4	PRESENCE	2		1	160µh		2.6Ω		∞	
	10	PLAZA DRIVEWAY	EASTBOUND	THRU-RIGHT	4	PRESENCE	2		2	190µh		2.9Ω		∞	
	11	INN DRIVEWAY	WESTBOUND	LEFT-THRU	8	PRESENCE	3		1	105µh		0.7Ω		∞	
	12	INN DRIVEWAY	WESTBOUND	RIGHT	8	PRESENCE	3		2	100µh		0.6Ω		∞	
										RECORD FIELD MEASUREMENTS HERE					

DETECTOR NOTES:
C = COUNTING LOOP
PRIOR = FIELD MEASUREMENTS CONDUCTED NOVEMBER 18, 2009.
PRESENT = FIELD MEASUREMENTS TO BE CONDUCTED UPON NEW CABINET INSTALLATION.
^ = EXISTING MAIN STREET LEFT-TURN WIRE LOOPS SHALL BE RETAINED; HOWEVER, THESE LANES SHALL ALSO BE SETUP AS VIDEO DETECTION ZONES FOR EASE OF TRANSITION TO FULL MAIN STREET VIDEO DETECTION IN THE EVENT OF A WIRE LOOP FAILURE. IN THE INTERIM, THE MAIN STREET VIDEO DETECTED LEFT-TURN LANE SHALL BE SETUP FOR COUNTING ONLY PURPOSES.

INTERSECTION:
ROUTE 104 (MAIN ST) AND WATERVILLE COMMONS DR
SIGNAL GROUP:
3
LOCATION:
24

SYSTEM DESIGN VOLUMES AM [MID] (PM)



COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

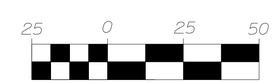
ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6
CYCLE LENGTH	84	100	110	120	150	150
OFFSET (END GRN)	6	45	62	83	127	64
COORDINATED Ø	2	2	2	2	2	6
SPLIT TIME Ø1	14	12	15	17	22	22
SPLIT TIME Ø2	37	51	55	58	80	80
SPLIT TIME Ø3	12	12	15	15	17	17
SPLIT TIME Ø4	21	25	25	30	31	31
SPLIT TIME Ø5	25	30	45	40	57	42
SPLIT TIME Ø6	26	33	25	35	45	60
SPLIT TIME Ø7	21	25	25	30	31	31
SPLIT TIME Ø8	12	12	15	15	17	17

FIXED FORCE-OFF

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 28A FOR DAY PLAN SETTINGS).
3. PHASE 3 AND 7 IS A DUMMY PHASE TO BE SET WITH SPLIT TIMES FOR NTCIP COMPLIANCE.

PLAN



SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN
17288.00

	BY	DATE
PROJ. MANAGER	J. MANSIR	
DESIGN-DETAILED	C. BIGBAY	7/16/10
CHECKED-REVIEWED	M. GRAHAM	8/13/10
DESIGN2-DETAILED2		
DESIGN3-DETAILED3	Address 98/ Comments	9/07/10
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
ROUTE 104 (MAIN ST) AND WATERVILLE COMMONS DR

TRAFFIC SIGNAL PLAN

SHEET NUMBER
28
OF 54

Filename: ...\ts\planset\054_5206800SG24.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER	1
FURNISH AND INSTALL NEW 16 CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS MOUNTED ON MAST ARMS WITH ASTRO-BRACKETS	2
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON EXISTING AND PROPOSED SIGNAL HEADS	11
REMOVE AND RESET EXISTING YELLOW LED MODULES INTO NEW SIGNAL HEADS	1
FURNISH AND INSTALL NEW 12-INCH LED RED, YELLOW(1), AND GREEN LENSES INTO NEW AND EXISTING SIGNAL HEADS	25
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS IN EXISTING CONTROLLER CABINET	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	3
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1
FURNISH AND INSTALL MAST ARM AND POST MOUNTED SIGNS	7
CABLE TO NEW SIGNAL INSTALLATIONS	-
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
INSTALL WHITE "ONLY" PAVEMENT MARKINGS (ITEM 627.75)	44 SF
FURNISH AND INSTALL VIDEO BASED VEHICLE DETECTION SYSTEM, REQUIRING 2-DETECTION UNITS PLUS FIELD WIRING TO ANCILLARY CABINET MOUNTED DEVICES (ITEM 643.83)	1
FURNISH AND INSTALL APPROXIMATELY 160 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 735 LINEAR FEET OF 72-STRAND FIBER OPTIC INTERCONNECT CABLE TO LOCATION 25 (SEE SHEET 29A) FROM VZ POLE 52/52/42 (ITEM 643.90)	1
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1

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

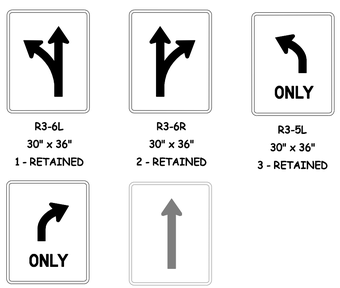
EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø1 & Ø6
R2	4	2	Ø2 & Ø5
R3	5	3	Ø4
R4	6	NOT USED	

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 3 = LOWEST)
3. 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 (4.0 SECONDS YELLOW AND 2.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

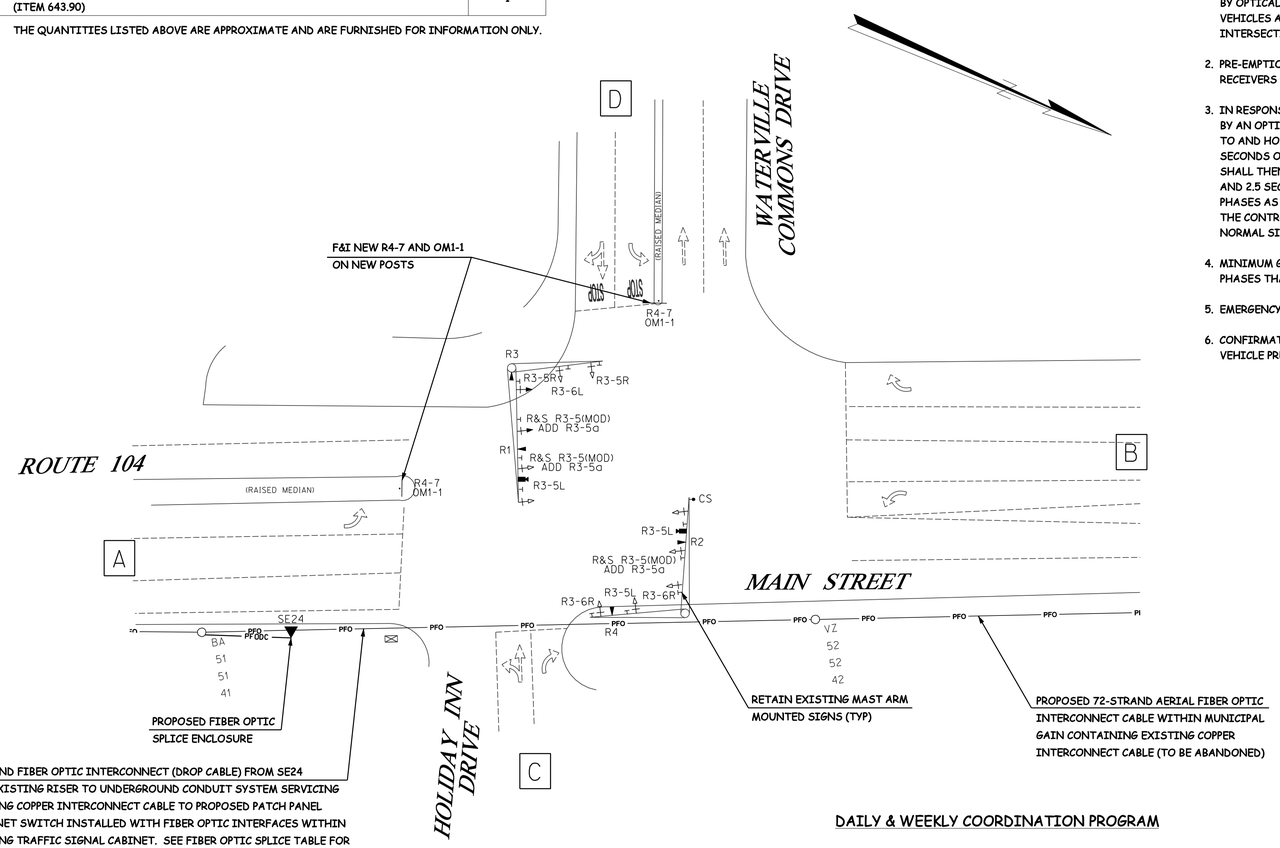
EXISTING MAST ARM MOUNTED SIGNS



R3-6L 30" x 36" 1 - RETAINED
R3-6R 30" x 36" 2 - RETAINED
R3-5L 30" x 36" 3 - RETAINED
R3-5R 30" x 36" 2 - RETAINED
R3-5(MOD) 30" x 36" 3 - REMOVED

PROPOSED MAST ARM AND POST MOUNTED SIGNS

R4-7 24" x 30" 2 - PROPOSED
OM1-1 18" x 18" 2 - PROPOSED
R3-5a 30" x 36" 3 - PROPOSED



F&I 12 STRAND FIBER OPTIC INTERCONNECT (DROP CABLE) FROM SE24 THROUGH EXISTING RISER TO UNDERGROUND CONDUIT SYSTEM SERVICING THE EXISTING COPPER INTERCONNECT CABLE TO PROPOSED PATCH PANEL AND ETHERNET SWITCH INSTALLED WITH FIBER OPTIC INTERFACES WITHIN THE EXISTING TRAFFIC SIGNAL CABINET. SEE FIBER OPTIC SPLICE TABLE FOR ADDITIONAL INFORMATION.

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE24	72F TO SE23	1	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	72F TO SE23	2	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	72F TO SE23	3-72	THROUGH	72F TO SE25	3-72	72F FIBER BACKBONE
	72F TO SE25	1	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	72F TO SE25	2	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
PPP, CONTROL CABINET	12F TO SE24	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE24	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE24	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE24	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE24	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
ROUTE 104 (MAIN ST) AND WATERVILLE COMMONS DR
SIGNAL GROUP:
3
LOCATION:
24

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 42/84 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3		Address 98/ Comments	9/07/10
REVISIONS: 1			
REVISIONS: 2			
REVISIONS: 3			
REVISIONS: 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

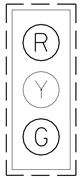
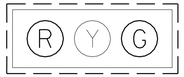
WATERVILLE-WINSLOW
ROUTE 104 (MAIN ST) AND WATERVILLE COMMONS DR

TRAFFIC SIGNAL PLAN

SHEET NUMBER
28A
OF 54

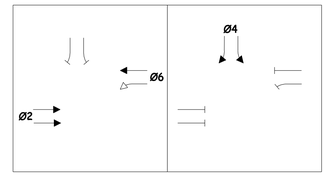
Filename: ...\planset\055_52068005G24A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

EXISTING	
A1,A2,C1,C2	B1,B2
	 (HORIZONTALLY MOUNTED)
12" LENS	12" LENS
ADD 5" RETROREFLECTIVE LOUVERED BACKPLATES	

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RETAINED (SEE LED LENSE SCHEDULE) L.E.D. MODULES -

PHASING SEQUENCE



RETAIN EXISTING SIGNAL HEADS (TYP)
AND EXISTING YELLOW LED MODULES (6)

F&I NEW RED AND GREEN LED MODULES
IN ACCORDANCE WITH LED LENSE SCHEDULE

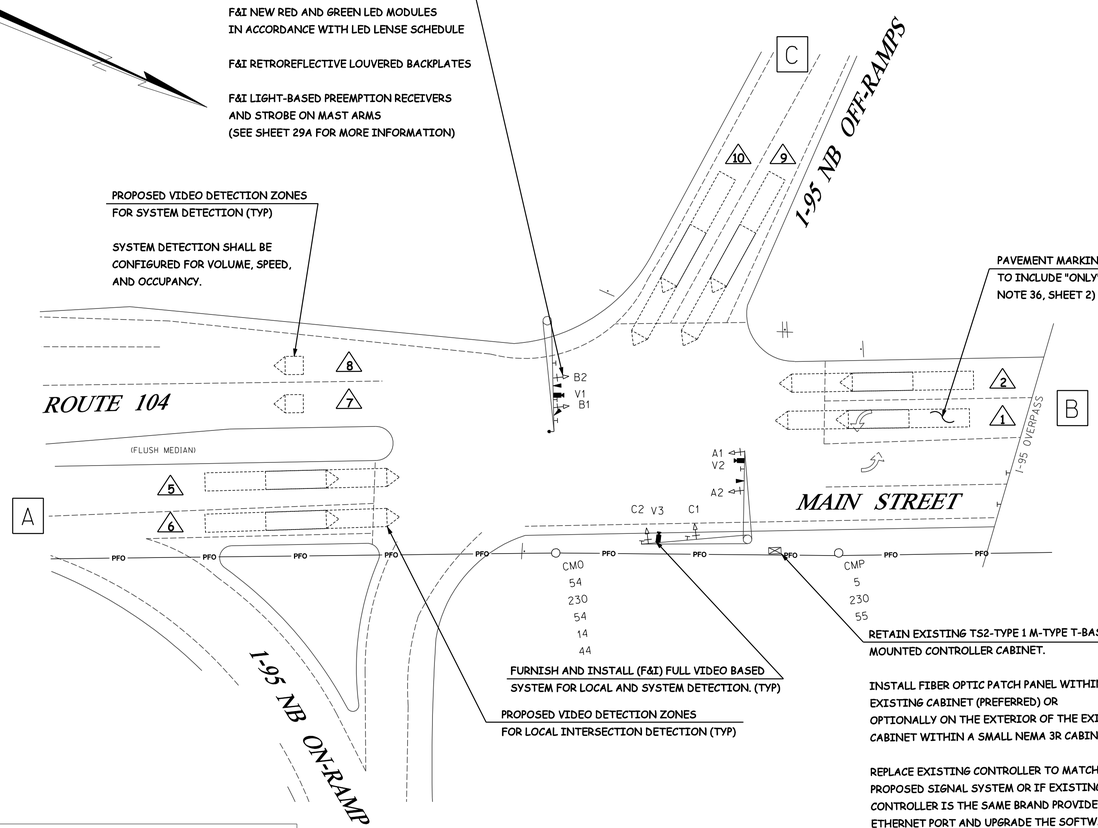
F&I RETROREFLECTIVE LOUVERED BACKPLATES

F&I LIGHT-BASED PREEMPTION RECEIVERS
AND STROBE ON MAST ARMS
(SEE SHEET 29A FOR MORE INFORMATION)

PROPOSED VIDEO DETECTION ZONES
FOR SYSTEM DETECTION (TYP)

SYSTEM DETECTION SHALL BE
CONFIGURED FOR VOLUME, SPEED,
AND OCCUPANCY.

PAVEMENT MARKING MODIFICATION
TO INCLUDE "ONLY" (SEE GENERAL
NOTE 36, SHEET 2)



RETAIN EXISTING TS2-TYPE 1 M-TYPE T-BASE
MOUNTED CONTROLLER CABINET.

INSTALL FIBER OPTIC PATCH PANEL WITHIN
EXISTING CABINET (PREFERRED) OR
OPTIONALLY ON THE EXTERIOR OF THE EXISTING
CABINET WITHIN A SMALL NEMA 3R CABINET.

REPLACE EXISTING CONTROLLER TO MATCH
PROPOSED SIGNAL SYSTEM OR IF EXISTING
CONTROLLER IS THE SAME BRAND PROVIDE
ETHERNET PORT AND UPGRADE THE SOFTWARE
TO THE LATEST VERSION.

IMPLEMENT LOCAL AND SYSTEM TIMING PLANS.

FURNISH AND INSTALL (F&I) FULL VIDEO BASED
SYSTEM FOR LOCAL AND SYSTEM DETECTION. (TYP)

PROPOSED VIDEO DETECTION ZONES
FOR LOCAL INTERSECTION DETECTION (TYP)

L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1	1	*	1							
A2	1	*	1							
B1	1	*	1							
B2	1	*	1							
C1	1	*	1							
C2	1	*	1							
TOTAL	6	0	6	0	0	0	0	0	0	0

NOTES: * = EXISTING L.E.D. LENSES TO BE RETAINED
R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL		10		5		10		
PASSAGE TIME		2		2		2		
MAXIMUM 1		40		30		40		
MAXIMUM 2		95		40		95		
YELLOW		4.0		4.0		4.0		
ALL RED		2.5		1.5		2.5		
PEDESTRIAN WALK								
PEDESTRIAN CLEARANCE								
RECALL		S		O		S		
DETECTOR OPERATION		PR		PR		PR		
PREEMPTION PRIORITY		2		3		1		
FLASH		Y		R		Y		
DUAL ENTRY		ON		OFF		ON		

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	42	100	55	60	75	150	
OFFSET (END GRN)	13	60	13	28	55	79	
COORDINATED Ø	2	2	2	2	2	6	
SPLIT TIME Ø1	0	0	0	0	0	0	
SPLIT TIME Ø2	22	65	30	35	48	108	
SPLIT TIME Ø3	0	0	0	0	0	0	
SPLIT TIME Ø4	20	35	25	25	27	42	
SPLIT TIME Ø5	0	0	0	0	0	0	
SPLIT TIME Ø6	22	65	30	35	48	108	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	20	35	25	25	27	42	

FLOATING FORCE-OFF

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY
(SEE SHEET 29A FOR DAY PLAN SETTINGS).
3. PHASE 8 IS A DUMMY PHASE TO BE SET WITH SPLIT TIMES FOR NTCIP COMPLIANCE.

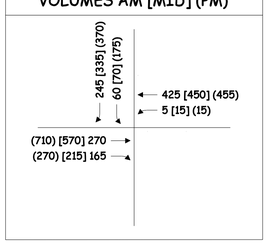
DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD			
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO	DETECTOR NO	CHANNEL
CAMERA V1	1	MAIN STREET	SOUTHBOUND	LEFT	6	FULL VIDEO	2	1/1	1
	2	MAIN STREET	SOUTHBOUND	THRU	6	FULL VIDEO	2	1/2	2
	(3)	SPARE						1/3	3
	(4)	SPARE						1/4	4
CAMERA V2	5	MAIN STREET	NORTHBOUND	THRU	2	FULL VIDEO	4	2/1	1
	6	MAIN STREET	NORTHBOUND	THRU	2	FULL VIDEO	4	2/2	2
	7	MAIN STREET	SOUTHBOUND	MEDIAN SIDE (SYSTEM)	C	FULL VIDEO	4	2/3	3
	8	MAIN STREET	SOUTHBOUND	CURB SIDE (SYSTEM)	C	FULL VIDEO	4	2/4	4
CAMERA V3	9	I-95 NORTHBOUND RAMP	EASTBOUND	LEFT	4	FULL VIDEO	6	3/1	1
	10	I-95 NORTHBOUND RAMP	EASTBOUND	RIGHT	4D	FULL VIDEO	6	3/2	2
	(11)	SPARE						3/3	3
	(12)	SPARE						3/4	4

DETECTOR NOTES:
C = COUNTING LOOP
ALL DETECTION SHOULD BE INITIALLY SET TO NONLOCKING OPERATIONS.
DETECTORS DESIGNATED FOR DELAY (4D) SHALL INCLUDE A 5 SECOND DELAY.

INTERSECTION:
ROUTE 104 (MAIN ST) AND I-95 NB RAMPS
SIGNAL GROUP:
3
LOCATION:
25

SYSTEM DESIGN VOLUMES AM [MID] (PM)



PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN
17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BIGBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW
ROUTE 104 (MAIN ST) AND I-95 NORTHBOUND RAMPS

TRAFFIC SIGNAL PLAN

SHEET NUMBER
29
OF 54

Filename: ...\Its\planset\056_5206800SG25.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY	EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER	1	INSTALL WHITE "ONLY" PAVEMENT MARKINGS (ITEM 627.75)	44 SF
FURNISH AND INSTALL NEW 16 CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1	FURNISH AND INSTALL CARD RACK MOUNT VIDEO COMMUNICATIONS BOARD (ITEM 643.83)	1
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON EXISTING SIGNAL HEADS	6	FURNISH AND INSTALL 2-CHANNEL/ 4-OUTPUT CARD RACK MOUNT DATA AND PRESENCE VIDEO DETECTOR CARDS (ITEM 643.83)	2
FURNISH AND INSTALL NEW 12-INCH LED RED AND GREEN LENSES INTO EXISTING SIGNAL HEADS	12	FURNISH AND INSTALL CARD RACK VIDEO POWER SUPPLY (ITEM 643.83)	1
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1	FURNISH AND INSTALL VIDEO DETECTION CAMERA (ITEM 643.83)	3
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1	FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS IN EXISTING CONTROLLER CABINET	1	FURNISH AND INSTALL APPROXIMATELY 160 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	3		
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1	FURNISH AND INSTALL APPROXIMATELY 460 LINEAR FEET OF 72-STRAND FIBER OPTIC INTERCONNECT CABLE TO LOCATION 26 (SEE SHEET 30A) FROM CMP POLE 55/230/55 (ITEM 643.90)	1
FURNISH AND INSTALL MAST ARM MOUNTED SIGNS	5		
IMPLEMENT LOCAL AND SYSTEM TIMING	-		

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

EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø6
R2	4	2	Ø2
R3	5	3	Ø4
	6	NOT USED	

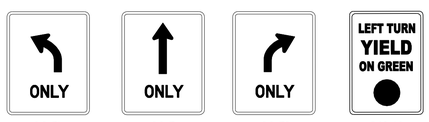
EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 3 = LOWEST)
3. 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 (4.0 SECONDS YELLOW AND 2.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

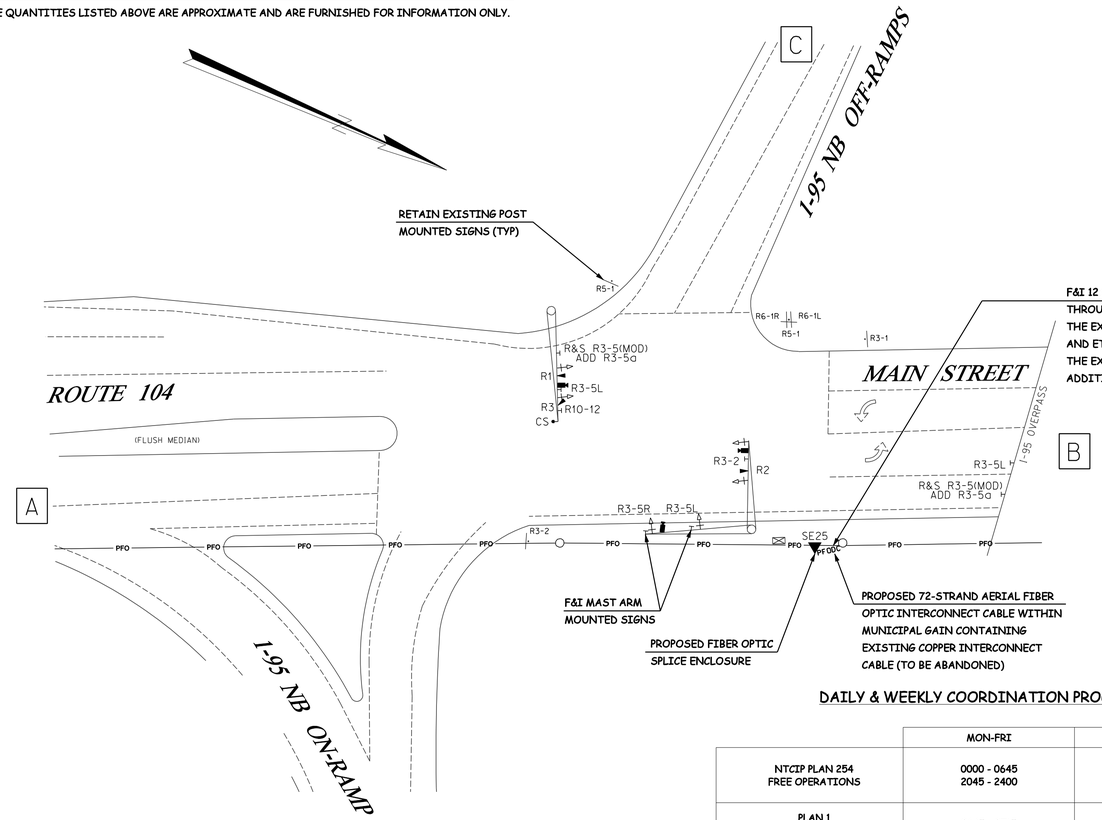
EXISTING MAST ARM AND BRIDGE MOUNTED SIGNS

R3-5L 30" x 36" 2 - RETAINED | R3-2 30" x 30" 1 - RETAINED | R3-5(MOD) 30" x 36" 2 - REMOVED

PROPOSED MAST ARM MOUNTED SIGNS



R3-5L 30" x 36" 1 - PROPOSED | R3-5a 30" x 36" 2 - PROPOSED | R3-5R 30" x 36" 1 - PROPOSED | R10-12 30" x 36" 1 - PROPOSED



F&I 12 STRAND FIBER OPTIC INTERCONNECT (DROP CABLE) FROM SE25 THROUGH EXISTING RISER TO UNDERGROUND CONDUIT SYSTEM SERVICING THE EXISTING COPPER INTERCONNECT CABLE TO PROPOSED PATCH PANEL AND ETHERNET SWITCH INSTALLED WITH FIBER OPTIC INTERFACES WITHIN THE EXISTING TRAFFIC SIGNAL CABINET. SEE FIBER OPTIC SPLICE TABLE FOR ADDITIONAL INFORMATION.

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE25	72F TO SE24	1	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	72F TO SE24	2	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	72F TO SE24	3-72	THROUGH	72F TO SE26	3-72	72F FIBER BACKBONE
	72F TO SE26	1	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	72F TO SE26	2	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
PPP, CONTROL CABINET	12F TO SE25	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE25	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE25	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE25	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE25	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
ROUTE 104 (MAIN ST) AND I-95 NB RAMPS
SIGNAL GROUP:
3
LOCATION:
25

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 42/84 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3	Address 98/ Comments		9/07/10
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

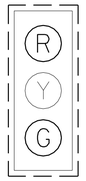
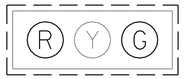
WATERVILLE-WINSLOW
ROUTE 104 (MAIN ST) AND I-95 NORTHBOUND RAMPS

TRAFFIC SIGNAL PLAN

SHEET NUMBER
29A
OF 54

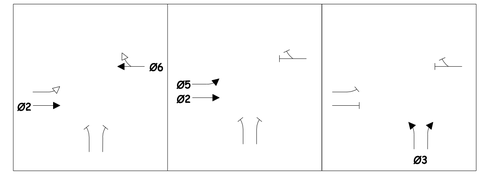
Filename: ...\planset\057_5206800SG25A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

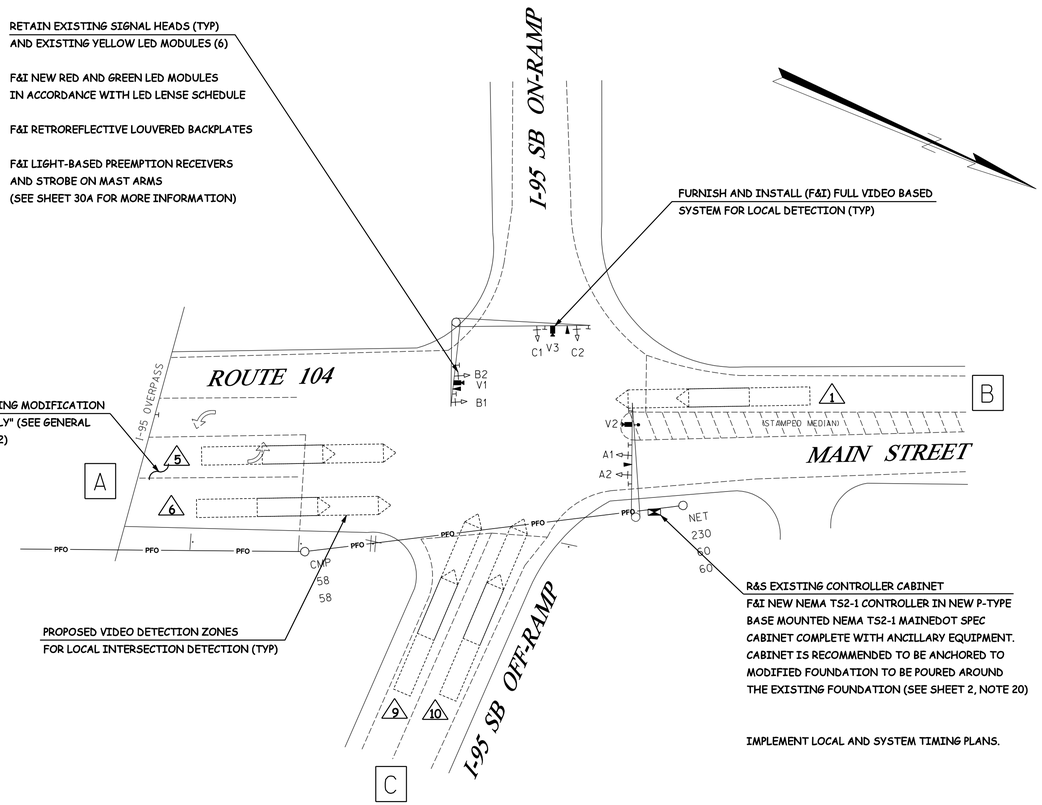
EXISTING		
B1,B2 C1,C2	A1	A2
	 (BIMODAL 4TH SECTION) HORIZONTALLY MOUNTED	
12" LENS	12" LENS	12" LENS
ADD 5" RETROREFLECTIVE LOUVERED BACKPLATES		

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RETAINED L.E.D. MODULES -
(SEE LED LENSE SCHEDULE)

PHASING SEQUENCE



NOTE: Ø5 LAGS



IMPLEMENT LOCAL AND SYSTEM TIMING PLANS.

L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA	BI
A1	1	*	1								1
A2	1	*	1								
B1	1	*	1								
B2	1	*	1								
C1	1	*	1								
C2	1	*	1								
TOTAL	6	0	6	0	0	0	0	0	0	0	1

NOTES: * = EXISTING L.E.D. LENSES TO BE RETAINED
R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
BI = BIMODAL YELLOW/GREEN LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL		10	5		5	10		
PASSAGE TIME		2	2		2	2		
MAXIMUM 1		40	30		20	40		
MAXIMUM 2		60	30		25	60		
YELLOW		4.0	4.0		4.0	4.0		
ALL RED		2.0	1.5		2.0	2.0		
PEDESTRIAN WALK								
PEDESTRIAN CLEARANCE								
RECALL		S	O		O	S		
DETECTOR OPERATION		PR	PR		PR	PR		
PREEMPTION PRIORITY		2	3		2	1		
FLASH		Y	R		Y	Y		
DUAL ENTRY		ON	OFF		OFF	ON		

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	84	100	55	60	75	150	FIXED FORCE-OFF
OFFSET (END GRN)	1	80	14	35	67	60	
COORDINATED Ø	6	2	2	2	2	4	
SPLIT TIME Ø1	0	0	0	0	0	0	
SPLIT TIME Ø2	28	70	36	42	53	66	
SPLIT TIME Ø3	14	30	19	18	22	84	
SPLIT TIME Ø4	0	0	0	0	0	0	
SPLIT TIME Ø5	14	20	15	19	22	27	
SPLIT TIME Ø6	14	50	21	23	31	39	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	14	30	19	18	22	84	

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY
(SEE SHEET 30A FOR DAY PLAN SETTINGS).
3. PHASE 8 IS A DUMMY PHASE TO BE SET WITH SPLIT TIMES FOR
NTCIP COMPLIANCE.

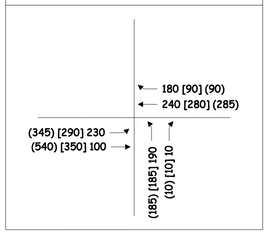
DETECTOR SCHEDULE

	DETECTOR					VIDEO DETECTOR CARD			
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	SLOT NO	DETECTOR NO	CHANNEL
CAMERA V1	1	MAIN STREET	SOUTHBOUND	THRU-RIGHT	6	FULL VIDEO	2	1/1	1
	(2)	SPARE						1/2	2
	(3)	SPARE						1/3	3
	(4)	SPARE						1/4	4
CAMERA V2	5	MAIN STREET	NORTHBOUND	LEFT	5	FULL VIDEO	4	2/1	1
	6	MAIN STREET	NORTHBOUND	THRU	2	FULL VIDEO	4	2/2	2
	(7)	SPARE						2/3	3
	(8)	SPARE						2/4	4
CAMERA V3	9	I-95 SOUTHBOUND RAMP	WESTBOUND	LEFT	3	FULL VIDEO	6	3/1	1
	10	I-95 SOUTHBOUND RAMP	WESTBOUND	RIGHT	3D	FULL VIDEO	6	3/2	2
	(11)	SPARE						3/3	3
	(12)	SPARE						3/4	4

DETECTOR NOTES:
C = COUNTING LOOP
ALL DETECTION SHOULD BE INITIALLY SET TO NONLOCKING OPERATIONS.
DETECTORS DESIGNATED FOR DELAY (3D) SHALL INCLUDE A 5 SECOND DELAY.

INTERSECTION:
ROUTE 104 (MAIN ST) AND I-95 SB RAMPS
SIGNAL GROUP:
3
LOCATION:
26

SYSTEM DESIGN
VOLUMES AM [MID] (PM)



PLAN
25 0 25 50
SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
PIN
17288.00

	BY	DATE
PROJ. MANAGER	J. MANSIR	
DESIGN-DETAILED	C. BIGBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1	Address 98/ Comments	9/07/10
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
ROUTE 104 (MAIN ST) AND I-95 SOUTHBOUND RAMPS
TRAFFIC SIGNAL PLAN

SHEET NUMBER
30
OF 54

Filename: ...\ts\planset\058_52068005G26.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY	EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW P-TYPE BASE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1	FURNISH AND INSTALL CONTROLLER CABINET FOUNDATION (ITEM 626.35)	1
		INSTALL WHITE "ONLY" PAVEMENT MARKINGS (ITEM 627.75)	44 SF
		FURNISH AND INSTALL CARD RACK MOUNT VIDEO COMMUNICATIONS BOARD (ITEM 643.83)	1
FURNISH AND INSTALL NEW 16 CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1	FURNISH AND INSTALL 2-CHANNEL/ 4-OUTPUT CARD RACK MOUNT DATA AND PRESENCE VIDEO DETECTOR CARDS (ITEM 643.83)	2
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON EXISTING SIGNAL HEADS	6	FURNISH AND INSTALL CARD RACK VIDEO POWER SUPPLY (ITEM 643.83)	1
FURNISH AND INSTALL NEW 12-INCH LED RED AND GREEN LENSES INTO EXISTING SIGNAL HEADS, INCLUDING 1-BIMODAL YELLOW/GREEN ARROWS	13	FURNISH AND INSTALL VIDEO DETECTION CAMERA (ITEM 643.83)	3
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1	FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1		
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1	FURNISH AND INSTALL APPROXIMATELY 120 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE	3	THE QUANTITIES LISTED ABOVE ARE APPROXIMATE AND ARE FURNISHED FOR INFORMATION ONLY.	
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE	1		
FURNISH AND INSTALL MAST ARM MOUNTED SIGNS	5		
IMPLEMENT LOCAL AND SYSTEM TIMING	-		

EMERGENCY VEHICLE PRE-EMPTION OPERATION

ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø6
R2	4	2	Ø2 & Ø5
R3	5	3	Ø3
	6	NOT USED	

EMERGENCY VEHICLE PRE-EMPTION NOTES:

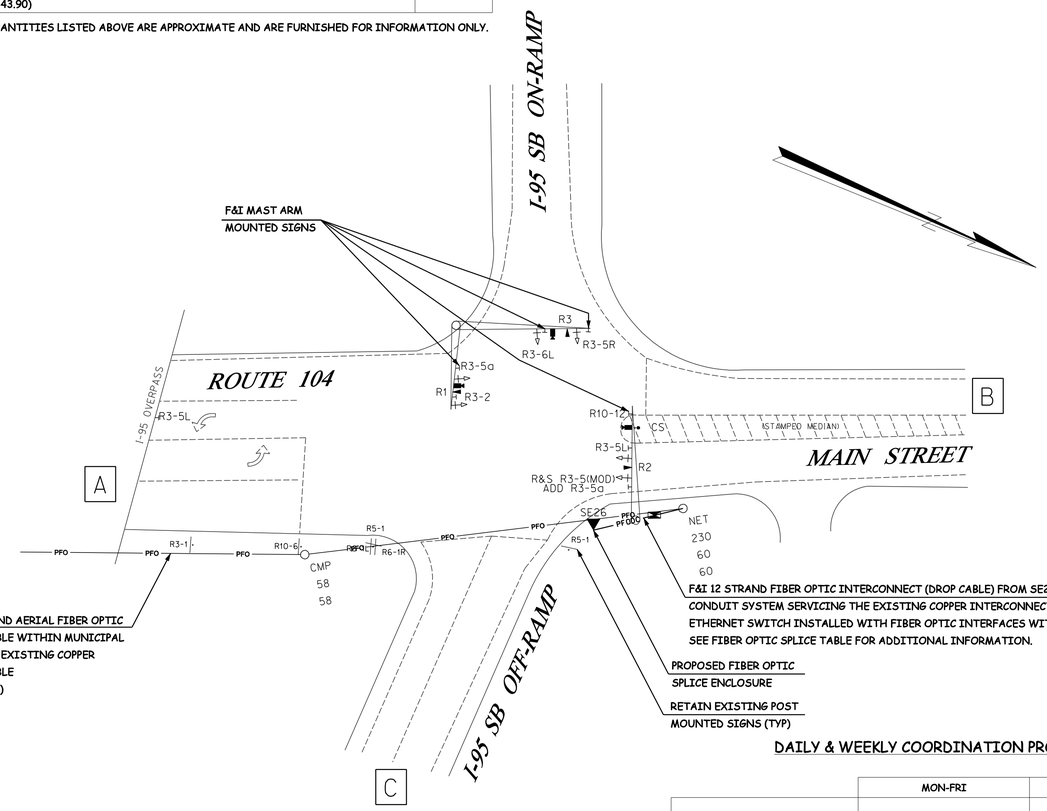
1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 3 = LOWEST)
3. 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 (4.0 SECONDS YELLOW AND 2.0 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.

EXISTING MAST ARM AND BRIDGE MOUNTED SIGNS

R3-5L 30" x 36" 1 - RETAINED | R3-5(MOD) 30" x 36" 1 - REMOVED | R3-2 30" x 30" 1 - RETAINED

PROPOSED MAST ARM MOUNTED SIGNS

R3-5a 30" x 36" 2 - PROPOSED | R3-6L 30" x 36" 1 - PROPOSED | R3-5R 30" x 36" 1 - PROPOSED | R10-12 30" x 36" 1 - PROPOSED



FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE26	72F TO SE25	1	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	72F TO SE25	2	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	72F TO SE25	3	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	72F TO SE25	4	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
	72F TO SE25	5-72	UNTERMINATED	-	-	END OF CABLE
PPP, CONTROL CABINET	12F TO SE26	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE26	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE26	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE26	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE26	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
ROUTE 104 (MAIN ST) AND I-95 SB RAMPS
SIGNAL GROUP:
3
LOCATION:
26

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 0645 2045 - 2400	0000 - 1000 1800 - 2400
PLAN 1 42/84 SECS OFFPEAK	0645 - 0715 1900 - 2045	-
PLAN 2 100 SECS MORNING PEAK	0715 - 0945	1000 - 1100
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	0945 - 1130 1315 - 1445 1745 - 1900	1100 - 1800
PLAN 4 120 SECS MIDDAY/EVENING PEAK	1130 - 1315 1445 - 1745	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

PLAN

25 0 25 50

SCALE

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
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REVISIONS 2			
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REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

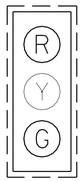
WATERVILLE-WINSLOW
ROUTE 104 (MAIN ST) AND I-95 SOUTHBOUND RAMPS

TRAFFIC SIGNAL PLAN

SHEET NUMBER
30A
OF 54

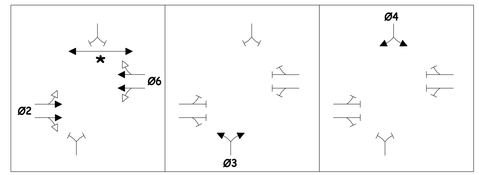
Filename: ...\planset\059_5206800SG26A.dgn Division: Username: J ROBERT Date:9/7/2010

SIGNAL HEAD DATA

EXISTING	PROPOSED	
D1,D2	A1,A2,B1 B2,C1,C2	P1-P2
		
8" LENS	12" LENS	16" x 18" PEDESTRIAN SIGNAL
RESET FROM LOCATION 14	WITH 5" RETROREFLECTIVE LOUVERED BACKPLATES	

- ALL SIGNAL HEADS SHALL BE EQUIPPED WITH NEW OR RESET L.E.D. MODULES - (SEE LED LENSE SCHEDULE)

PHASING SEQUENCE



★ = NORMALLY DW, UPON PEDESTRIAN ACTUATION, W/FDW COUNTDOWN

L.E.D. LENSE SCHEDULE

SIGNAL ID	R	Y	G	RLA	YLA	GLA	GVA	RRA	YRA	GRA
A1	1	*	1							
A2	1	*	1							
B1	1	*	1							
B2	1	*	1							
C1	1	*	1							
C2	1	*	1							
D1	*	*	*							
D2	*	*	*							
TOTAL	6	0	6	0	0	0	0	0	0	0

NOTES: * = EXISTING L.E.D. LENSES TO BE RESET

R = RED BALL
Y = YELLOW BALL
G = GREEN BALL
RLA = RED LEFT ARROW
YLA = YELLOW LEFT ARROW
GLA = GREEN LEFT ARROW
GVA = GREEN VERTICAL ARROW
RRA = RED RIGHT ARROW
YRA = YELLOW RIGHT ARROW
GRA = GREEN RIGHT ARROW

F&I NEW 10-FOOT PEDESTAL POST WITH NEW COUNTDOWN PEDESTRIAN SIGNAL HEAD AND ADA COMPLIANT PEDESTRIAN ASSEMBLY CONSISTING OF BUTTONS WITH LED CONFIRMATION, VIBRO-TACTILE ARROW, SPEAKERS FOR INFORMATIONAL MESSAGE AND TONE LOCATOR, AND R10-3eL INFORMATIONAL SIGN

RESET 8-INCH SIGNAL HEAD D1 FROM LOCATION 14

INSTALL RISER ON EXISTING WOOD POLE
F&I NEW 3-INCH PVC CONDUIT FROM RISER TO PROP PED POLE

RESET 8-INCH SIGNAL HEAD D2 FROM LOCATION 14

OPTIONAL LOCATION FOR PROPOSED STOPLINE RADAR VEHICLE DETECTION IF INSTALLER FINDS EXISTING TREE IS INTERFERING WITH VEHICLE DETECTION

R&S EXISTING SIGNAL HEADS (TYP)
R&R EXISING YELLOW LED MODULES (6) INTO NEW SIGNAL HOUSINGS

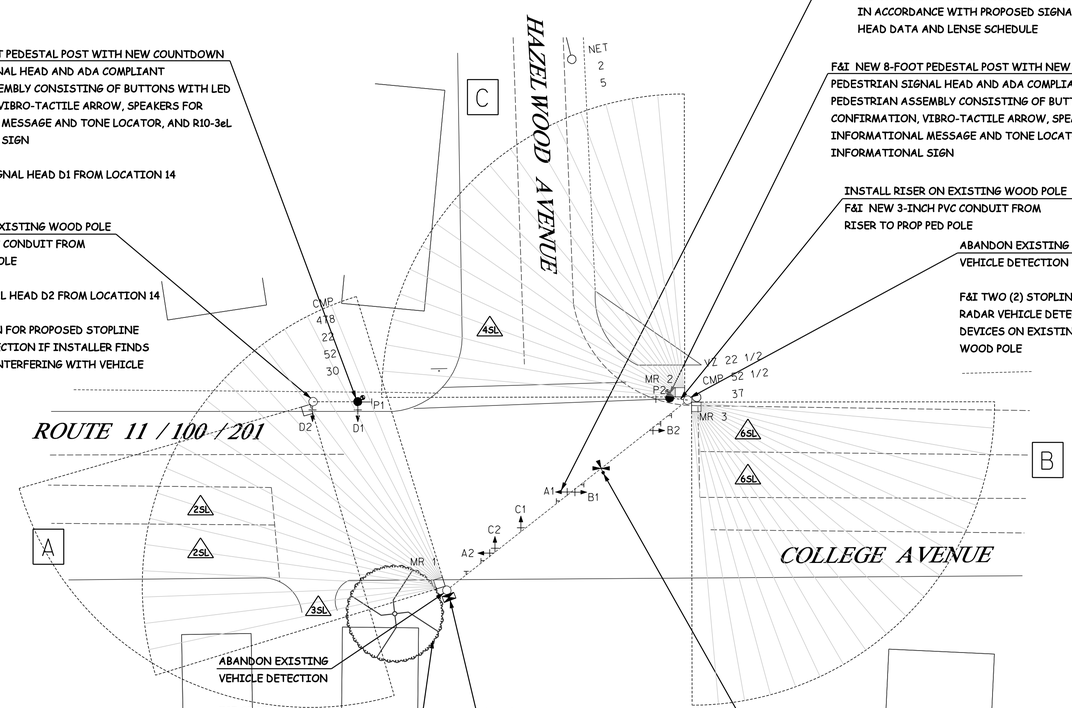
F&I NEW SPAN WIRE MOUNTED SIGNALHEADS WITH RETROREFLECTIVE LOUVERED BACKPLATES IN ACCORDANCE WITH PROPOSED SIGNAL HEAD DATA AND LENSE SCHEDULE

F&I NEW 8-FOOT PEDESTAL POST WITH NEW COUNTDOWN PEDESTRIAN SIGNAL HEAD AND ADA COMPLIANT PEDESTRIAN ASSEMBLY CONSISTING OF BUTTONS WITH LED CONFIRMATION, VIBRO-TACTILE ARROW, SPEAKERS FOR INFORMATIONAL MESSAGE AND TONE LOCATOR, AND R10-3eR INFORMATIONAL SIGN

INSTALL RISER ON EXISTING WOOD POLE
F&I NEW 3-INCH PVC CONDUIT FROM RISER TO PROP PED POLE

ABANDON EXISTING VEHICLE DETECTION

F&I TWO (2) STOPLINE RADAR VEHICLE DETECTION DEVICES ON EXISTING WOOD POLE



ABANDON EXISTING VEHICLE DETECTION

F&I STOPLINE RADAR VEHICLE DETECTION DEVICE ON EXISTING WOOD POLE.

EXISTING TREE

R&S EXISTING POLE MOUNTED CABINET
F&I NEW NEMA TS2-1 CONTROLLER IN NEW M-TYPE POLE MOUNTED NEMA TS2-1 MAINEDOT SPEC CABINET COMPLETE WITH ANCILLARY EQUIPMENT.

IMPLEMENT LOCAL AND SYSTEM TIMING PLANS.

F&I LIGHT BASED PREEMPTION RECEIVERS AND STROBE ON PIPED ASSEMBLY.
(SEE SHEET 31A FOR MORE INFORMATION)

SIGNAL TIMING SCHEDULE

ITEM / PHASE	1	2	3	4	5	6	7	8
MINIMUM INITIAL		10	4	5		10		
PASSAGE TIME		3	1	2		3		
MAXIMUM 1		60	7	30		60		
MAXIMUM 2		95	7	35		95		
YELLOW		4.0	4.0	4.0		4.0		
ALL RED		2.5	2.5	2.5		2.5		
PEDESTRIAN WALK						10		
PEDESTRIAN CLEARANCE						18		
RECALL		S	O	O		S		
DETECTOR OPERATION		PR	PR	PR		PR		
PREEMPTION PRIORITY		2		3		1		
FLASH ~		Y	R	R		Y		
DUAL ENTRY		ON	OFF	OFF		ON		

NOTES: S = SOFT RECALL
O = RECALL OFF
PR = PRESENCE
MAX2 = UNDER COORDINATION
Y = YELLOW
R = RED
~ PED. SIGNALS SHALL BE DARK DURING FLASHING OPERATIONS.

COORDINATION CYCLE/SPLIT/OFFSET SCHEDULE

ALL ENTRIES IN SECONDS

	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	
CYCLE LENGTH	84	100	110	120	150	150	
OFFSET (END GRN)	0	0	0	0	123	90	
COORDINATED Ø	(Free)	(Free)	(Free)	(Free)	2	6	
SPLIT TIME Ø1	0	0	0	0	0	0	
SPLIT TIME Ø2	0	0	0	0	101	101	
SPLIT TIME Ø3	0	0	0	0	12	12	
SPLIT TIME Ø4	0	0	0	0	37	37	
SPLIT TIME Ø5	0	0	0	0	0	0	
SPLIT TIME Ø6	0	0	0	0	101	101	
SPLIT TIME Ø7	0	0	0	0	0	0	
SPLIT TIME Ø8	0	0	0	0	49	49	

FLOATING FORCE-OFF

COORDINATION NOTES:
1. OFFSET IS REFERENCED TO THE END OF THE COORDINATED PHASE.
2. COORDINATION TO OPERATE BY TIME-OF-DAY (SEE SHEET 31A 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.

PLAN

SCALE

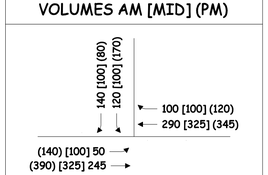
DETECTOR SCHEDULE

	DETECTOR					DETECTOR	
	PLAN ID	STREET	DIRECTION	LANE	Ø	TYPE	DETECTOR NO
MR 1	2SL	COLLEGE AVENUE	NORTHBOUND	LEFT-THRU / THRU-RIGHT	2	RADAR	2
	3SL	DRIVEWAY	WESTBOUND	LEFT-THRU-RIGHT	3	RADAR	3
MR 2	4SL	HAZELWOOD AVENUE	EASTBOUND	LEFT-THRU-RIGHT	4	RADAR	4
MR 3	6SL	COLLEGE AVENUE	SOUTHBOUND	LEFT-THRU / THRU-RIGHT	6	RADAR	6

DETECTOR NOTES:
ALL DETECTION SHOULD BE INITIALLY SET TO NONLOCKING OPERATIONS.

INTERSECTION:
ROUTE 11/100/201 (COLLEGE AVE) AND HAZELWOOD AVE
SIGNAL GROUP:
3
LOCATION:
27

SYSTEM DESIGN VOLUMES AM [MID] (PM)



NEGLIGIBLE TRAFFIC TO/FROM RESIDENTIAL DRIVEWAY

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
STP-1728(800)X
PIN 17288.00

	BY	DATE
PROJ. MANAGER	J. MANSIR	
DESIGN-DETAILED	C. BIGBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments	9/07/10
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE
P.E. NUMBER
DATE

WATERVILLE-WINSLOW
ROUTE 11/100/201 (COLLEGE AVE) AND HAZELWOOD AVE

TRAFFIC SIGNAL PLAN

SHEET NUMBER
31
OF 54

Filename: ...\ts\planset\060_5206800SG27.dgn Division: Username: J ROBERT Date:9/7/2010

LIST OF MAJOR EQUIPMENT

EQUIPMENT AND WORK ITEMS 643.71	QUANTITY
FURNISH AND INSTALL NEW NEMA TS2, TYPE 1 ETHERNET EQUIPPED CONTROLLER IN NEW M-TYPE POLE MOUNTED NEMA TS2, TYPE 1 MAINEDOT SPEC CABINET COMPLETE WITH ALL ANCILLARY EQUIPMENT AND WIRING INCLUDING 8-SLOT VEHICLE DETECTOR RACK WIRED IN ACCORDANCE WITH NEMA TS-2 SPECIFICATIONS FOR WIRE LOOP AND VIDEO BASED LOCAL DETECTION, SYSTEM DETECTION, AND STOPLINE VEHICLE COUNTING	1
FURNISH AND INSTALL NEW 16-CHANNEL ETHERNET EQUIPPED ENHANCED MALFUNCTION MANAGEMENT UNIT (MMU)	1
FURNISH AND INSTALL ONE-WAY, 3-SECTION, 12-INCH SPAN WIRE MOUNTED FEDERAL YELLOW WITH BLACK DOOR POLYCARBONATE TRAFFIC SIGNAL HEADS AND YELLOW TUNNEL VISORS.	6
FURNISH AND INSTALL RETROREFLECTIVE LOUVERED BACKPLATES ON EXISTING AND PROPOSED SIGNAL HEADS	6
FURNISH AND INSTALL NEW 12-INCH LED RED AND GREEN LENSES INTO NEW SIGNAL HEADS	12
FURNISH AND INSTALL ADA COMPLIANT ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSH BUTTON WITH R10-3e INFORMATIONAL SIGN	2
FURNISH AND INSTALL ONE-WAY, 16 X 18-INCH LED POST MOUNTED COUNTDOWN PEDESTRIAN SIGNAL HEAD	2
FURNISH AND INSTALL ENVRIONMENTALLY HARDENED FIBER SWITCH	1
FURNISH AND INSTALL DUAL USE SPLICE ENCLOSURE AND 12-POSITION PATCH PANEL	1
FURNISH AND INSTALL 4-CHANNEL PREEMPTION PHASE SELECTOR WITH SYSTEM CHASSIS	1
FURNISH AND INSTALL LIGHT-BASED PREEMPTION RECEIVERS WITH DETECTOR CABLE ON SPAN WIRE ASSEMBLY	3
FURNISH AND INSTALL PREEMPTION CONFIRMATION RED STROBE WITH CABLE ON SPAN WIRE PIPE ASSEMBLY	1
FURNISH AND INSTALL SPAN WIRE MOUNTED SIGNS	6
FURNISH AND INSTALL RADAR BASED VEHICLE DETECTION SYSTEM (3-DETECTION UNITS PLUS FIELD WIRING TO ANCILLARY CABINET MOUNTED DEVICES)	1
IMPLEMENT LOCAL AND SYSTEM TIMING	-

EQUIPMENT AND WORK (ITEM XXX.YYZ)	QUANTITY
FURNISH AND INSTALL (3-INCH) NON-METALLIC CONDUIT (ITEM 626.22)	25 SF
FURNISH AND INSTALL 18-INCH FOUNDATION (ITEM 626.31)	2
FURNISH AND INSTALL FIBER OPTIC SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL POLE RISER (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 300 LINEAR FEET OF 12-STRAND FIBER OPTIC INTERCONNECT CABLE TO CONTROLLER CABINET FROM SPLICE ENCLOSURE (ITEM 643.90)	1
FURNISH AND INSTALL APPROXIMATELY 3520 LINEAR FEET OF 72-STRAND FIBER OPTIC INTERCONNECT CABLE TO NET 2/5 FROM GEORGE J.MITCHELL SCHOOL (ITEM 643.90)	1
FURNISH AND INSTALL (8-FOOT) PEDESTAL POLE (ITEM 643.92)	1
FURNISH AND INSTALL (10-FOOT) PEDESTAL POLE (ITEM 643.92)	1

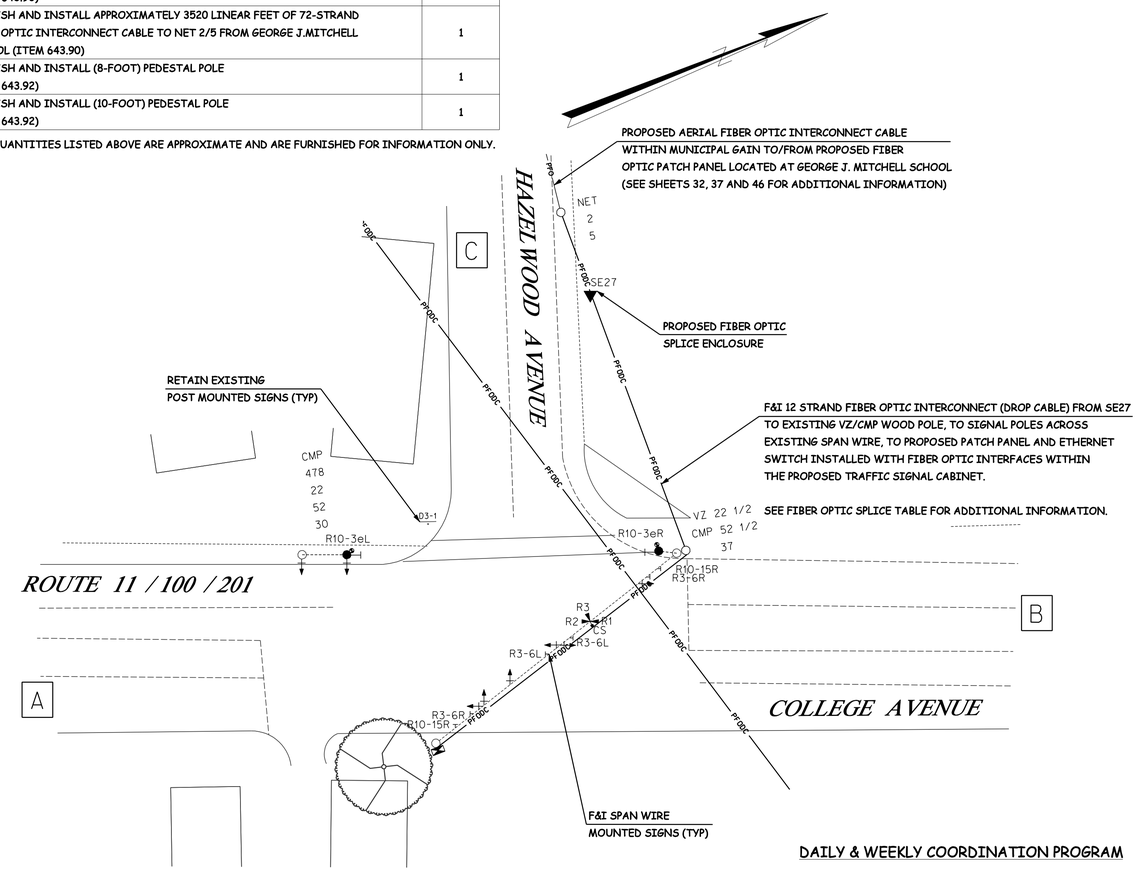
THE QUANTITIES LISTED ABOVE ARE APPROXIMATE AND ARE FURNISHED FOR INFORMATION ONLY.

EMERGENCY VEHICLE PRE-EMPTION OPERATION

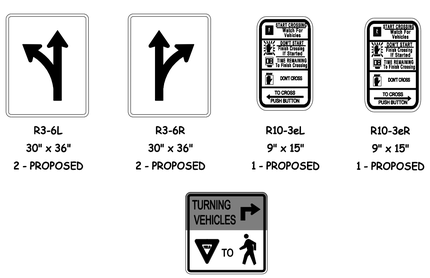
ID	PREEMPT ASSIGNMENT	RECEIVER PRIORITY	ACTIVE PHASE
	1	NOT USED / RESERVED	
	2		
R1	3	1	Ø6
R2	4	2	Ø2
R3	5	3	Ø4
	6	NOT USED	

EMERGENCY VEHICLE PRE-EMPTION NOTES:

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE TRANSMITTED BY OPTICAL EMITTERS (PROVIDED BY OTHERS) MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT THE INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH RECEIVERS ASSIGNED DESCENDING PRIORITIES (1 = HIGHEST, 3 = LOWEST)
3. 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 (4.0 SECONDS YELLOW AND 2.5 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.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE-EMPTION SHALL OVERRIDE COORDINATION.
6. CONFIRMATION STROBES SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PREEMPTION GREEN IS ON.



PROPOSED MAST ARM AND POLE MOUNTED SIGNS



R3-6L
30" x 36"
2 - PROPOSED

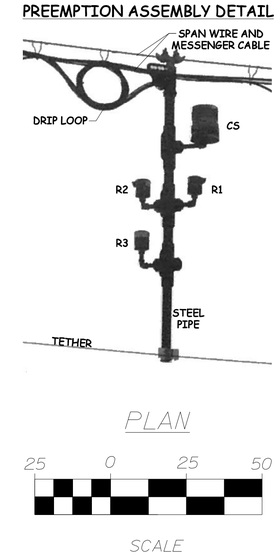
R3-6R
30" x 36"
2 - PROPOSED

R10-3eL
9" x 15"
1 - PROPOSED

R10-3eR
9" x 15"
1 - PROPOSED

R10-15R
30" x 30"
2 - PROPOSED

PREEMPTION ASSEMBLY DETAIL



FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE27	72F TO MITCHELL SCHOOL	1	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	72F TO MITCHELL SCHOOL	2	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	72F TO MITCHELL SCHOOL	3-72	UNTERMINATED	-	-	END OF CABLE
PPP. CONTROL CABINET	12F TO SE27	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE27	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE27	3-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
ROUTE 11/100/201 (COLLEGE AVE) AND HAZELWOOD AVE
SIGNAL GROUP:
3
LOCATION:
27

DAILY & WEEKLY COORDINATION PROGRAM

	MON-FRI	SAT-SUN
NTCIP PLAN 254 FREE OPERATIONS	0000 - 2400	0000 - 2400
PLAN 1 50/100 SECS OFFPEAK	-	-
PLAN 2 100 SECS MORNING PEAK	-	-
PLAN 3 110 SECS MIDMORNING/AFTERNOON PEAK	-	-
PLAN 4 120 SECS MIDDAY/EVENING PEAK	-	-
PLAN 5 150 SECS I-95 NB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 NORTHBOUND CLOSURE AND SUBSEQUENT KMD-SILVER-ELM-MAIN TRAFFIC DIVERSION FROM EXIT 127 TO EXITS 130, 132 OR 133	
PLAN 6 150 SECS I-95 SB DIVERSION PLAN	MANUALLY INITIATED PLAN WITH I-95 SOUTHBOUND CLOSURE AND SUBSEQUENT MAIN-ELM-SILVER-KMD TRAFFIC DIVERSION FROM EXITS 133, 132, OR 130 TO EXIT 127	

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3		Address 98/ Comments	9/07/10
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

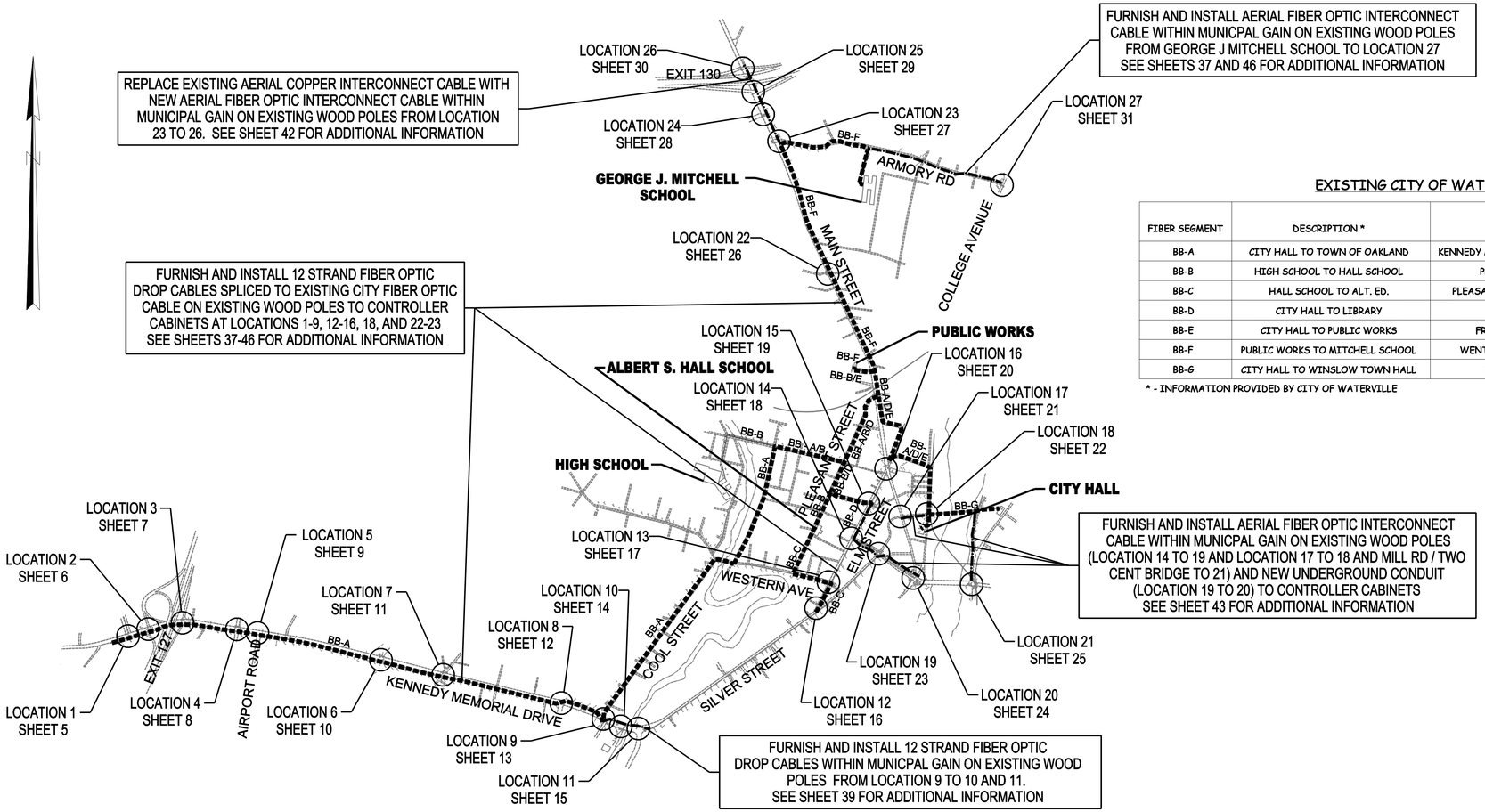
DATE

WATERVILLE-WINSLOW
ROUTE 11/100/201 (COLLEGE AVE) AND HAZELWOOD AVE

TRAFFIC SIGNAL PLAN

SHEET NUMBER
31A
OF 54

Filename: ...\planset\061_5206800SG27A.dgn Division: Username: J ROBERT Date:9/7/2010



EXISTING CITY OF WATERVILLE FIBER OPTIC CABLE

FIBER SEGMENT	DESCRIPTION *	LOCATION *	# STRANDS *	STRANDS ASSIGNED TO THIS PROJECT *
BB-A	CITY HALL TO TOWN OF OAKLAND	KENNEDY MEM. DR., COLLEGE AVE., FRONT ST., ETC.	48	25, 26
BB-B	HIGH SCHOOL TO HALL SCHOOL	PLEASANT ST., GILMAN ST., ETC.	36	25, 26, 27, 28
BB-C	HALL SCHOOL TO ALT. ED.	PLEASANT ST., WESTERN AVE., ELM ST., ETC.	12	1, 2, 3, 4
BB-D	CITY HALL TO LIBRARY	PARK ST., ELM ST., ETC.	12	1, 2
BB-E	CITY HALL TO PUBLIC WORKS	FRONT ST., WENTWORTH CT., ETC.	24	23, 24
BB-F	PUBLIC WORKS TO MITCHELL SCHOOL	WENTWORTH CT., MAIN ST., ARMORY RD.	48	13, 14
BB-G	CITY HALL TO WINSLOW TOWN HALL	2 CENT BRIDGE, MILL RD., ETC.	48	25, 26

* - INFORMATION PROVIDED BY CITY OF WATERVILLE

Fiber Optic Interconnect Notes:

1) PRIOR TO CONSTRUCTION CONTRACTOR SHALL CONFIRM WITH CITY OF WATERVILLE IT DEPARTMENT THAT EXISTING FIBER CABLES/STRANDS PREVIOUSLY ASSIGNED TO THIS PROJECT (AS SHOWN IN CHART) ARE STILL VALID FOR USE ON THIS PROJECT.

2) AT LOCATIONS CALLING FOR PROPOSED FIBER OPTIC DROP CABLE ATTACHMENT TO EXISTING FIBER OPTIC CABLE, CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF WATERVILLE IT DEPARTMENT. NO WORK SHALL BE CONDUCTED ON THE EXISTING FIBER OPTIC CABLE WITHOUT THE PERMISSION OF THE CITY OF WATERVILLE. CONTRACTOR SHALL NOT CUT NOR DISRUPT IN ANY WAY THE EXISTING FIBER OPTIC CABLE STRANDS THAT ARE NOT USED FOR ATTACHMENT TO THE PROPOSED DROP CABLE. CONTRACTOR SHALL INSTALL PROPOSED AERIAL SPLICE ENCLOSURE AND 200 FEET OF FIBER OPTIC CABLE SLACK, MINIMUM, AT EACH SPLICE ENCLOSURE LOCATION.

3) AT LOCATIONS CALLING FOR PROPOSED FIBER OPTIC DROP CABLE TO ENTER A TRAFFIC SIGNAL CONTROLLER CABINET, ALL STRANDS OF THE PROPOSED DROP CABLE SHALL BE TERMINATED ON A FIBER OPTIC PATCH PANEL INSIDE THE CONTROLLER CABINET.

4) NUMBERS SHOWN ON FIBER OPTIC ARCHITECTURE DIAGRAM INSIDE SPLICE ENCLOSURES AND PATCH PANELS ARE FIBER OPTIC CABLE STRAND NUMBERS. THEY DO NOT REFLECT PATCH PANEL POSITION NUMBERS.

5) THE CONTRACTOR SHALL NOT CUT NOR DISRUPT IN ANY WAY EXISTING FIBER OPTIC CABLE STRANDS THAT ARE NOT SHOWN IN THESE PLANS.

6) AT THE INTERSECTION OF GILMAN ST. AND PLEASANT ST. THE CONTRACTOR SHALL FURNISH AND INSTALL A PROPOSED SPLICE ENCLOSURE. THE CONTRACTOR SHALL SPLICE THE EXISTING 48 STRAND CITY OF WATERVILLE FIBER OPTIC CABLE (BB-A) TO THE EXISTING 36 STRAND CITY OF WATERVILLE FIBER OPTIC CABLE (BB-B) IN ACCORDANCE WITH THESE PLANS. THE CONTRACTOR SHALL NOT DISTURB ANY FIBER OPTIC STRANDS OTHER THAN THOSE SHOWN IN THESE PLANS TO BE SPLICED.

Fiber Optic Interconnect Notes: (cont.)

7) AT THE INTERSECTION OF MILL ROAD AND THE 2 CENT BRIDGE IN WINSLOW THE CONTRACTOR SHALL FURNISH AND INSTALL A PROPOSED SPLICE ENCLOSURE. THE CONTRACTOR SHAL SPLICE THE EXISTING 48 STRAND CITY OF WATERVILE FIBER OPTIC CABLE (BB-G) TO THE PROPOSED 72 STRAND FIBER OPTIC CABLE IN ACCORDANCE WITH THESE PLANS. THE CONTRACTOR SHALL NOT DISTURB ANY FIBER OPTIC STRANDS OTHER THAN THOSE SHOWN IN THESE PLANS TO BE SPLICED.

8) AT THE "FUTURE" LOCATIONS, INTERSECTIONS 5 AND 18, THE CONTRACTOR SHALL COIL AND STORE SUFFICENT FIBER OPTIC DROP CABLE TO REACH THE PROPOSED LOCATION OF THE FUTURE TRAFFIC SIGNAL CONTROL CABINET, PLUS 300 FEET EXTRA. THE CONTRACTOR SHALL ATTACH AND MECHANICALLY SECURE THE DROP CABLES WITHIN THE PROPOSED FIBER OPTIC SPLICE ENCLOSURES, BUT SHALL NOT SPLICE THE DROP CABLES TO ANY OTHER CABLES, AS SHOWN IN THESE PLANS.

9) SEE SHEET 52 FOR ADDITIONAL FIBER DETAILS APPLICABLE TO THIS PROJECT.

City Hall Building Connection Notes:

1) IN THE CITY HALL EQUIPMENT ROOM THE CONTRACTOR SHALL INSTALL 4 EACH MEDIA CONVERTERS, 8 EACH FIBER OPTIC PATCH CORDS (2 PER MEDIA CONVERTER), AND ONE EACH RACK MOUNTED ETHERNET SWITCH (COPPER INTERFACES ONLY) IN THE EXISTING EQUIPMENT RACK, IN ACCORDANCE WITH THESE PLANS, AND SHALL CONNECT THE PROPOSED SWITCH TO THE EXISTING CITY SWITCH WITH AN ETHERNET PATCH CORD. THE FIBER OPTIC PATCH CORDS SHALL BE COMPATIBLE WITH THE EXISTING FIBER OPTIC PATCH PANELS AND THE MEDIA CONVERTERS. ALL WORK WITHIN THE EQUIPMENT ROOM SHALL BE COORDINATED WITH AND UNDER THE STRICT SUPERVISION OF THE CITY OF WATERVILLE IT DEPARTMENT.

Public Works Connection Notes:

1) INSIDE THE PUBLIC WORKS BUILDING AT 6 WENTWORTH COURT THE CONTRACTOR SHALL FURNISH AND INSTALL 2 EACH FIBER OPTIC PATCH CORDS ON EXISTING FIBER OPTIC PATCH PANELS IN ACCORDANCE WITH THESE PLANS. THE PROPOSED PATCH CORDS SHALL BE COMPATIBLE WITH THE EXISTING PATCH PANELS. THE CONTRACTOR SHALL COORDINATE WITH PUBLIC WORKS OFFICIALS AND CITY OF WATERVILLE IT DEPARTMENT PRIOR TO PERFORMING THIS WORK.

Albert S. Hall School Connection Notes:

1) INSIDE THE ALBERT S. HALL SCHOOL AT 27 PLEASANT STREET THE CONTRACTOR SHALL FURNISH AND INSTALL 4 EACH FIBER OPTIC PATCH CORDS ON EXISTING FIBER OPTIC PATCH PANELS IN ACCORDANCE WITH THESE PLANS. THE PROPOSED PATCH CORDS SHALL BE COMPATIBLE WITH THE EXISTING PATCH PANELS. THE CONTRACTOR SHALL COORDINATE WITH SCHOOL OFFICIALS AND CITY OF WATERVILLE IT DEPARTMENT PRIOR TO PERFORMING THIS WORK.

George J. Mitchell School Connection Notes:

1) INSIDE THE GEORGE J. MITCHELL SCHOOL AT 58 DRUMMOND AVENUE THE CONTRACTOR SHALL FURNISH AND INSTALL ONE FIBER OPTIC PATCH PANEL, 2 EACH FIBER OPTIC PATCH CORDS, AND ONE 72 FIBER CABLE IN ACCORDANCE WITH THESE PLANS. THE PATCH CORDS SHALL BE INSTALLED BETWEEN THE EXISTING PATCH PANEL AND THE PROPOSED PATCH PANEL IN ACCORDANCE WITH THESE PLANS. THE PROPOSED PATCH CORDS SHALL BE COMPATIBLE WITH THE EXISTING PATCH PANEL AND THE PROPOSED PATCH PANEL. THE CONTRACTOR SHALL COORDINATE WITH SCHOOL OFFICIALS AND CITY OF WATERVILLE IT DEPARTMENT PRIOR TO PERFORMING THIS WORK.

LAYOUT SCALE

1200 0 1200 2400

Scale in Feet

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSER		
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

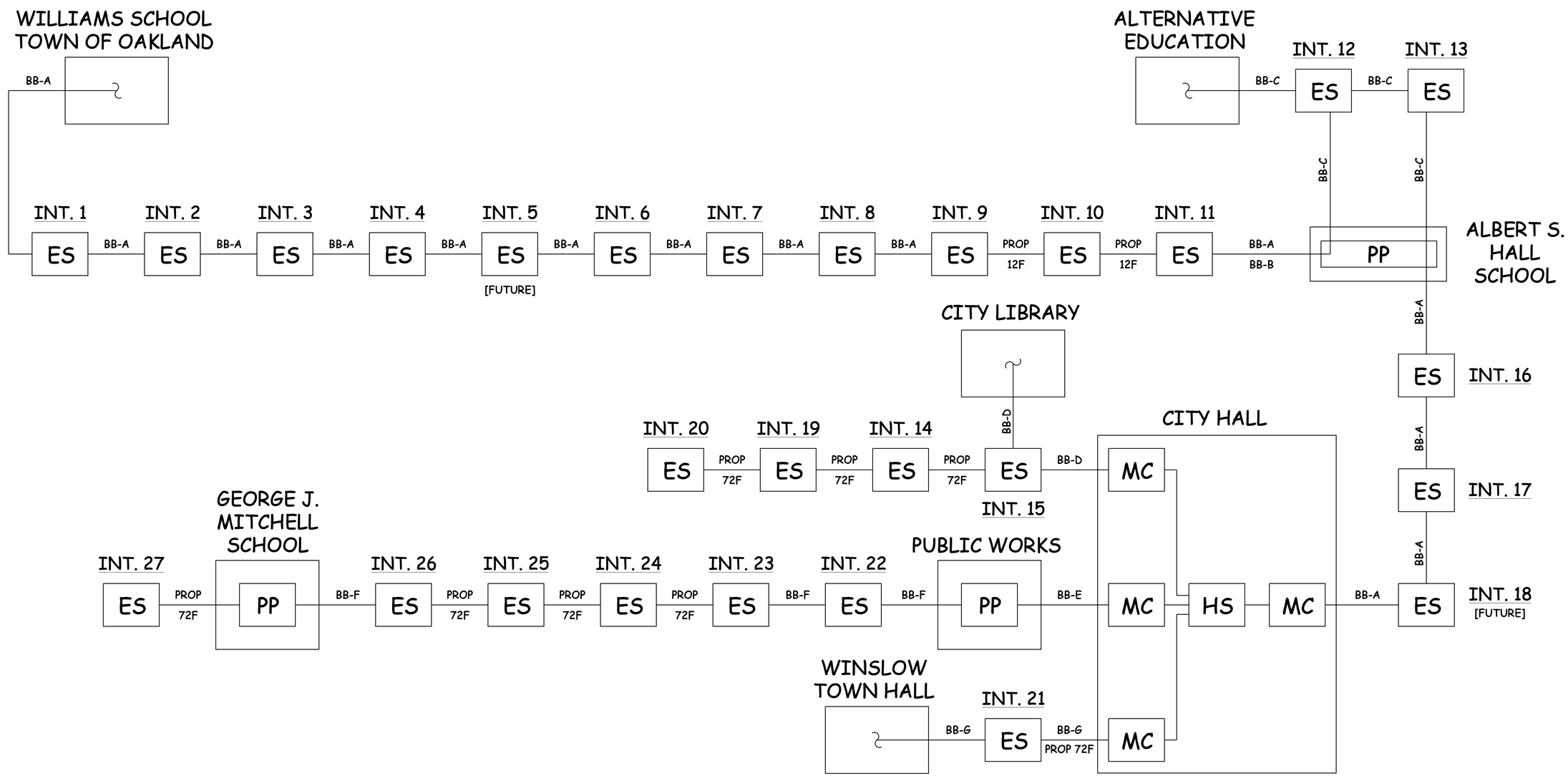
FIBER OPTIC CABLE PATH

SHEET NUMBER

32

OF 54

Filename: ...\planset\062_5206800FIBPATH.dgn Division: Username: J ROBERT Date:9/7/2010



LEGEND

BB-X	EXISTING FIBER OPTIC CABLE BACKBONE SEGMENT X (SEE "EXISTING CITY OF WATERVILLE FIBER OPTIC CABLE" CHART FOR DETAILS)
PROP. 12F	PROPOSED 12 STRAND FIBER OPTIC DROP CABLE
PROP. 72F	PROPOSED 72 STRAND FIBER OPTIC CABLE
ES	PROPOSED ETHERNET SWITCH IN TRAFFIC CONTROL CABINET, FIBER INTERFACES, 1Gbps
HS	PROPOSED ETHERNET SWITCH IN CITY HALL, COPPER INTERFACES ONLY, RACK MOUNT, 1Gbps
PP	FIBER PATCH PANEL, EXISTING
PPP	FIBER PATCH PANEL, PROPOSED
SEX	FIBER SPLICE ENCLOSURE AT LOCATION X, PROPOSED
SE	FIBER SPLICE ENCLOSURE, PROPOSED
MC	MEDIA CONVERTER, PROPOSED (FIBER TO ETHERNET)

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN
17288.00

		BY	DATE
PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

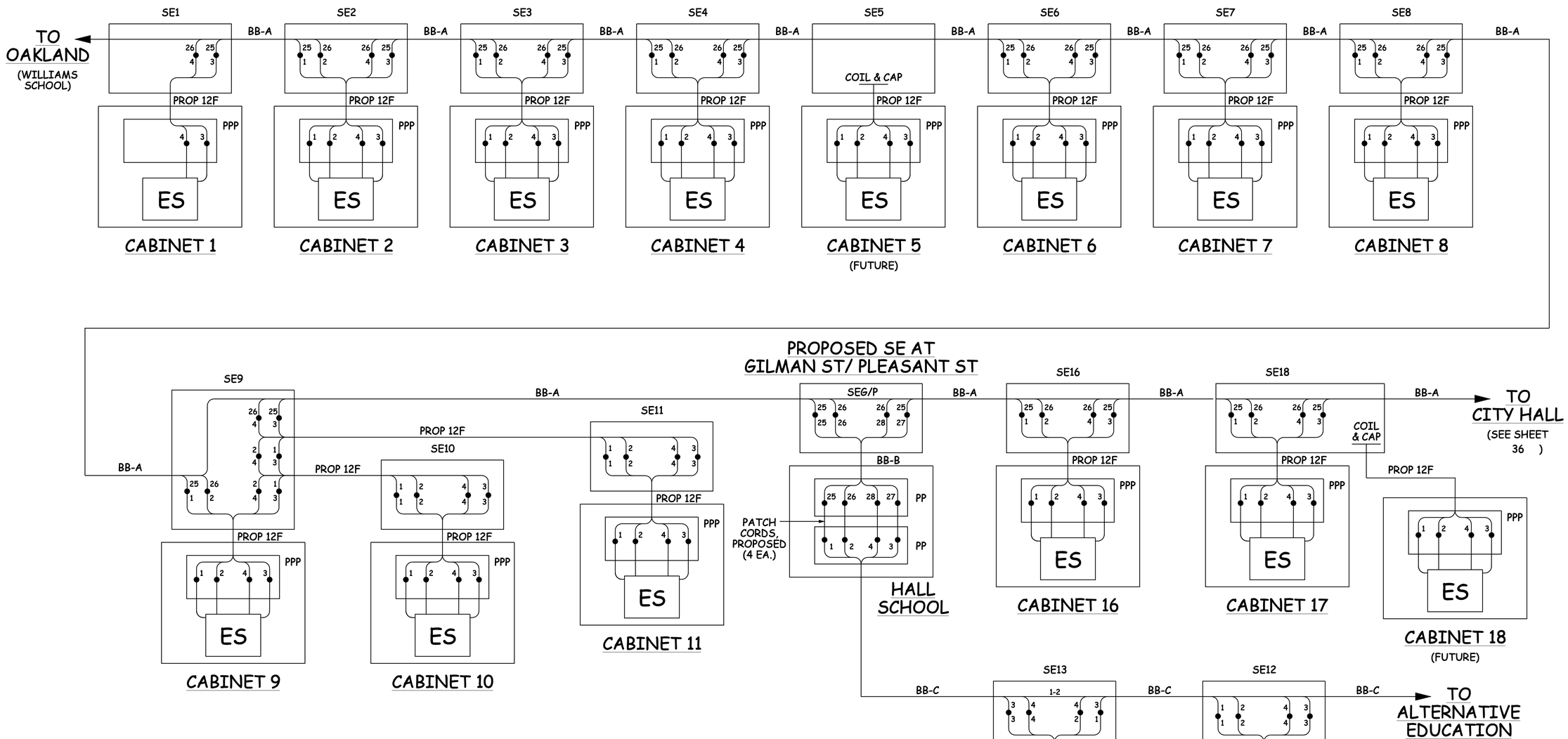
FIBER OPTIC NETWORK DIAGRAM

SHEET NUMBER

33

OF 54

Filename: ...\ts\planset\063_5206800HND.dgn Division: Username: J ROBERT Date:9/7/2010



LEGEND

BB-X	EXISTING FIBER OPTIC CABLE BACKBONE SEGMENT X (SEE "EXISTING CITY OF WATERVILLE FIBER OPTIC CABLE" CHART FOR DETAILS)
PROP. 12F	PROPOSED 12 STRAND FIBER OPTIC DROP CABLE
PROP. 72F	PROPOSED 72 STRAND FIBER OPTIC CABLE
ES	PROPOSED ETHERNET SWITCH IN TRAFFIC CONTROL CABINET, FIBER INTERFACES, 1Gbps
HS	PROPOSED ETHERNET SWITCH IN CITY HALL, COPPER INTERFACES ONLY, RACK MOUNT, 1Gbps
PP	FIBER PATCH PANEL, EXISTING
PPP	FIBER PATCH PANEL, PROPOSED
SEX	FIBER SPLICE ENCLOSURE AT LOCATION X, PROPOSED
SE	FIBER SPLICE ENCLOSURE, PROPOSED
MC	MEDIA CONVERTER, PROPOSED (FIBER TO ETHERNET)
TSC	TRAFFIC SIGNAL CONTROLLER
ETH	ETHERNET CABLE
ETH/SRL	SERIAL-TO-ETHERNET CONNECTIVITY CABLE (PER MANUFACTURER'S RECOMMENDATION)
EPS	EMERGENCY PREEMPTION SYSTEM
RU	RADAR UNIT
VID	FULL VIDEO DETECTION CONTROL UNIT
VID SENSOR	VIDEO-BASED TRAFFIC PRESENCE SENSOR
MMU	MALFUNCTION MANAGEMENT UNIT
CMU	CONFLICT MONITOR UNIT

NOTE: SEE SHEET 36 FOR DEVICE CONNECTIONS TO EACH ETHERNET SWITCH

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98% Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

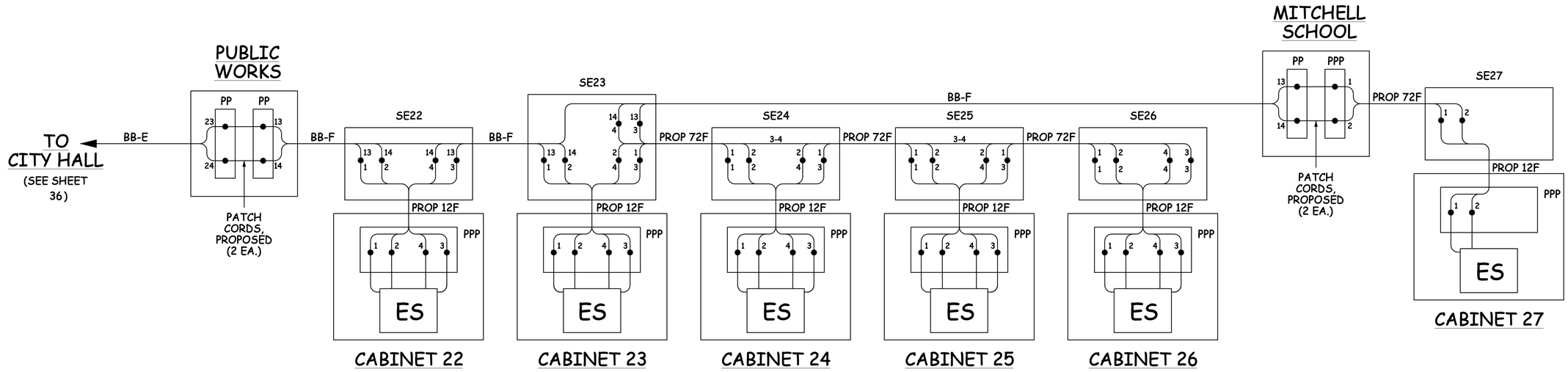
FIBER OPTIC ARCHITECTURE DIAGRAM

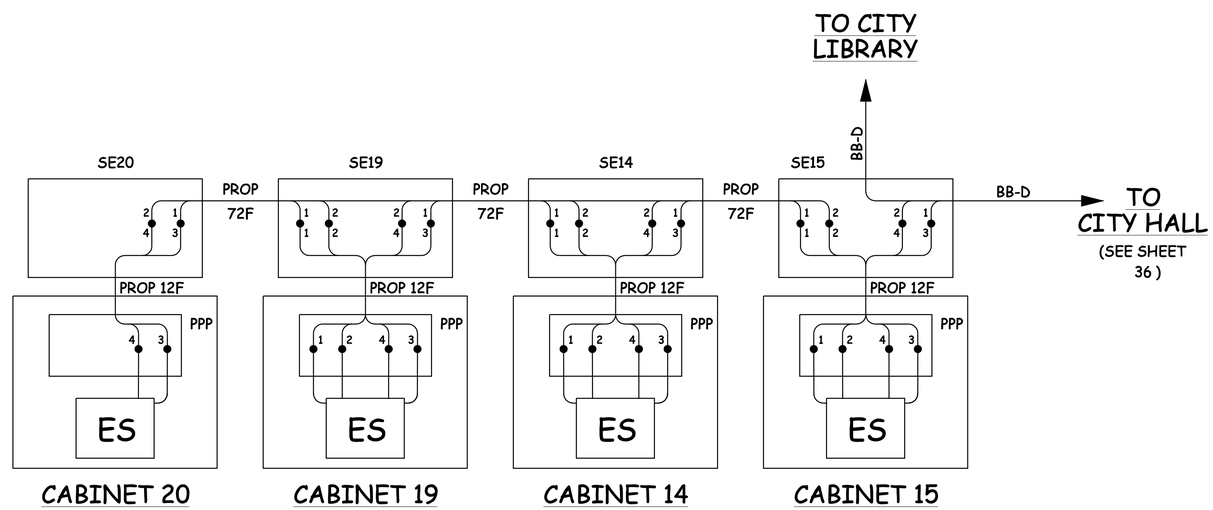
SHEET NUMBER

34

OF 54

Filename: ...\ts\planset\064_52068005AD1.dgn Division: Username: J ROBERT Date:9/7/2010





LEGEND

BB-X	EXISTING FIBER OPTIC CABLE BACKBONE SEGMENT X (SEE "EXISTING CITY OF WATERVILLE FIBER OPTIC CABLE" CHART FOR DETAILS)
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MC	MEDIA CONVERTER, PROPOSED (FIBER TO ETHERNET)
TSC	TRAFFIC SIGNAL CONTROLLER
ETH	ETHERNET CABLE
ETH/SRL	SERIAL-TO-ETHERNET CONNECTIVITY CABLE (PER MANUFACTURER'S RECOMMENDATION)
EPS	EMERGENCY PREEMPTION SYSTEM
RU	RADAR UNIT
VID	FULL VIDEO DETECTION CONTROL UNIT
VID SENSOR	VIDEO-BASED TRAFFIC PRESENCE SENSOR
MMU	MALFUNCTION MANAGEMENT UNIT
CMU	CONFLICT MONITOR UNIT

NOTE: SEE SHEET 36 FOR DEVICE CONNECTIONS TO EACH ETHERNET SWITCH

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

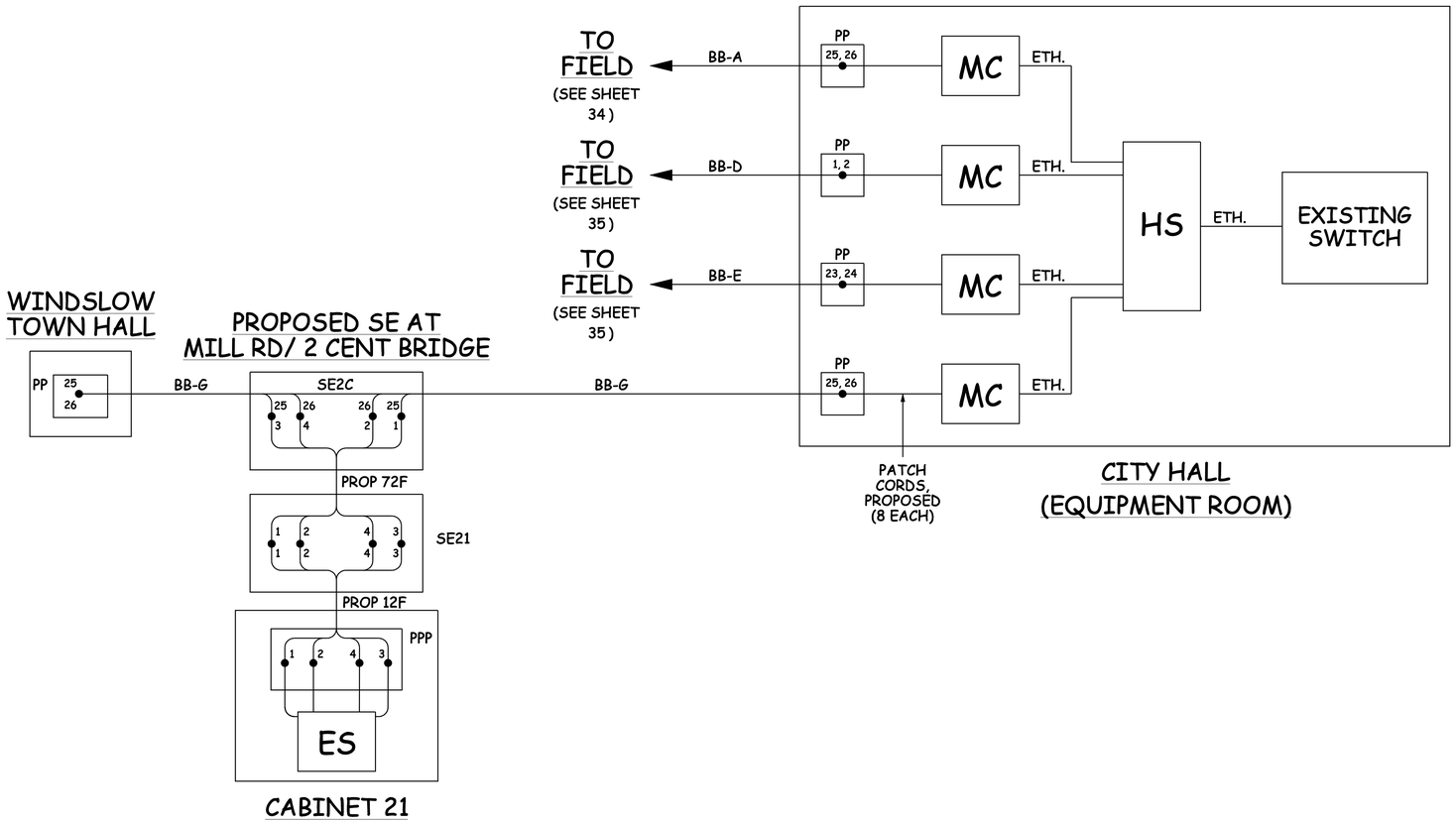
FIBER OPTIC ARCHITECTURE DIAGRAM

SHEET NUMBER

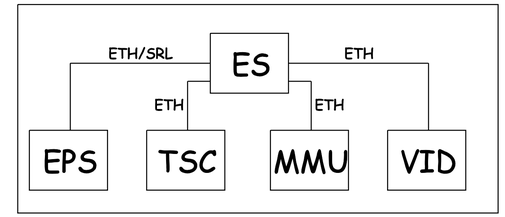
35

OF 54

Filename: ...\ts\planset\065_52068005AD2.dgn Division: Username: J ROBERT Date:9/7/2010

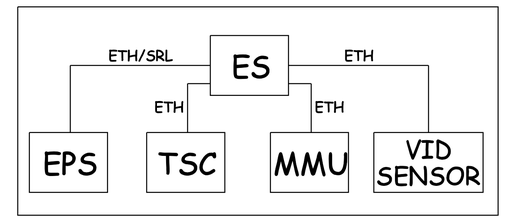


CATEGORY 1 DEVICE CONNECTIONS



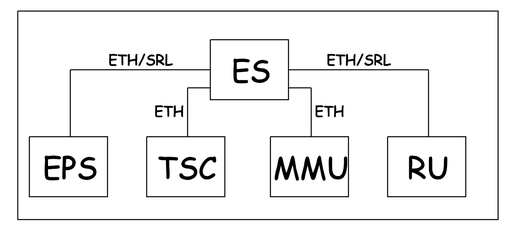
CABINETS 2,3,4,8,10,14,16,20,22,25,26

CATEGORY 2 DEVICE CONNECTIONS



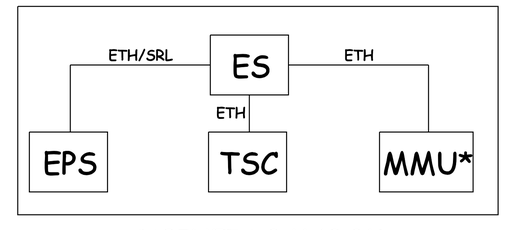
CABINETS 6,7,12,13,15,17,23,24

CATEGORY 3 DEVICE CONNECTIONS



CABINETS 1,5,18,27

CATEGORY 4 DEVICE CONNECTIONS



CABINETS 9,11,19,21*

* - CMU AT LOCATION 21

LEGEND

BB-X	EXISTING FIBER OPTIC CABLE BACKBONE SEGMENT X (SEE "EXISTING CITY OF WATERVILLE FIBER OPTIC CABLE" CHART FOR DETAILS)
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SEX	FIBER SPLICE ENCLOSURE AT LOCATION X, PROPOSED
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VID SENSOR	VIDEO-BASED TRAFFIC PRESENCE SENSOR
MMU	MALFUNCTION MANAGEMENT UNIT
CMU	CONFLICT MONITOR UNIT

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR		
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3	Address 98/ Comments		9/07/10
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

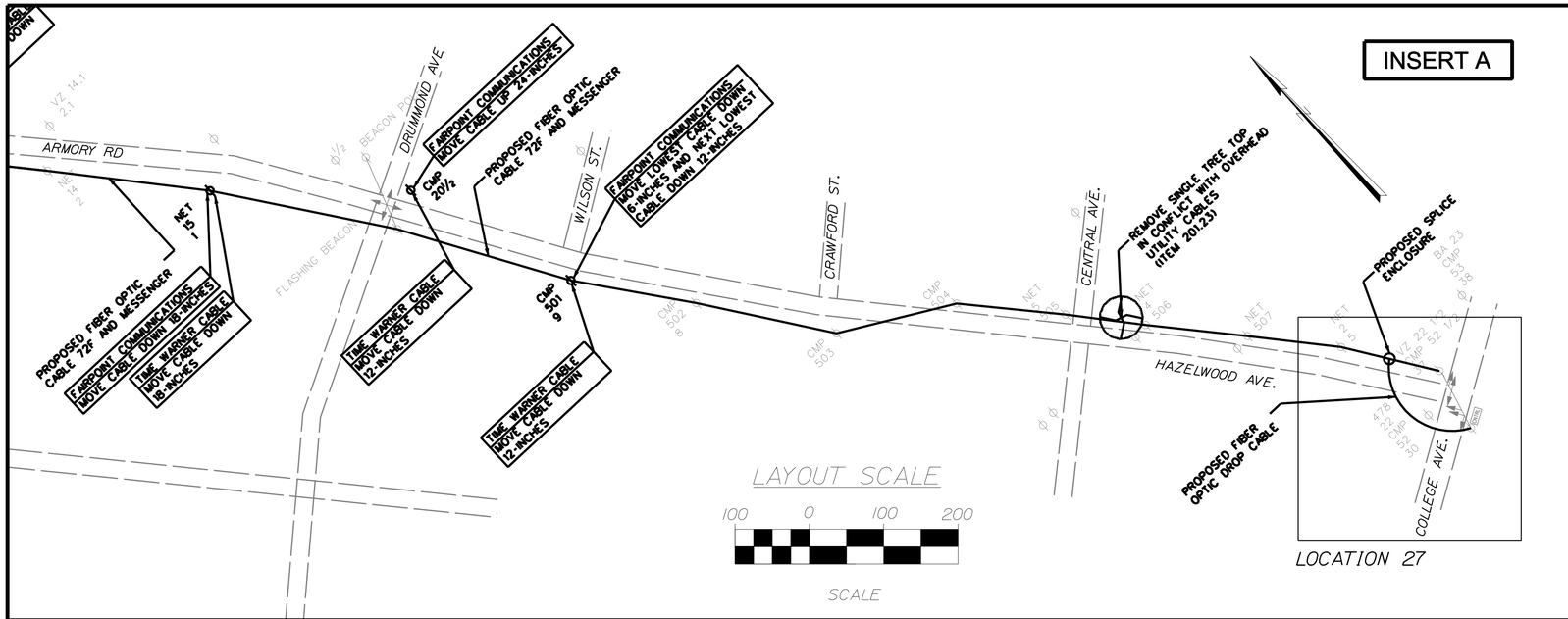
FIBER OPTIC ARCHITECTURE DIAGRAM

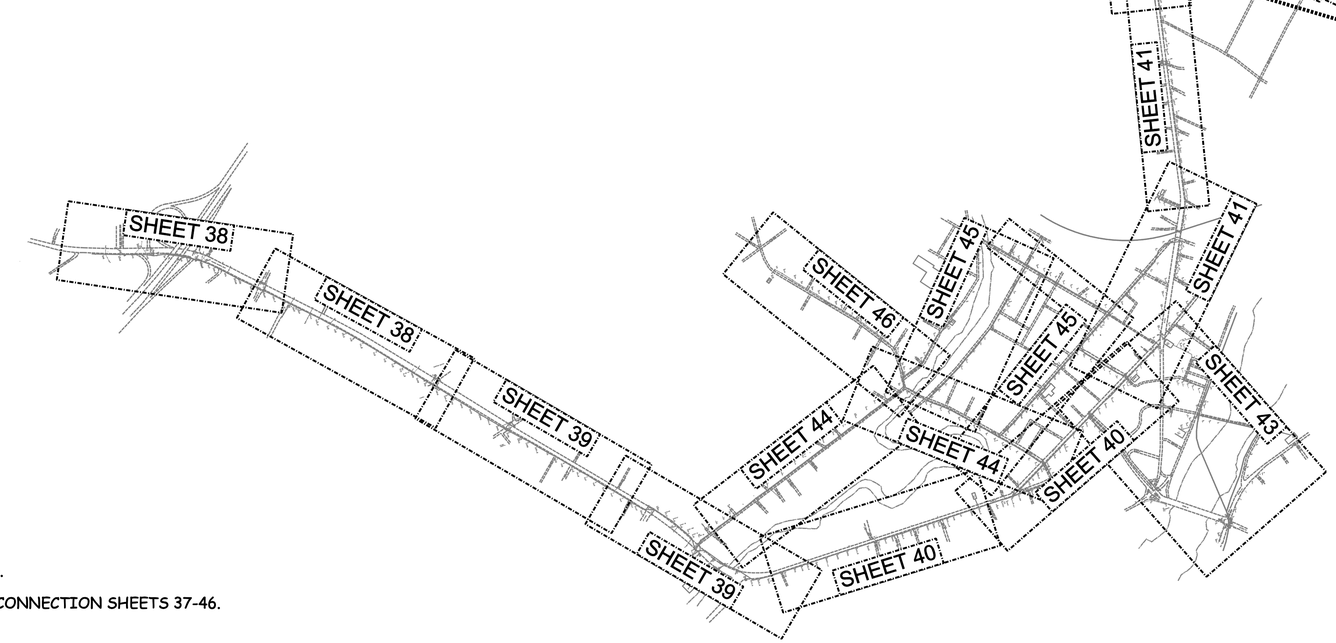
SHEET NUMBER

36

OF 54

Filename: ...\ts\planset\066_52068005AD3.dgn Division: Username: J ROBERT Date:9/7/2010





KEY PLAN

UTILITY ADJUSTMENTS

WATERVILLE FIRE DEPARTMENT SEE SHEETS 42 AND 43.

TIME WARNER CABLE SEE SHEETS 37, 42, 43, AND 46.

OXFORD NETWORKS SEE SHEET 42.

FAIRPOINT COMMUNICATIONS SEE SHEETS 37, 42, AND 46.

CONTRACTOR SEE ALL ITEMS RELATING TO SIGNAL INTERCONNECTION SHEETS 37-46.

PLAN

1000 0 1000 2000

SCALE

BASE PLANS PROVIDED BY TMSI ENGINEERS; GARDINER ME.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN
17288.00

		BY	DATE
PROJ. MANAGER	J. MANSER		
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

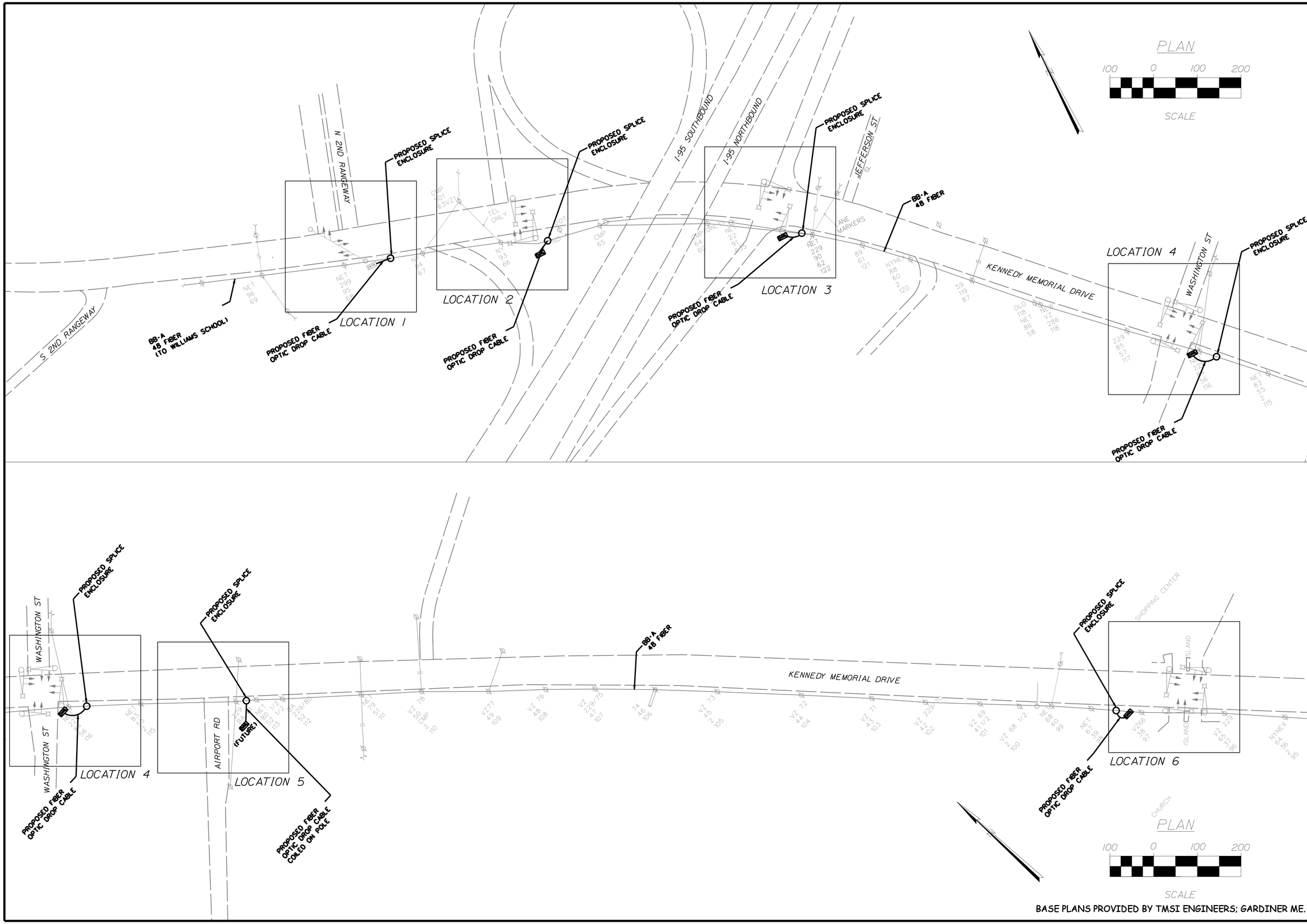
POLE AND CABLE PLANS

SHEET NUMBER

37

OF 54

Filename: ...\067_5206800EXPOLE01.dgn Division: Username: J ROBERT Date:9/9/2010



BASE PLANS PROVIDED BY TMSI ENGINEERS; GARDINER ME.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSER		
DESIGN-DETAILED	C. BIDDAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

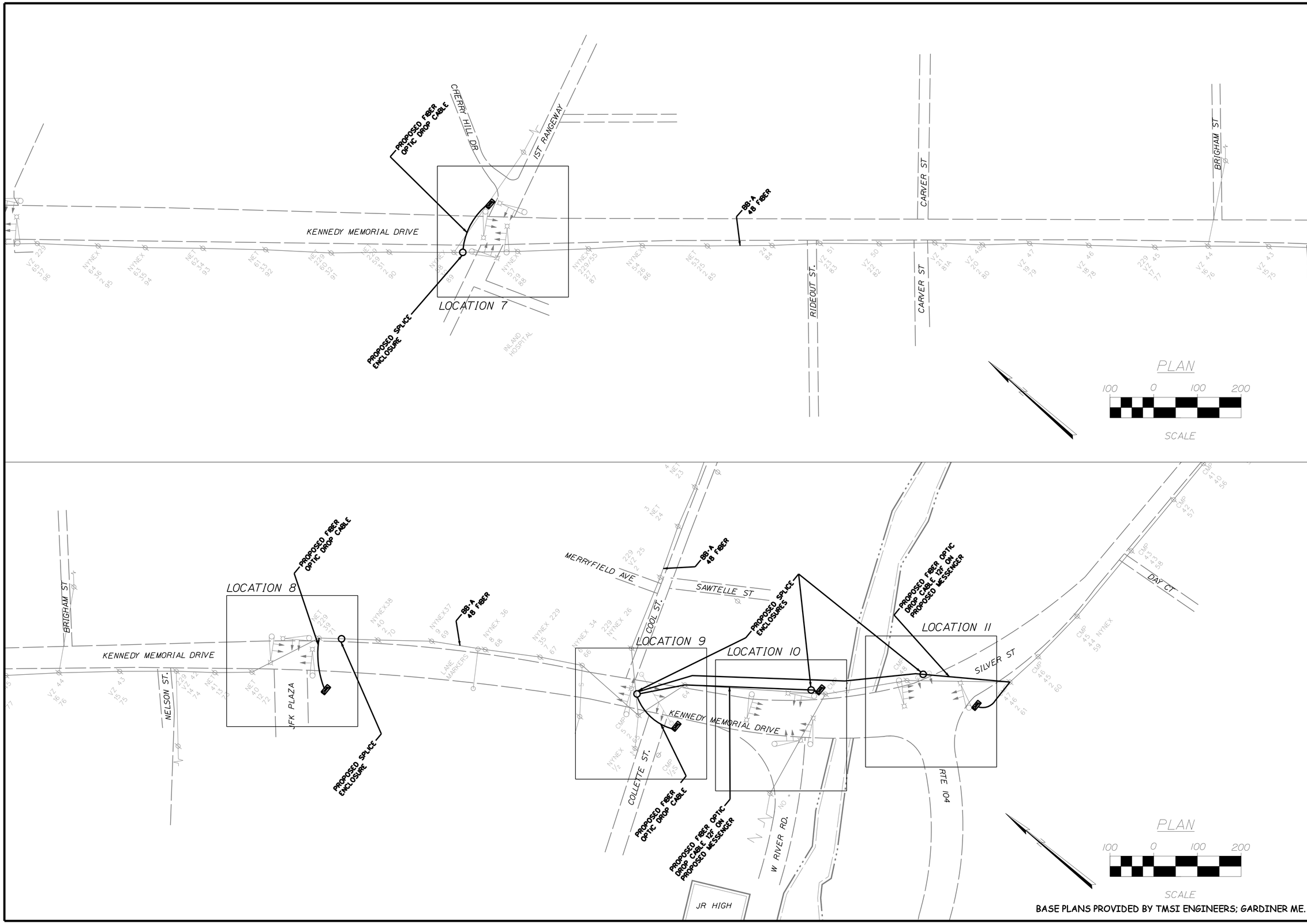
POLE AND CABLE PLANS

SHEET NUMBER

38

OF 54

Filename: ...\068_5206800EXPOLE02.dgn Division: Username: J ROBERT Date:9/7/2010



BASE PLANS PROVIDED BY TMSI ENGINEERS; GARDINER ME.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

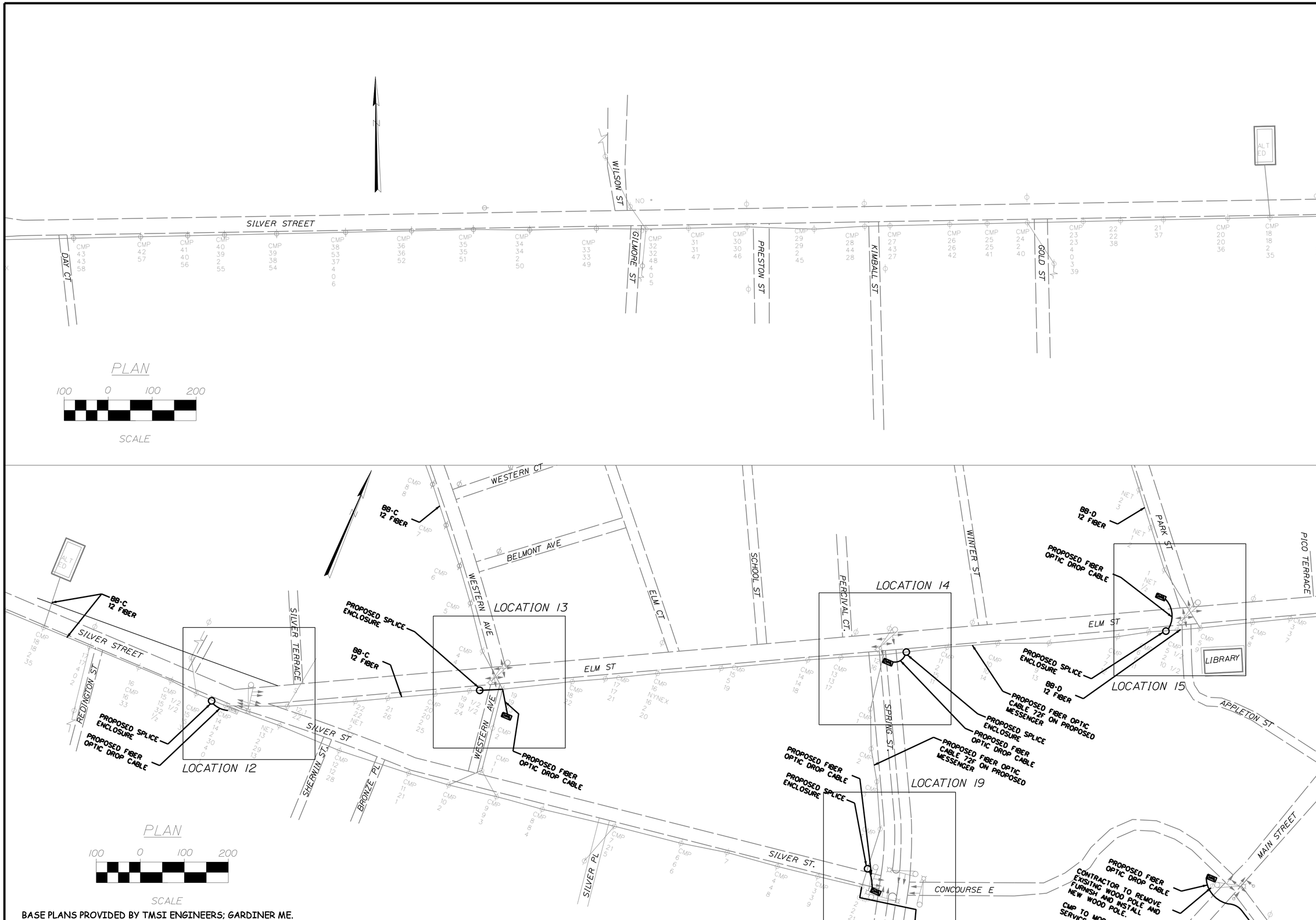
POLE AND CABLE PLANS

SHEET NUMBER

39

OF 54

Filename: ...\069_5206800EXPOLE03.dgn Division: Username: J ROBERT Date:9/7/2010



BASE PLANS PROVIDED BY TMSI ENGINEERS; GARDINER ME.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

POLE AND CABLE PLANS

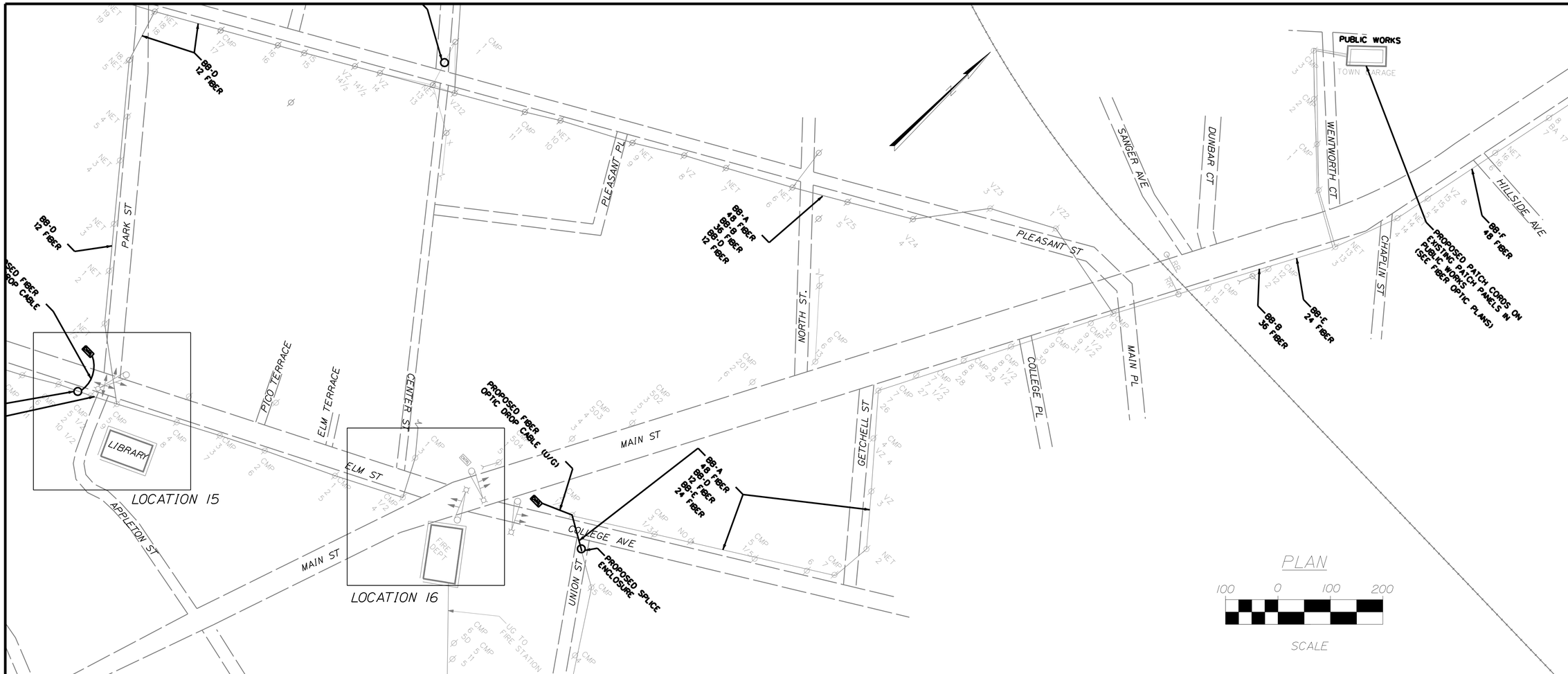
SHEET NUMBER

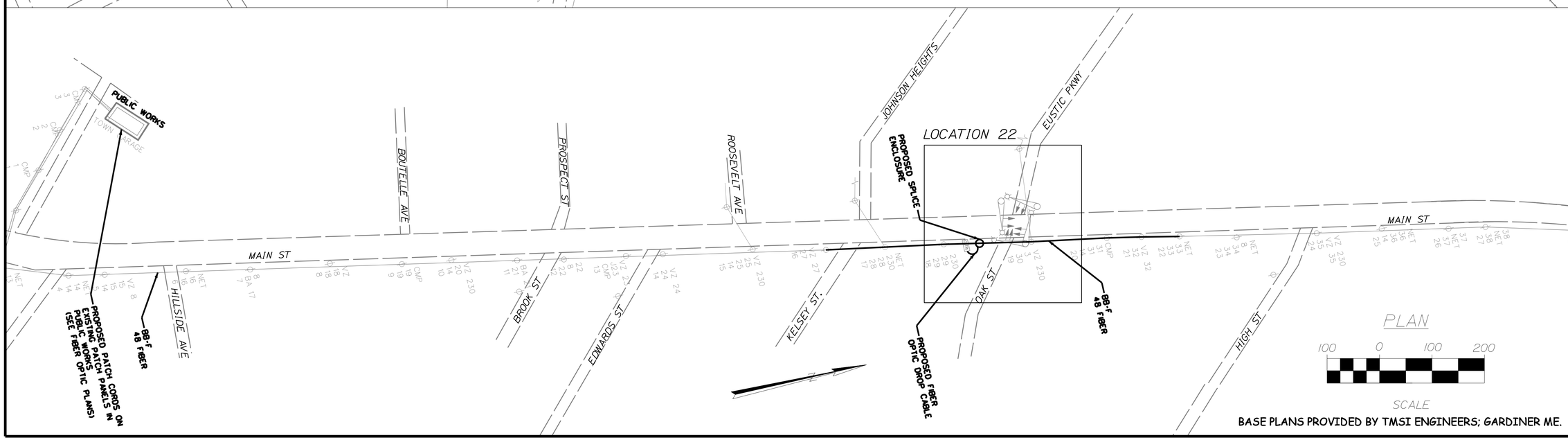
40

OF 54

Filename: ...\071_5206800EXPOLE05.dgn Division: Username: J ROBERT Date:9/7/2010

Filename: ...\073_52068OOEXPOLE07.dgn Division: Username: J ROBERT Date:9/7/2010





BASE PLANS PROVIDED BY TMSI ENGINEERS; GARDINER ME.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN
17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	W. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

POLE AND CABLE PLANS

SHEET NUMBER

41

OF 54

BASE PLANS PROVIDED BY TMSI ENGINEERS; GARDINER ME.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

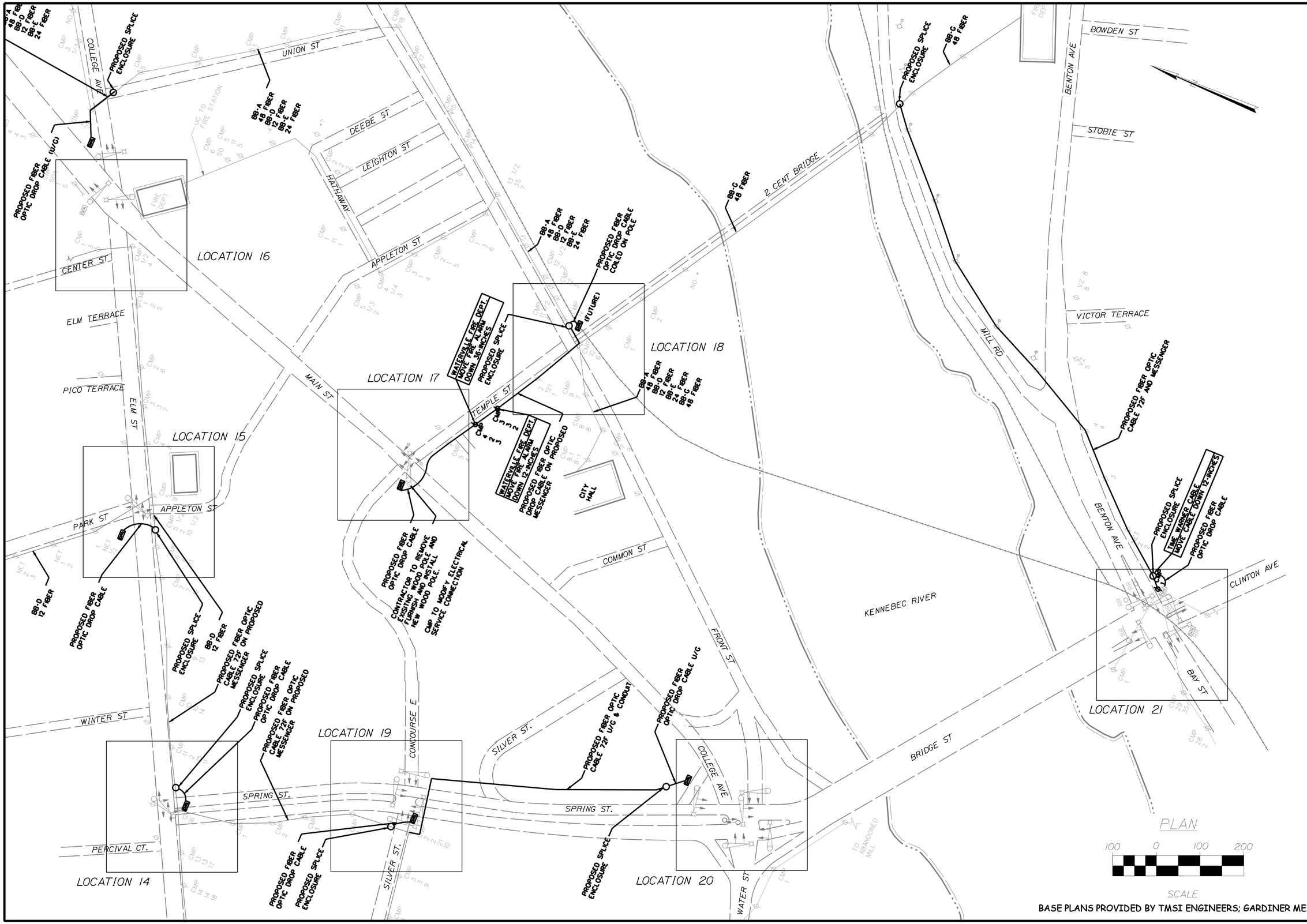
POLE AND CABLE PLANS

SHEET NUMBER

42

OF 54

Filename: ...\075_5206800EXPOLE09.dgn Division: Username: J ROBERT Date:9/7/2010



BASE PLANS PROVIDED BY TMSI ENGINEERS; GARDINER ME.

STATE OF MAINE
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STP-1728(800)X

PIN 17288.00

		BY	DATE
PROJ. MANAGER	J. MANSER		
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REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
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REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

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WATERVILLE-WINSLOW

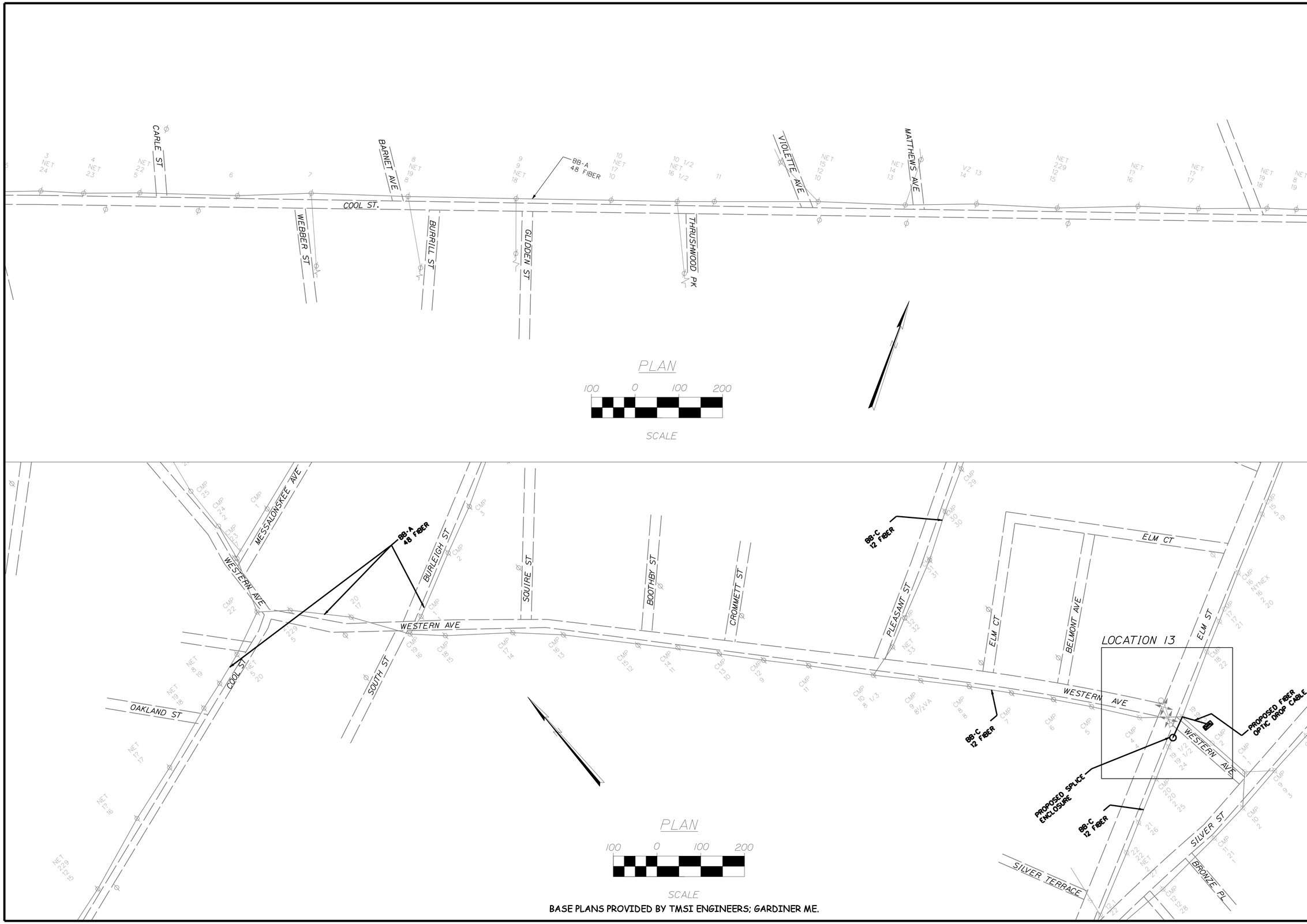
POLE AND CABLE PLANS

SHEET NUMBER

43

OF 54

Filename: ...\074_5206800EXPOLE08.dgn Division: Username: J ROBERT Date:9/7/2010



BASE PLANS PROVIDED BY TMSI ENGINEERS; GARDINER ME.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN
17288.00

PROJ. MANAGER	J. MANSER	BY	DATE
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
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REVISIONS 4			
FIELD CHANGES			

SIGNATURE

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WATERVILLE-WINSLOW

POLE AND CABLE PLANS

SHEET NUMBER

44

OF 54

Filename: ...\070_52068000EXPOLE04.dgn Division: Username: J ROBERT Date:9/7/2010

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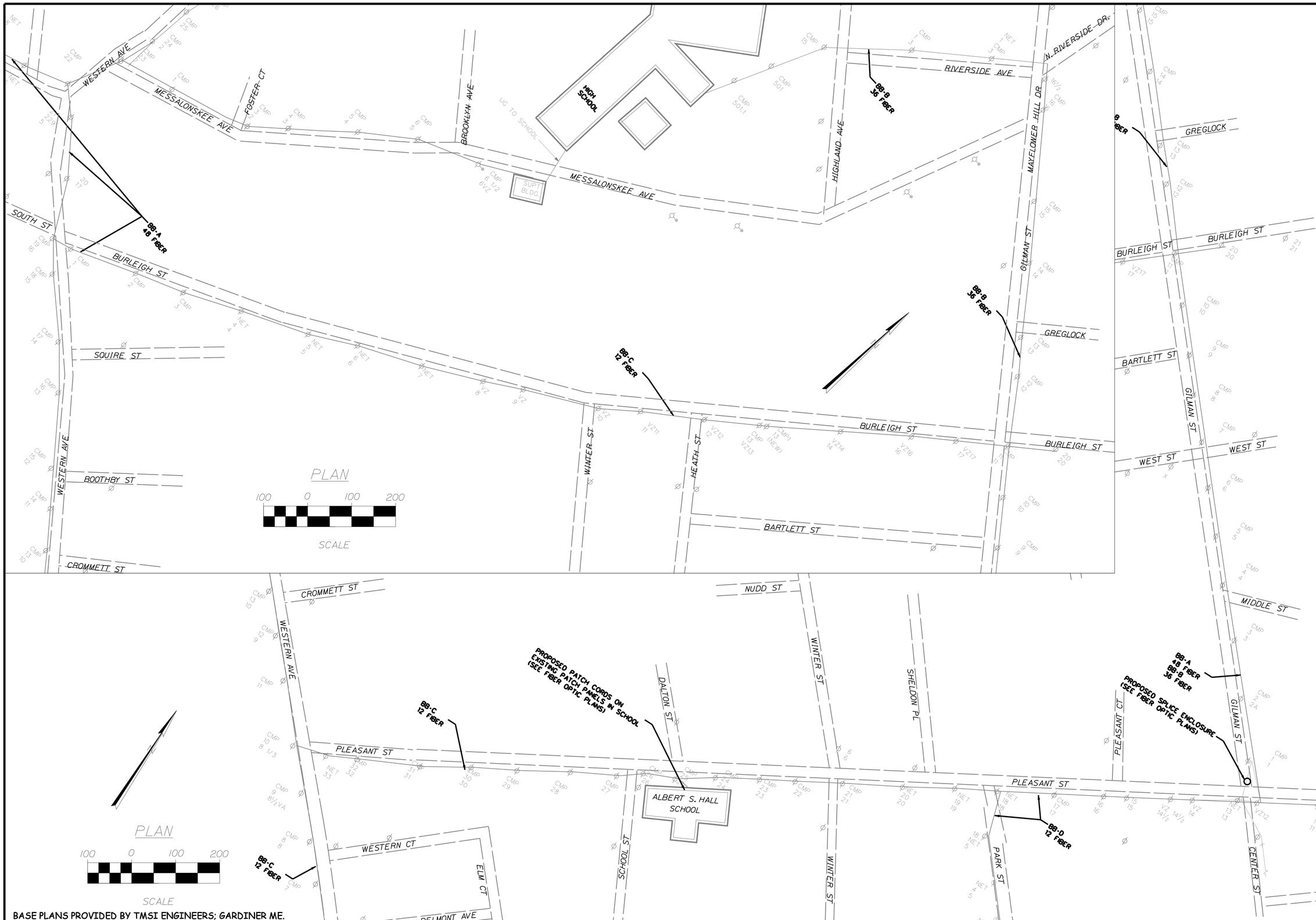

BASE PLANS PROVIDED BY TMSI ENGINEERS; GARDINER ME.

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STP-1728(800)X

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FIELD CHANGES			

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WATERVILLE-WINSLOW

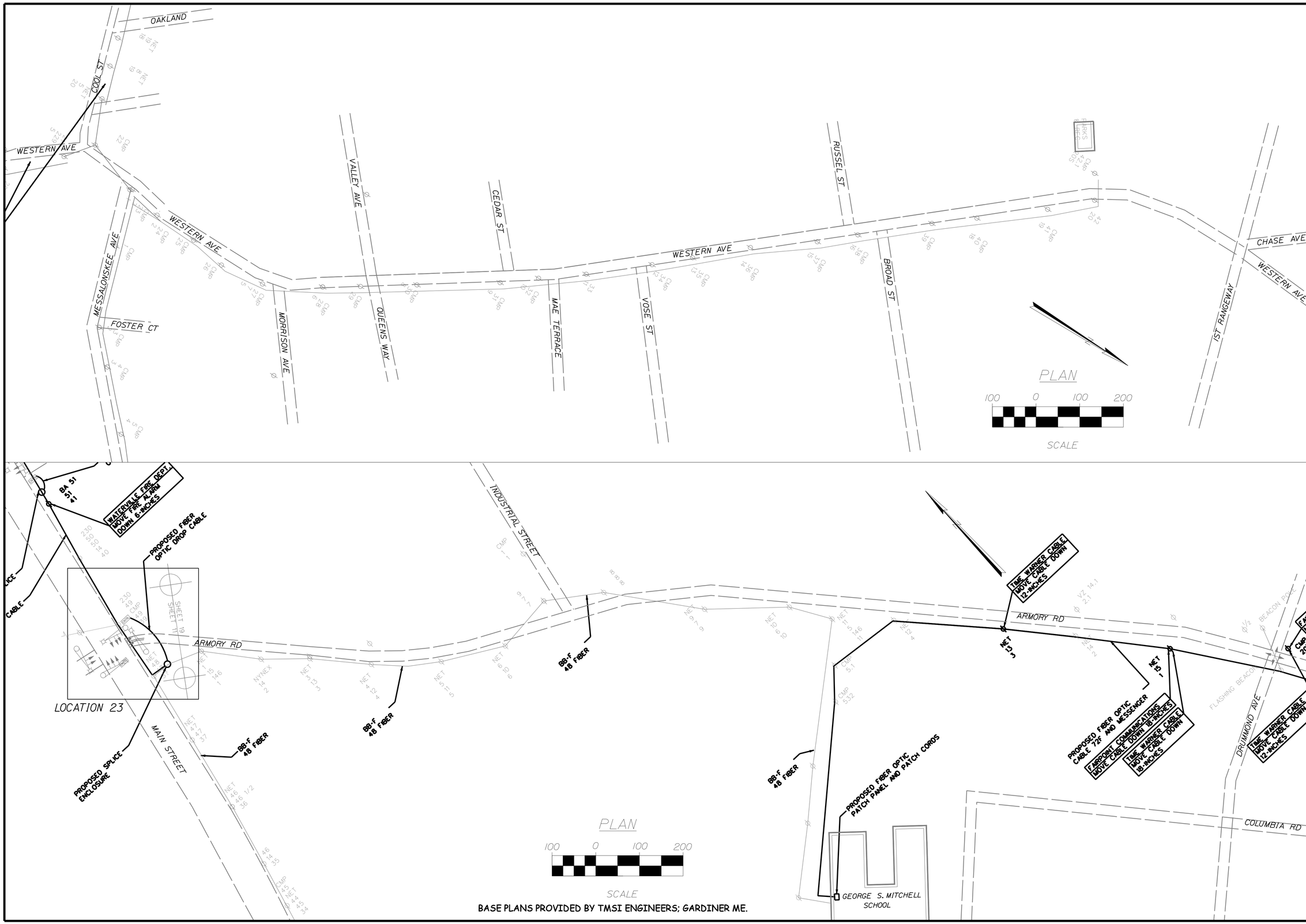
POLE AND CABLE PLANS

SHEET NUMBER

45

OF 54

Filename: ...\076_5206800EXPOLE10.dgn Division: Username: J ROBERT Date:9/7/2010



BASE PLANS PROVIDED BY TMSI ENGINEERS; GARDINER ME.

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REVISIONS 1	Address '98/ Comments		9/07/10
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FIELD CHANGES			

SIGNATURE

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DATE

WATERVILLE-WINSLOW

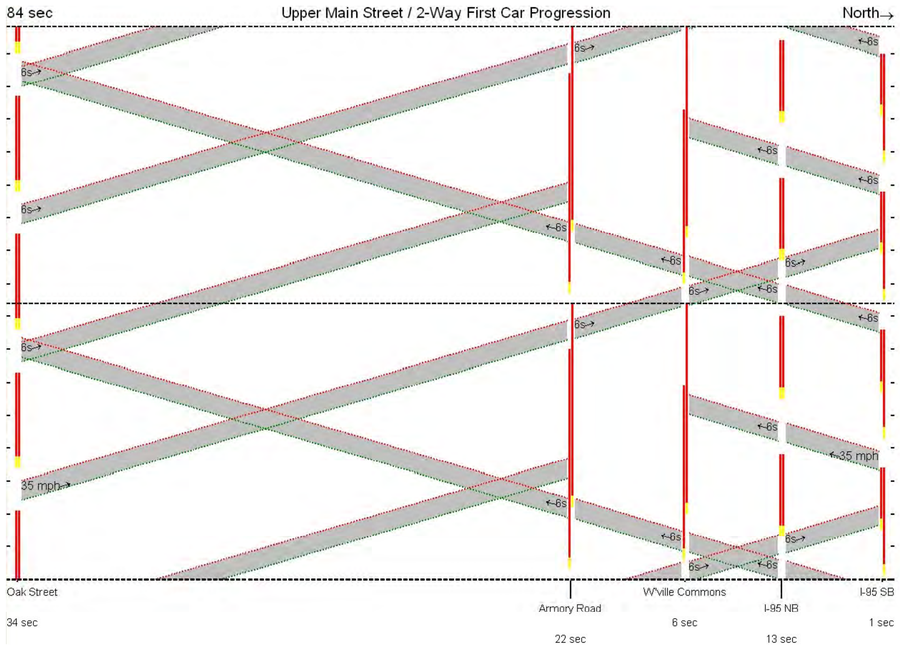
POLE AND CABLE PLANS

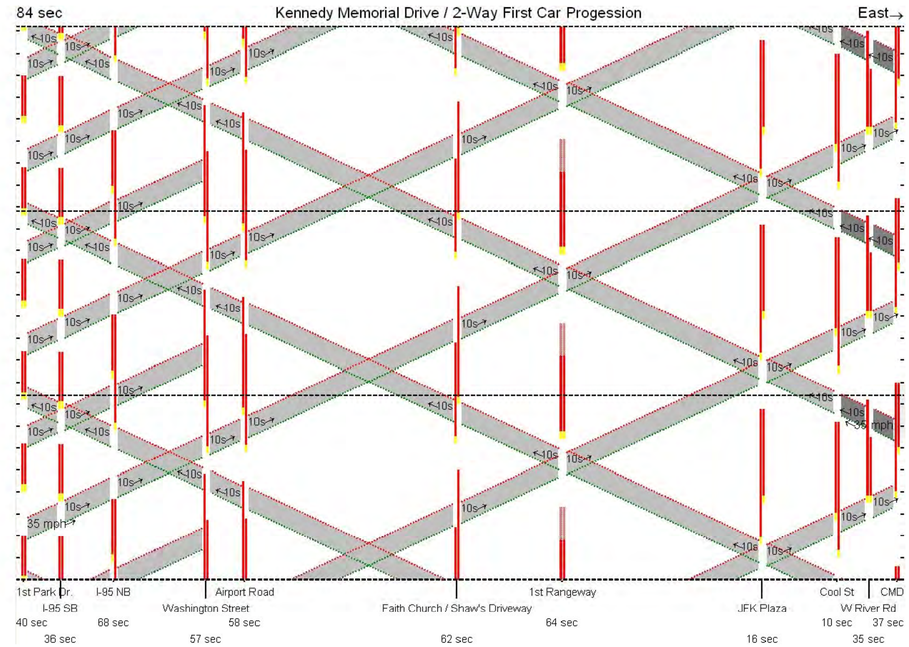
SHEET NUMBER

46

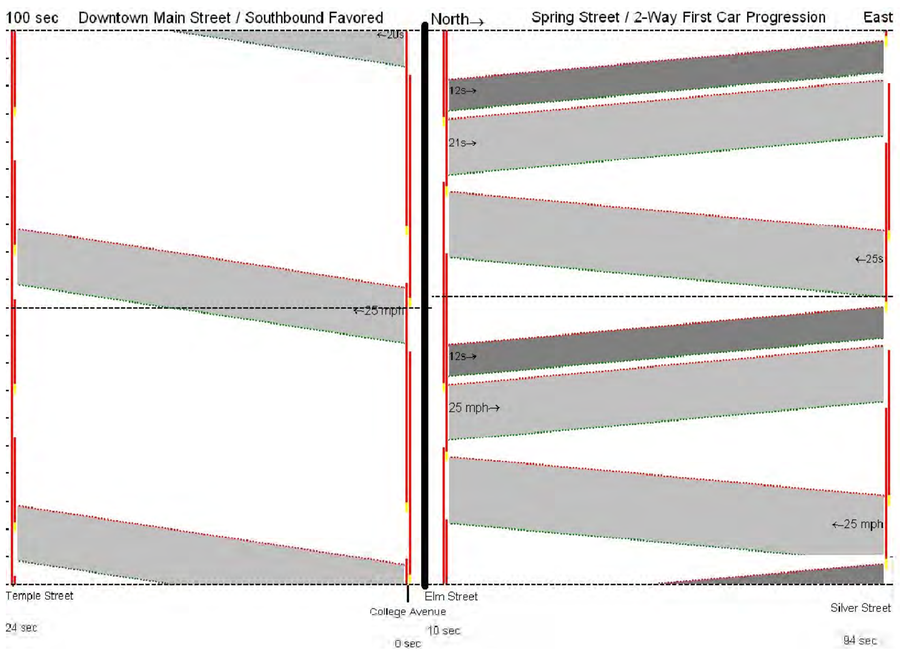
OF 54

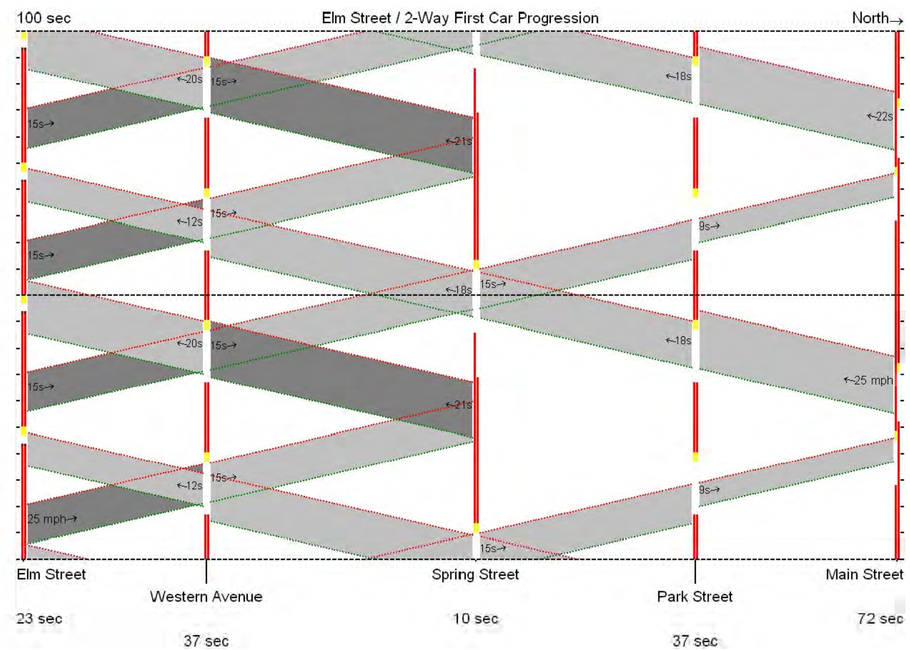
PLAN 1
SIGNAL GROUPS 1 AND 3
42 / 84 SECOND BACKGROUND CYCLE





PLAN 1
SIGNAL GROUP 2
50 / 100 SECOND BACKGROUND CYCLE





STATE OF MAINE
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STP-1728(800)X

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		BY	DATE
PROJ. MANAGER	J. MANSIR		
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CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3		Address 98/ Comments	9/07/10
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

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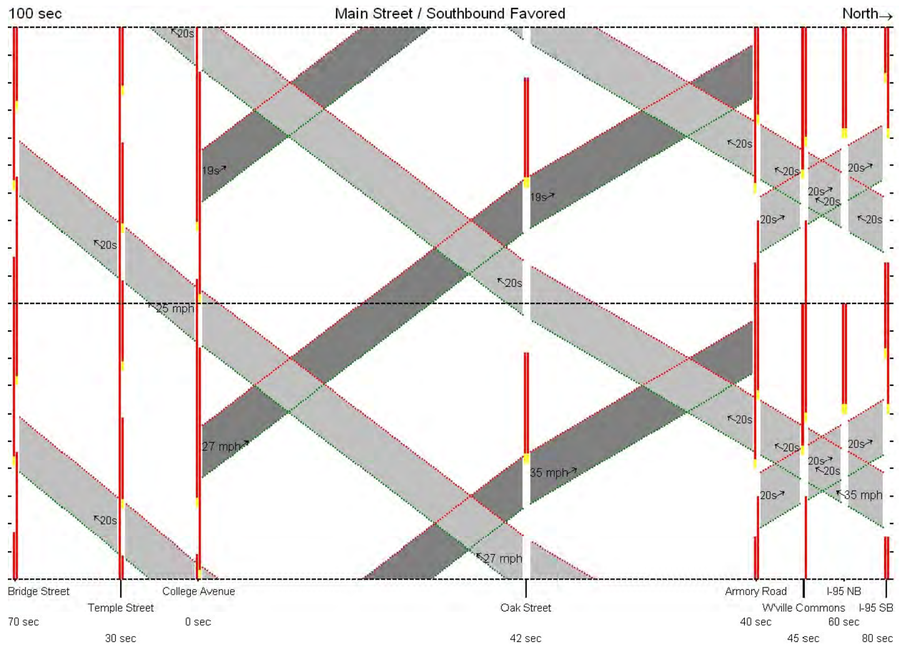
WATERVILLE-WINSLOW
COORDINATION PLAN 1

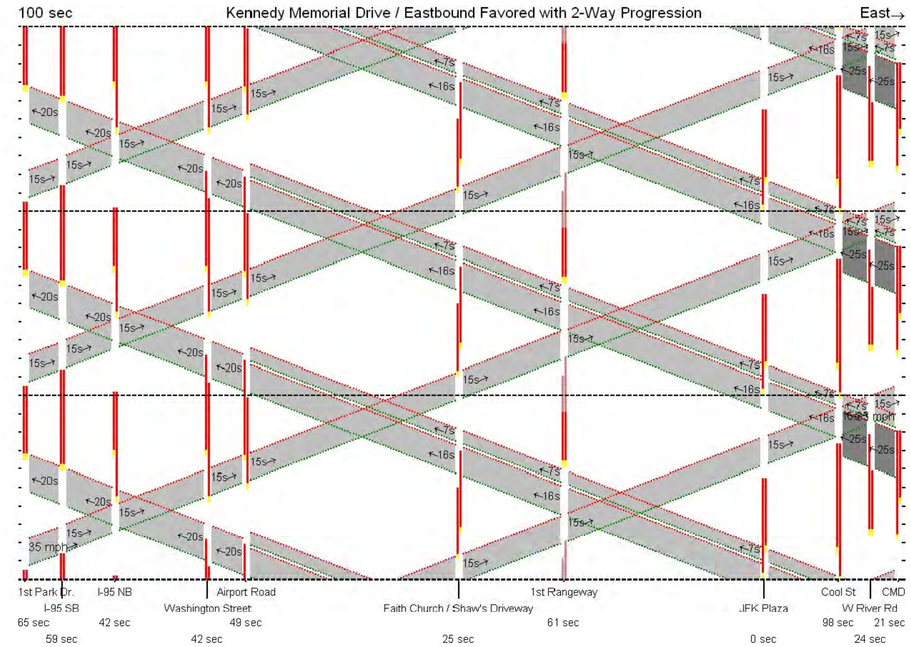
TIME SPACE DIAGRAMS

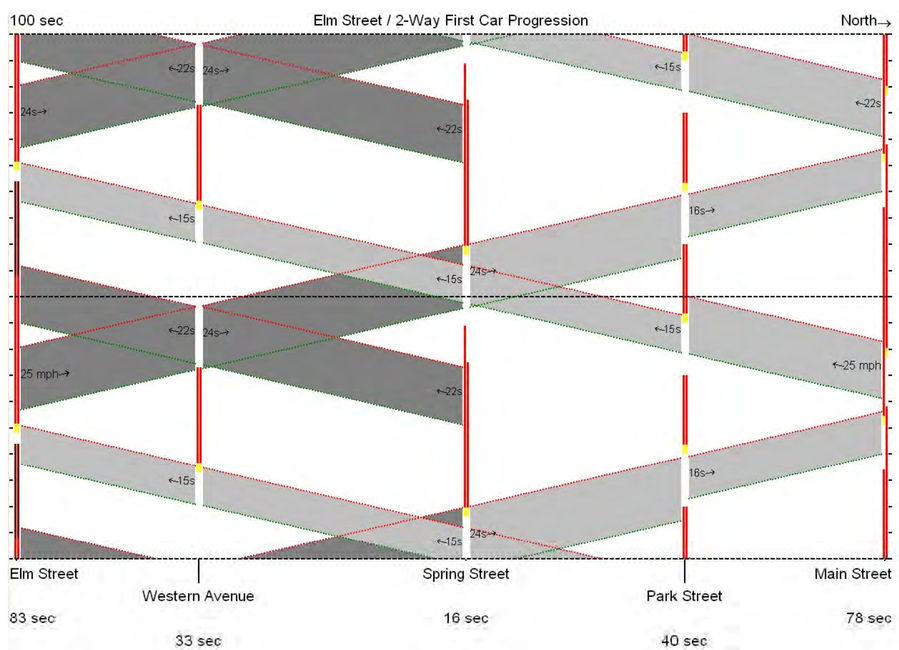
SHEET NUMBER
47
OF 54

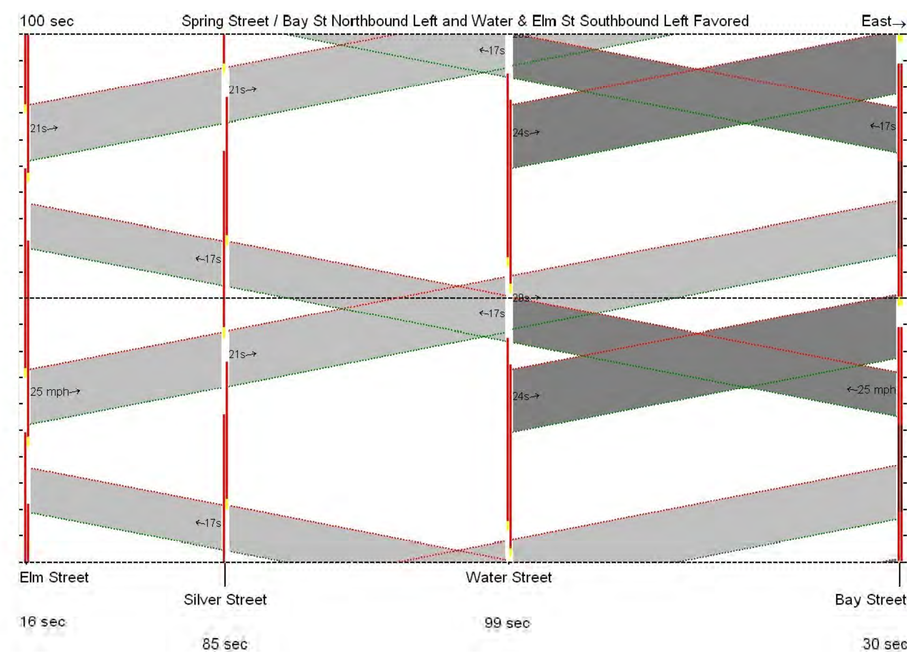
Filename: ...\ts\planset\077_5206800TSD1.dgn Division: Username: J ROBERT Date:9/7/2010

PLAN 2
SIGNAL GROUPS 1, 2, AND 3
100 SECOND BACKGROUND CYCLE









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PROJ. MANAGER	J. MANSIR		
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DESIGN3-DETAILED3		Address 98/ Comments	9/07/10
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REVISIONS 4			
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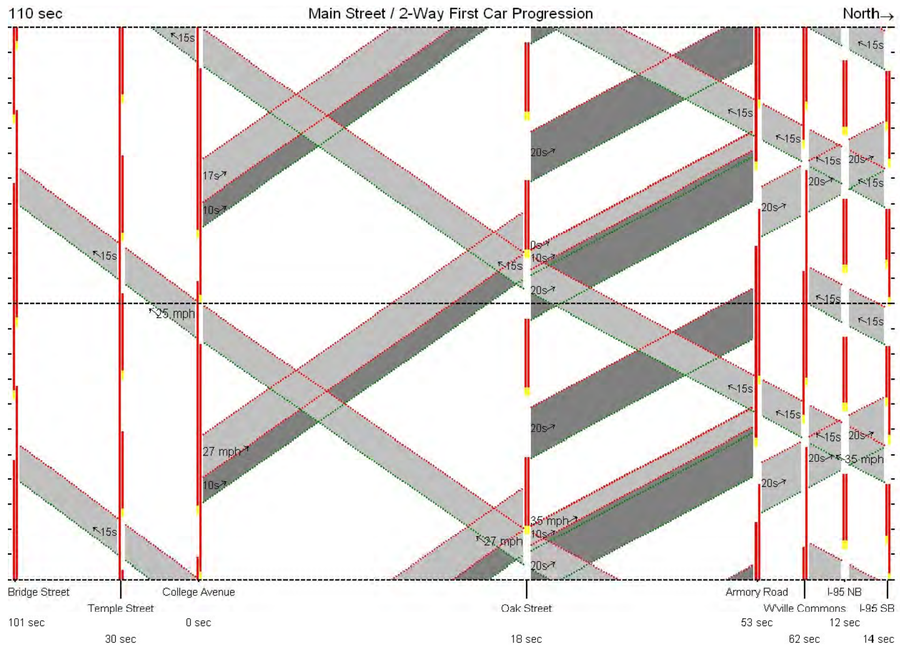
WATERVILLE-WINSLOW
COORDINATION PLAN 2

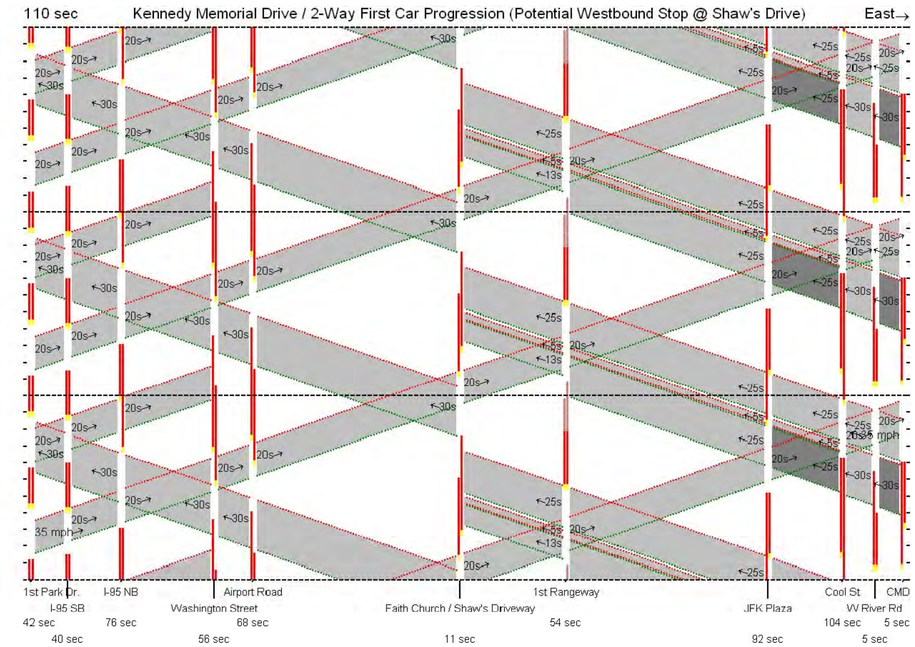
TIME SPACE DIAGRAMS

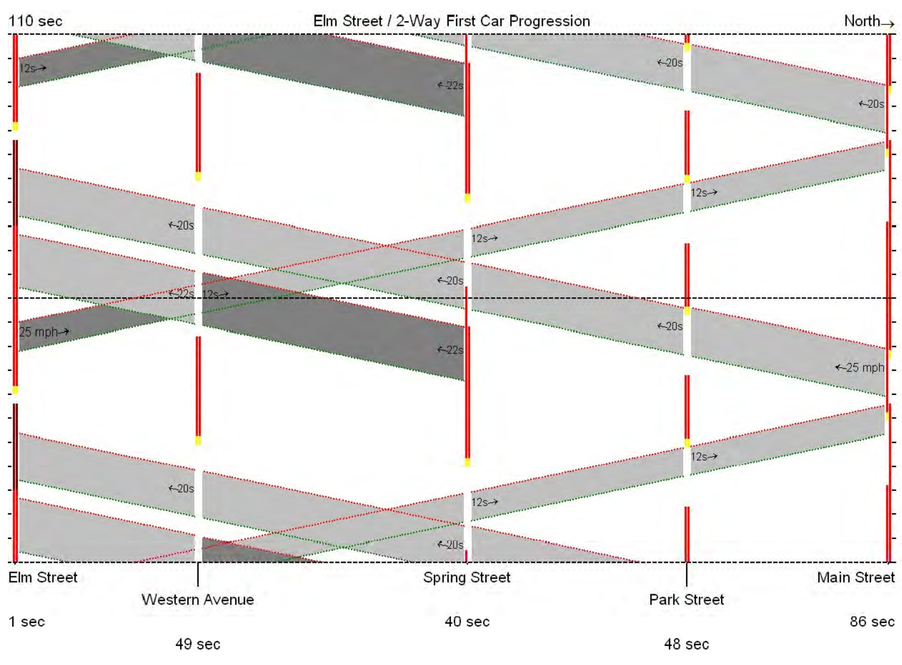
SHEET NUMBER
48
OF 54

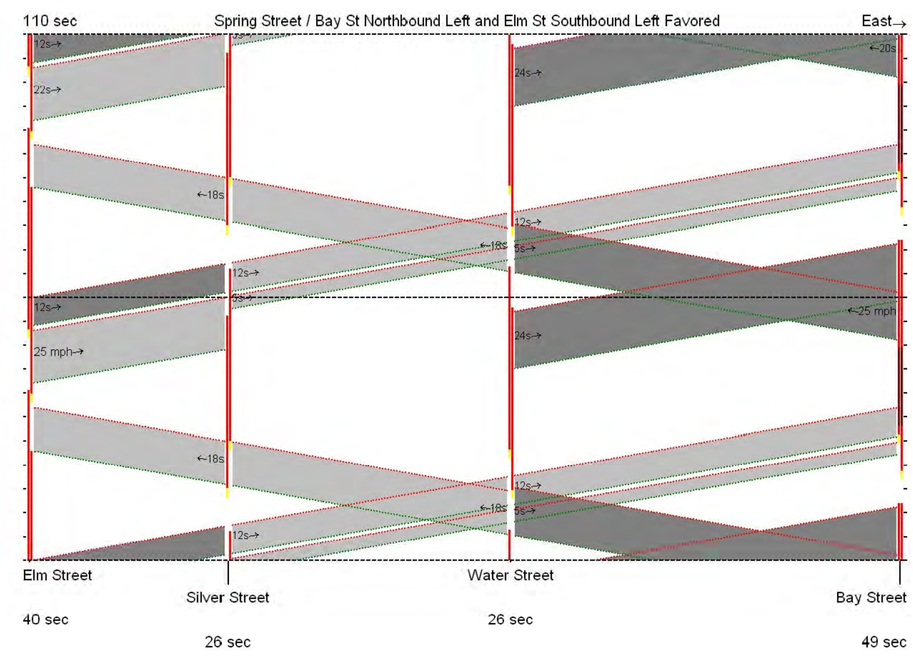
Filename: ...\ts\planset\078_5206800TSD2.dgn Division: Username: J ROBERT Date:9/7/2010

PLAN 3
SIGNAL GROUPS 1, 2, AND 3
110 SECOND BACKGROUND CYCLE









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DESIGN2-DETAILED2			
DESIGN3-DETAILED3	Address 98/ Comments		9/07/10
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

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WATERVILLE-WINSLOW
COORDINATION PLAN 3

TIME SPACE DIAGRAMS

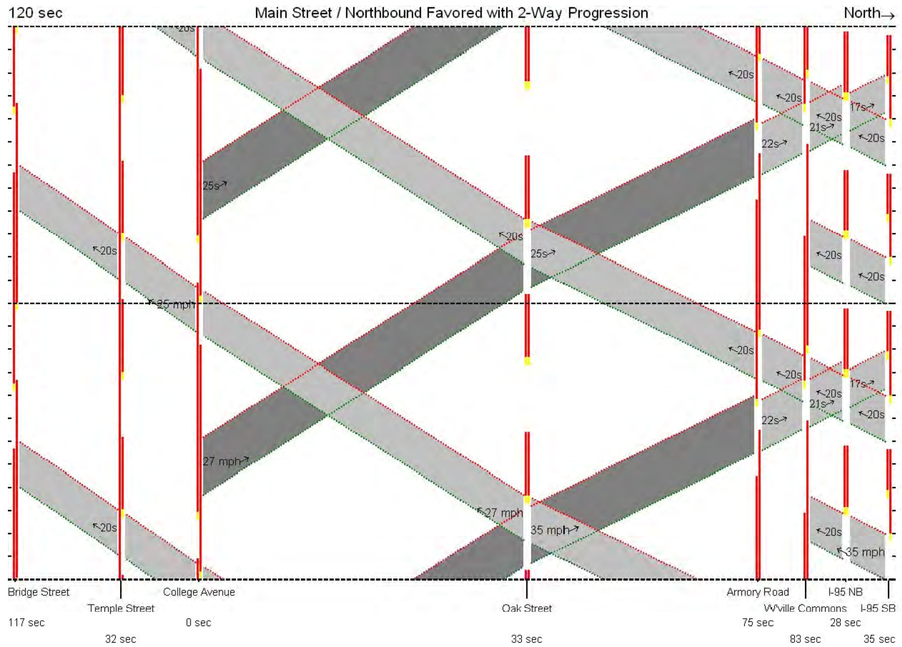
SHEET NUMBER

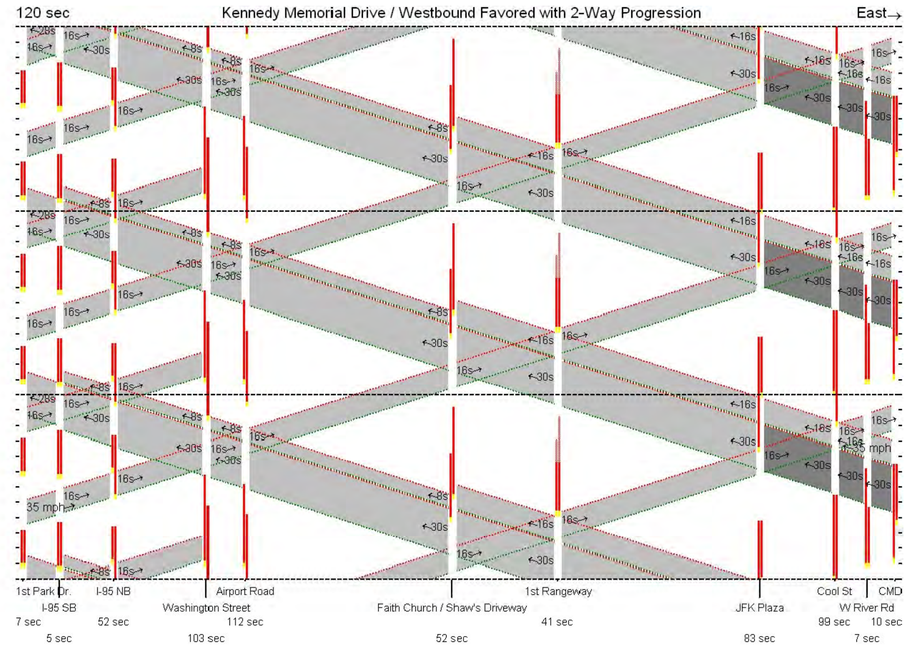
49

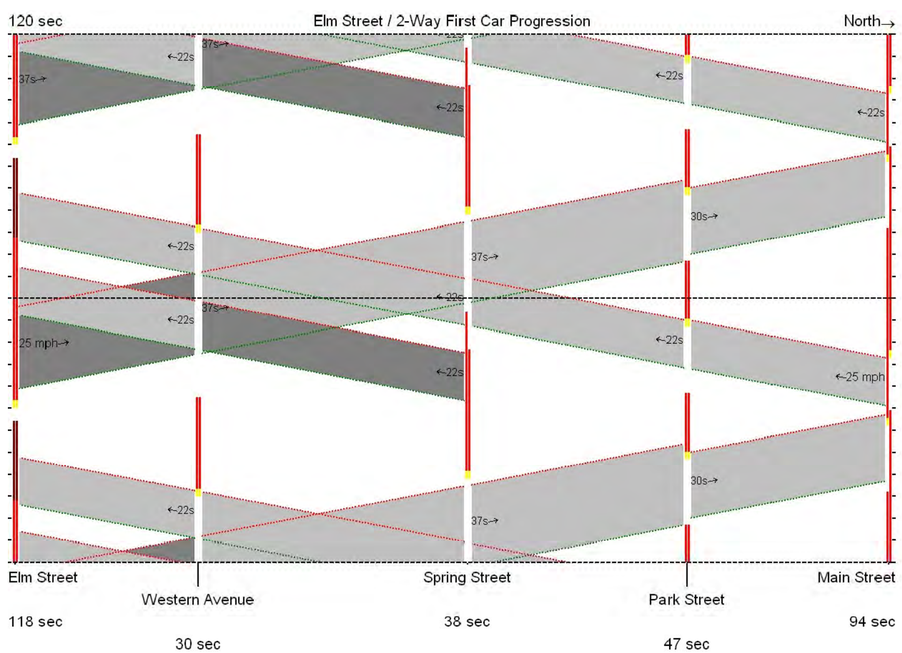
OF 54

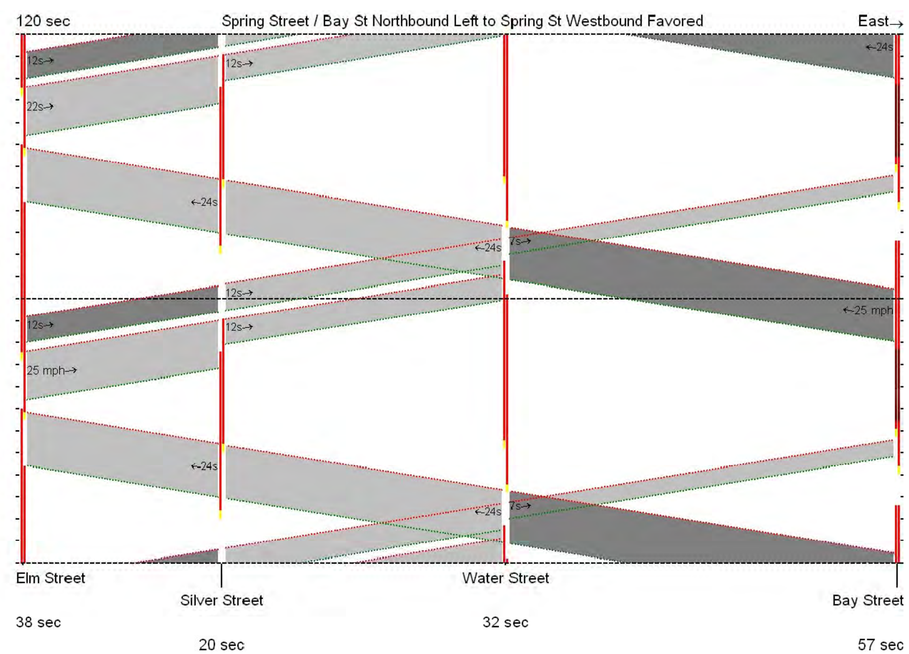
Filename: ...\ts\planset\079_52068001SD3.dgn Division: Username: J ROBERT Date:9/7/2010

PLAN 4
SIGNAL GROUPS 1, 2, AND 3
120 SECOND BACKGROUND CYCLE









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DESIGN2-DETAILED2			
DESIGN3-DETAILED3	Address 98/ Comments		9/07/10
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REVISIONS 4			
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WATERVILLE-WINSLOW
COORDINATION PLAN 4

TIME SPACE DIAGRAMS

SHEET NUMBER

50

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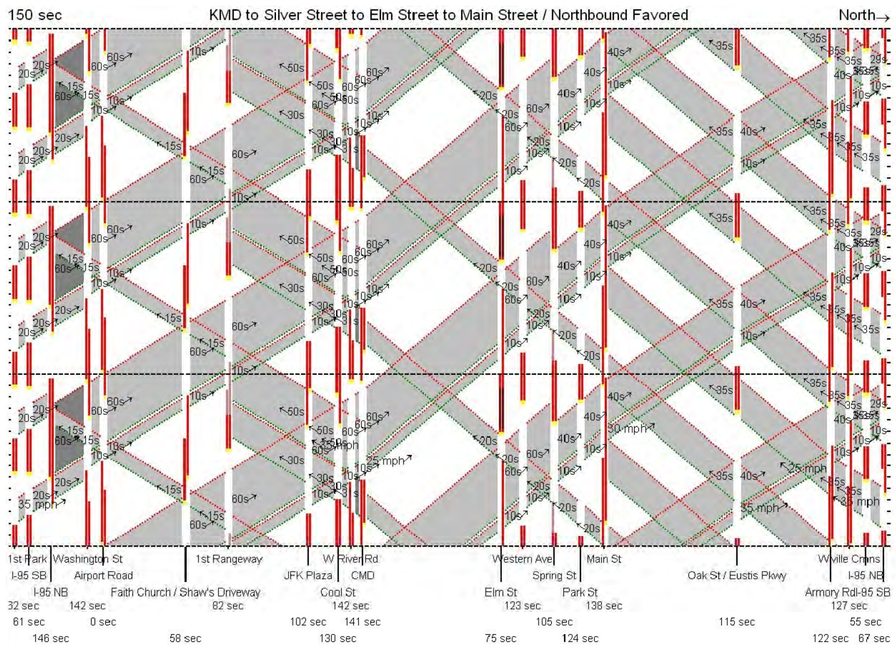
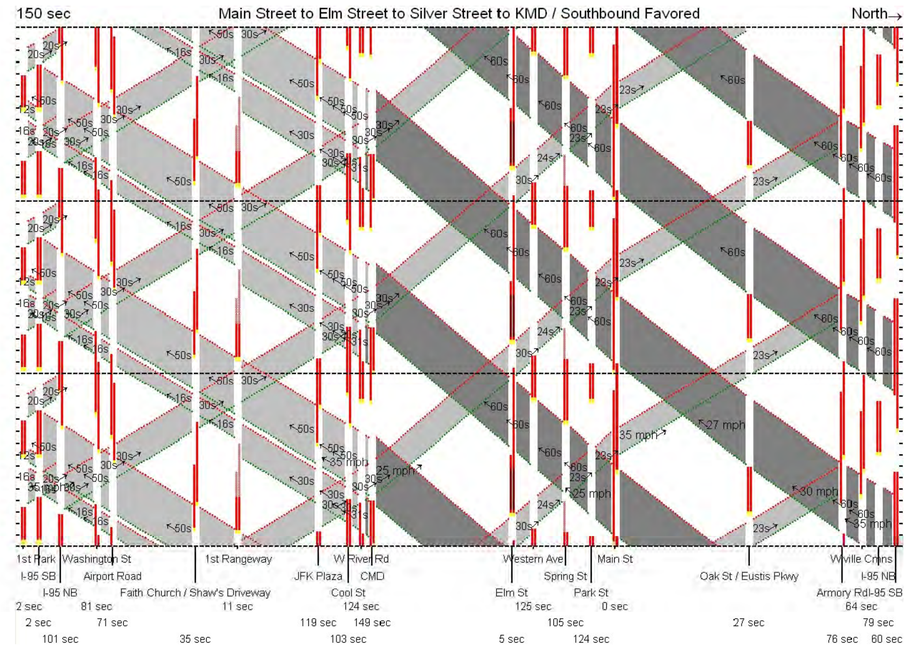
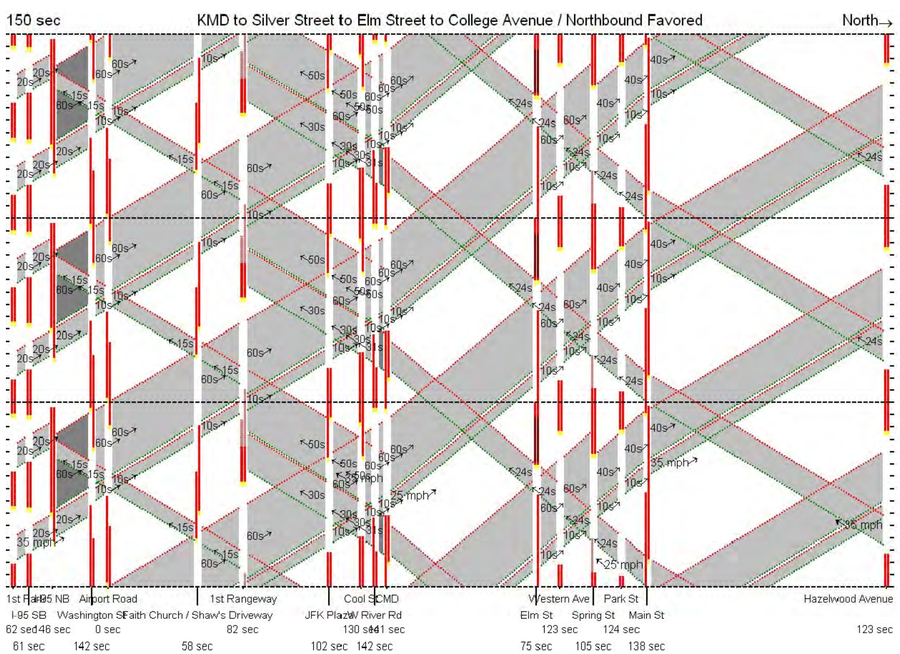
Filename: ...\ts\planset\080_5206800TSD4.dgn Division: Username: J ROBERT Date:9/7/2010

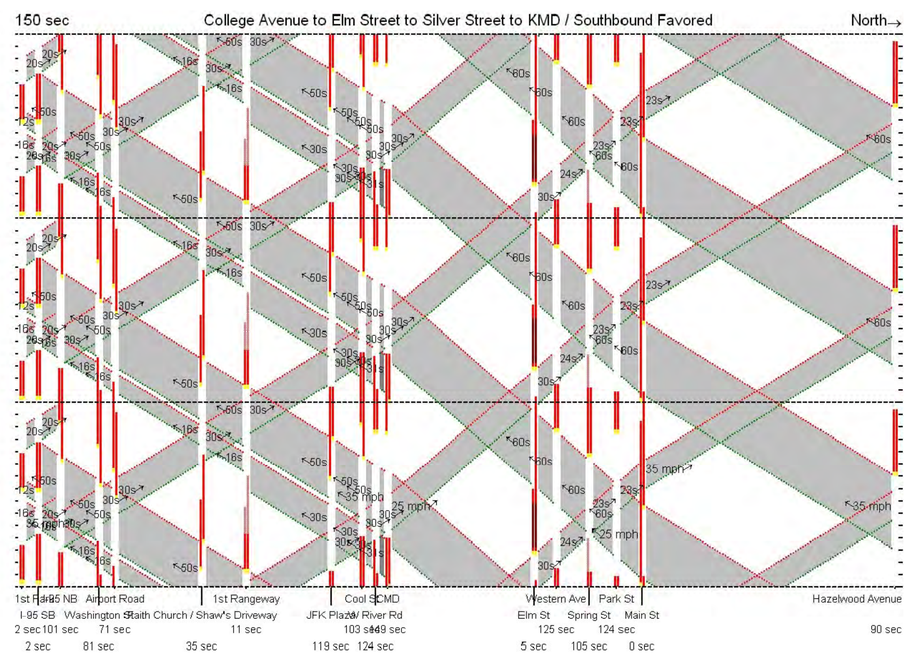
PLAN 5
SIGNAL GROUPS 1, 2, AND 3
150 SECOND BACKGROUND CYCLE



PLAN 6
SIGNAL GROUPS 1, 2, AND 3
150 SECOND BACKGROUND CYCLE







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PROJ. MANAGER	J. MANSIR	BY	DATE
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CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3		Address 98/ Comments	9/07/10
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REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
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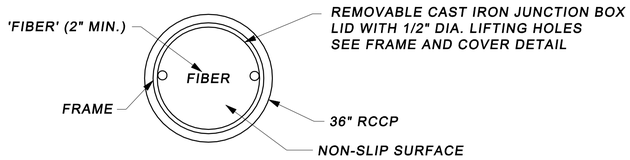
WATERVILLE-WINSLOW
I-95 DIVERSION PLANS 5 AND 6
TIME SPACE DIAGRAMS

SHEET NUMBER

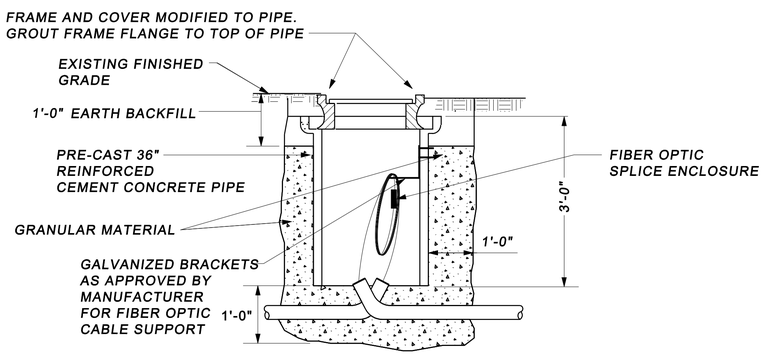
51

OF 54

Filename: ...\ts\planset\081_52068000TSD5.dgn Division: Username: J ROBERT Date:9/7/2010



JUNCTION BOX COVER



36-INCH CONCRETE FIBER OPTIC JUNCTION BOX

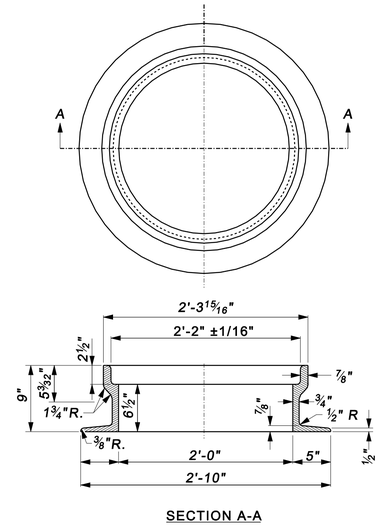
NOTES:

1. CONDUIT BENDS THAT ARE GREATER THAN THE MINIMUM BENDING RADIUS OF THE CABLE SHALL BE USED TO ENTER THE JUNCTION BOX.

2. CONDUIT SHALL EXTEND INTO THE JUNCTION BOX A MAXIMUM OF 12".

3. SLACK CABLE SHOULD BE SUSPENDED FROM GALVANIZED BRACKETS AS APPROVED BY THE CABLE MANUFACTURER SO AS NOT TO EXCEED THE MINIMUM BENDING RADIUS OF THE CABLE.

4. THE COVER SHALL BE CAST IRON WITH A NON-SLIP SURFACE. THE SURFACE SHALL HAVE A MINIMUM COEFFICIENT OF FRICTION OF 0.50.



SECTION A-A

FRAME AND COVER DETAIL FIBER OPTIC JUNCTION BOX

GENERAL NOTES:

1) FIBERS INDICATED AS THROUGH FIBERS SHALL NOT BE CUT.
2) AT LOCATIONS WHERE TWO FIBER OPTIC CABLES MUST BE JOINED, ALL FIBER CONNECTIONS SHALL BE FUSION SPLICES CONTAINED IN A SPLICE ENCLOSURE OF SUFFICIENT SIZE TO HOLD ALL THE SPLICES.
3) SPLICE ENCLOSURES SHALL HAVE 12-SPLICE CAPACITY MINIMUM. AT LOCATIONS REQUIRING MORE THAN 12 SPLICES, THE SPLICE ENCLOSURE SHALL HAVE A CAPACITY SUFFICIENT TO HOLD ALL OF THE REQUIRED SPLICES, IN A MULTIPLE OF 12.
4) CONTRACTOR SHALL MAKE ALL REQUIRED CONNECTIONS FOR ALL ANCILLARY TRAFFIC SIGNAL EQUIPMENT INTERFACING WITH THE TRAFFIC SIGNAL CONTROLLER PER NEMA TS2, TYPE 1 TYPICAL DETAIL.
5) MANUFACTURED PIGTAILS SHALL BE TERMINATED ON PATCH PANELS. PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET FIBER SWITCHES.
6) AT FIBER OPTIC CABLE TERMINAL ENDS WHERE IT IS UNLIKELY THAT THE TRAFFIC SIGNAL SYSTEM WOULD BE EXPANDED BEYOND THE TERMINAL INTERSECTION, THE SPLICE ENCLOSURE MAY BE OMITTED AND THE CABLE MAY BE TERMINATED AT THE PATCH PANEL IN THE TRAFFIC SIGNAL CABINET.
7) CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF EXISTING FIBERS NOT INDICATED FOR USE AT A PROJECT SITE. CONTRACTOR SHALL AVOID INTERRUPTING EXISTING FIBER OPTIC COMMUNICATIONS WHEN SPLICING FIBER OPTIC CABLE FOR NEW CONNECTIONS. IF INTERRUPTION OF EXISTING COMMUNICATIONS IS NECESSARY, CONTRACTOR SHALL CONTACT THE CITY OF WATERVILLE ASSISTANT ENGINEER (JOHN LOMBARDI, 207-680-4743) AT LEAST 24 HOURS PRIOR TO INTERRUPTION.

FIBER OPTIC CABLE NOTES:

1) MANUFACTURED CONDUIT BEND RADIUS SHALL EXCEED THE MINIMUM BENDING RADIUS FOR FIBER OPTIC CABLE. FIELD BENDING CONDUIT SHALL NOT BE PERMITTED.
2) FIBER OPTIC CABLE SHALL EXCEED THE MINIMUM BENDING RADIUS FOR THE CABLE AT ALL TIMES DURING INSTALLATION, MODIFICATION, REPAIR, SPLICING, OR IN PERMANENT CONDITION. MINIMUM BENDING RADIUS SHALL BE THE GREATER OF THE MANUFACTURER'S RECOMMENDED RADIUS OR 15X THE OUTSIDE DIAMETER OF THE CABLE.
3) SPACING OF PULL BOXES FOR FIBER OPTIC CABLE SHALL NOT EXCEED:
   a) 360 DEGREES OF CONDUIT BENDS;
   b) DISTANCE THAT WOULD EXCEED 600-LB PULLING TENSION; OR
   c) 750 LINEAR FEET.
4) CONTRACTOR SHALL USE ONLY MANUFACTURER-RECOMMENDED GRIPPING AND PULLING DEVICES FOR PULLING CABLES THROUGH THE CONDUIT SYSTEM.
5) FOR UNDERGROUND INSTALLATIONS, FIBER OPTIC SPLICE ENCLOSURES SHALL BE INSTALLED IN EQUIPMENT CABINETS OR IN FIBER OPTIC CABLE JUNCTION BOXS. FOR AERIAL ATTACHMENTS, FIBER OPTIC SPLICE ENCLOSURES SHALL BE ATTACHED TO THE MESSENGER WIRE.
6) A MINIMUM OF 30 FEET OF SPARE CABLE SHALL BE PROVIDED ON EACH SIDE OF ANY SPLICE ENCLOSURE IN EACH FIBER OPTIC JUNCTION BOX. A MINIMUM OF 60 FEET OF SPARE CABLE SHALL BE PROVIDED ON EACH SIDE OF ANY AERIAL SPLICE ENCLOSURE. AN ADDITIONAL 10 FEET ON EACH SIDE OF THE SPLICE ENCLOSURE SHALL BE PROVIDED FOR EVERY 10 LATERAL FEET FROM THE SPLICE ENCLOSURE LOCATION TO A VEHICLE-ACCESSIBLE LOCATION.
7) UNDERGROUND FIBER OPTIC CABLE SHALL BE INSTALLED IN RACEWAYS IN ACCORDANCE WITH NEC. DIRECT BURIAL OF FIBER OPTIC CABLE SHALL NOT BE PERMITTED.
8) AT AERIAL FIBER OPTIC CABLE INSTALLATIONS, THE FIBER OPTIC CABLE SHALL BE TAGGED AT THE ATTACHMENT LOCATION ON EACH POLE TO WHICH THE CABLE IS ATTACHED. THE TAG SHALL INDICATE THE CABLE OWNER (CITY OF WATERVILLE), CONTACT TELEPHONE NUMBER, AND NUMBER OF FIBERS IN THE CABLE.
9) IN THE EVENT THE MATERIAL MANUFACTURER'S INSTALLATION REQUIREMENTS RECOMMEND MORE STRINGENT INSTALLATION PROCEDURES, THE MORE STRINGENT RECOMMENDATIONS AND PROCEDURES SHALL APPLY UNLESS OTHERWISE APPROVED BY THE ENGINEER.

FIBER OPTIC JUNCTION BOXS:

1) FIBER OPTIC JUNCTION BOXES SHALL BE EXCAVATED TO A DEPTH OF 12 INCHES BELOW THE STRUCTURE'S BOTTOM. THE CONTRACTOR SHALL INSTALL 12 INCHES OF GRANULAR FILL MATERIAL AT THE BASE OF THE EXCAVATION BEFORE INSTALLING THE JUNCTION BOX.
2) FIBER OPTIC JUNCTION BOXES SHALL NOT BE INSTALLED IN EXISTING OR PROPOSED ROADWAY PAVEMENT. INSTALLATION OF JUNCTION BOXES IN SIDEWALK MAY BE PERMITTED EXCEPT WHERE PROHIBITED BY ADA REGULATIONS.
3) FIBER OPTIC JUNCTION BOXES SHALL BE MOUNTED FLUSH TO GRADE.
4) FIBER OPTIC JUNCTION BOXES SHALL NOT BE INSTALLED ON STEEP SLOPES WHERE THE COVER CANNOT BE LEVELED WITHIN A TOLERANCE OF 1 INCH PER 1 FOOT OF GRADE.
5) THE MAXIMUM OPENING SIZE FOR FIBER OPTIC JUNCTION BOXES SHALL EXCEED 1.5 TIMES THE MINIMUM BENDING RADIUS OF THE FIBER OPTIC CABLE TO BE INSTALLED.

STATE OF MAINE
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DESIGN3-DETAILED3			
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REVISIONS 3			
REVISIONS 4			
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DATE

WATERVILLE-WINSLOW

FIBER OPTIC DETAILS

SHEET NUMBER

52

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Filename: ...\ts\planset\082_5206800F01.dgn Division: Username: J ROBERT Date:9/7/2010

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE9	BB-A (48F) TO SE8	25	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE8	26	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	BB-A (48F) TO SE8	1-24, 27-48	THROUGH	BB-A (48F) TO SE6/P	1-24, 27-48	BB-A (48F) FIBER OPTIC BACKBONE
	12F TO SE10	1	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	12F TO SE10	2	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
	12F TO SE10	3	SPLICE	12F TO SE11	1	SPLICE TO 12F DROP CABLE
	12F TO SE10	4	SPLICE	12F TO SE11	2	SPLICE TO 12F DROP CABLE
	12F TO SE11	3	SPLICE	BB-A (48F) TO SE6/P	25	BB-A (48F) FIBER OPTIC BACKBONE
	12F TO SE11	4	SPLICE	BB-A (48F) TO SE6/P	26	BB-A (48F) FIBER OPTIC BACKBONE
PPP, CONTROL CABINET	12F TO SE9	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE9	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE9	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE9	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE9	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
KMD (ROUTE 11/137) AND COOL ST/COLLETTE ST
SIGNAL GROUP:
1
LOCATION:
9

SEE SHEET 13A FOR INTERSECTION DETAILS

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE21	72F TO SE2C	1	SPLICE	12F TO CONTROLLER CABINET	1	SPLICE TO 12F DROP CABLE
	72F TO SE2C	2	SPLICE	12F TO CONTROLLER CABINET	2	SPLICE TO 12F DROP CABLE
	72F TO SE2C	3	SPLICE	12F TO CONTROLLER CABINET	3	SPLICE TO 12F DROP CABLE
	72F TO SE2C	4	SPLICE	12F TO CONTROLLER CABINET	4	SPLICE TO 12F DROP CABLE
	72F TO SE2C	5-72	UNTERMINATED	-	-	END OF CABLE
PPP, CONTROL CABINET	12F TO SE21	1	SPLICE	PIGTAIL	-	ES, PPP POSITION 1
	12F TO SE21	2	SPLICE	PIGTAIL	-	ES, PPP POSITION 2
	12F TO SE21	3	SPLICE	PIGTAIL	-	ES, PPP POSITION 3
	12F TO SE21	4	SPLICE	PIGTAIL	-	ES, PPP POSITION 4
	12F TO SE21	5-12	UNTERMINATED	-	-	-

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
ROUTE 100/127/US201 (BRIDGE ST), ROUTE 100/127/US201 (BAY ST), CLINTON AVENUE, AND BENTON AVENUE
SIGNAL GROUP:
2
LOCATION:
21

SEE SHEET 25A FOR INTERSECTION DETAILS

FIBER OPTIC SPLICE TABLE

	CABLE	STRAND	CONNECTION TYPE	CABLE	STRAND	DESCRIPTION
SE2C	BB-G (48F) TO CITY HALL	25	SPLICE	72F TO SE21	1	SPLICE TO 72F DROP CABLE
	BB-G (48F) TO CITY HALL	26	SPLICE	72F TO SE21	2	SPLICE TO 72F DROP CABLE
	BB-G (48F) TO CITY HALL	1-24, 27-48	THROUGH	BB-G (48F) TO WINSLOW	1-24, 27-48	BB-G (48F) FIBER OPTIC BACKBONE
	BB-G (48F) TO WINSLOW	25	SPLICE	BB-G (48F) TO CITY HALL	3	SPLICE TO 72F DROP CABLE
	BB-G (48F) TO WINSLOW	26	SPLICE	BB-G (48F) TO CITY HALL	4	SPLICE TO 72F DROP CABLE

NOTES:

1. ALL FIBER OPTIC PIGTAILS SHALL BE TERMINATED ON PATCH PANELS (PP); PATCH CORDS SHALL BE USED TO CONNECT TO ETHERNET SWITCHES (ES).
2. SEE ALSO FIBER OPTIC NOTES ON SHEET 32.

INTERSECTION:
MILL ROAD / 2 CENT BRIDGE
SIGNAL GROUP:
2
FOR LOCATION:
21

SEE SHEET 25A FOR INTERSECTION DETAILS

STATE OF MAINE
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PIN 17288.00

PROJ. MANAGER	J. MANSIR	BY	DATE
DESIGN-DETAILED	C. BOBAY	J. ROBERT	7/16/10
CHECKED-REVIEWED	M. GRAHAM	MTR	8/13/10
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

SUPPLEMENTAL FIBER OPTIC SPLICE TABLES

SHEET NUMBER

53

OF 54

Filename: ...\ts\planset\083_5206800F02.dgn Division: Username: J ROBERT Date:9/7/2010

VIDEO DETECTION SUMMARY

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

TYPE OF DETECTION (No. of Devices)	LOCATION NUMBER 1	2	3	4	5*	6	7	8	9	10	11	12	13	14	15	16	17	18*	19	20	21	22	23	24	25	26	27	TYPE OF DETECTION (No. of Devices)	ROUNDING / SPARES +	BASE BID TOTAL	BID ALT. TOTAL
WIRE LOOP		4**				2 (New) 5**	4 (New) 4**		7**		4**							1	6**		5**		6**	6**				WIRE LOOP	4	**10**	1
VIDEO PRESENCE						3	2					3	4		4		4						2	2				VIDEO PRESENCE	1	**25**	0
FULL VIDEO		3	3	4				6		4				3		5				4		4			3	3		FULL VIDEO	1	**43**	0
STOPLINE RADAR	2				4			****										1				****					1	STOPLINE RADAR	1	**4**	5
ADVANCE RADAR	1				1		***	****																			2	ADVANCE RADAR	1	**3**	1
MICROWAVE									1^			1^		1^		1^												MICROWAVE	0	**0**	0

* = Bid Alternate No. 1 and No. 2 (Location 5) and No. 3 (Location 18).
** = Number of Existing Wire Loops To Be Retained.
*** = Advance Radar Can Be Used (If Proposed By The Contractor) And Determined More Cost Effective Than Wire Loop Installation That Requires 300 Feet Of New Conduit And Junction Boxes On Each Applicable Approach.
**** = Stop line and Advance Radar System Can Be Used (If Proposed By The Contractor) And Determined More Cost Effective Than Full Color Video Installation. Cost shall be reflected in 643.83 Item For The Applicable Intersection.
^ = Number of Existing Microwave Units To Be Reused.
\+ = Undetermined Wire Loops Identified In Item 643.86. Spare Video and Radar Devices Are Ancillary To Item 643.81.

SIGN SUMMARY

THE QUANTITIES LISTED BELOW ARE APPROXIMATE AND FURNISHED FOR INFORMATION ONLY.
SEE PLAN SHEETS (5A-31A) FOR SIGN SIZE AND THE FEDERAL HIGHWAY ADMINISTRATIONS
"STANDARD HIGHWAY SIGNS" FOR TEXT AND LEGEND SPACING, SIZE AND COLOR.

SIGN	LOCATION NUMBER 1	2	3	4	5*	6	7	8	9	10	11	12	13	14	15	16	17	18*	19	20	21	22	23	24	25	26	27	SIGN	BASE BID TOTAL	BID ALT. TOTAL
R3-2										1								1										R3-2	1	1
R3-4		1							1																			R3-4	2	0
R3-5L		1		2	2	3	2	3	1	1	1			1		1			3	5	1	1			1			R3-5L	27	2
R3-5a		4	4	3	2	3	1	1	1	2	3								2	3	1	1	3	3	2	2		R3-5a	39	2
R3-5R			1	3	2	2		1		2		1	1	2	1		1					1			1	1		R3-5R	18	2
R3-6L			1	2	2	1		1	1	2				1	1			1			1	1				1	2	R3-6L	15	3
R3-6R				1	2	2		2	2	2	1	1		1		1		1	3	4	1	1					2	R3-6R	24	3
R3-8(MOD)																					1							R3-8(MOD)	1	0
R3-8a(MOD)																					1							R3-8a(MOD)	1	0
R3-8R(MOD)															1													R3-8R(MOD)	1	0
R4-7	1							1						1							1			2				R4-7	6	0
R10-3e **												1		1						1	1							R10-3e **	4	0
R10-3eL **							2	1	4	1		1	1	5	4	5	4	2	3	4	3	4	1				1	R10-3eL **	44	2
R10-3eR **							2	1	4	1		1	3	3	4	5	4	2	3	2	3	2	1				1	R10-3eR **	40	2
R10-5					2							1																R10-5	1	2
R10-6												1		1														R10-6	2	0
R10-10L																				3								R10-10L	3	0
R10-11																1												R10-11	1	0
R10-11a																2												R10-11a	2	0
R10-12				2		2			1	2				2	2				2						1	1		R10-12	15	0
R10-15L														1				1										R10-15L	1	1
R10-15R								1	3	1		1	2	1	1		1		4		1	3	1				2	R10-15R	22	0
R10-17																									1			R10-17	1	0
OM1-1	1							1						1							2			2				OM1-1	7	0
W11-2								1																				W11-2	1	0
W12-1																					1							W12-1	1	0
BASE BID TOTAL **	2	6	6	13		13	3	12	10	13	5	5	3	12	6	5	2		14	15	11	8	4	7	6	5	6	BASE BID TOTAL **	192	
BID ALT. TOTAL					12													8										BID ALT. TOTAL		20

* = Bid Alternate No. 1 and No. 2 (Location 5) and No. 3 (Location 18).
** = Base Bid Total does not include R10-3e type signs, which are incidental to the Pedestrian Assembly.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

STP-1728(800)X

PIN 17288.00

		BY	DATE
PROJ. MANAGER		J. MANSIR	
DESIGN-DETAILED		C. BIGBAY	7/16/10
CHECKED-REVIEWED		J. ROBERT	8/13/10
DESIGN2-DETAILED2		M. GRAHAM	
DESIGN3-DETAILED3		MTR	
REVISIONS 1	Address 98/ Comments		9/07/10
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SIGNATURE

P.E. NUMBER

DATE

WATERVILLE-WINSLOW

VEHICLE DETECTION AND SIGN SUMMARY

SHEET NUMBER

54

OF 54

Filename: ...\ts\planset\084_5206800VDSS.dgn Division: Username: J ROBERT Date:9/7/2010