June 8, 2016

Mr. Christopher Bonsignore, P.E.
Principal Engineer
Environmental Compliance Section
Bureau of Engineering and Highway Operations
State of Connecticut Department of Transportation
2800 Berlin Turnpike, P.O. Box 317546
Newington, CT 06131-7546

Attention: Adam Fox, P.E. / Roger Levesque, P.E.

Subject: On-Call Asbestos, Lead, Air Quality & Demolition Compliance
Agreement No. 04.27-01(15)
HazMat Inspection – Replacement of Signal Poles, Groton, Plainfield, Bolton, CT
ConnDOT Assignment No. 514-5367
ConnDOT Project No. 172-436
TRC Project No. 222165.5367.00710

Dear Mr. Bonsignore:

TRC performed a limited survey for hazardous building materials associated with the Replacement of eight (8) Signal Poles project, at seven (7) intersections in Groton, Plainfield and Bolton, Connecticut. Results of the survey identified detectable amounts of lead in the paint (0.1 mg/cm^2) on the metal signal span pole at Intersection No. 58-210 (Route 1 at Buddington Rd., Groton, CT). The signal span poles at Intersections Nos. 58-211 (Route 1 at South Rd., Groton, CT), 58-236 (Route 1 at Drozdyk Dr., Groton, CT), 58-236 (Route 12 at Pleasant Valley Rd. and Groton Square Dr., Groton, CT), 58-256 (Route 12 at Ohio Ave. Groton, CT), 108-208 (Route 12 at Route 14A and Cemetery Rd., Plainfield CT), and 012-201 (Route 6 at Route 85, Bolton, CT) were galvanized, therefore no lead paint was identified. Projected paint waste debris from the metal span pole at Intersection. No. 58-210 was sampled and characterized as non- hazardous, non-RCRA waste (0.18 mg/L). No suspect asbestos containing materials associated with the eight (8) metal span poles were identified at the 7 intersections. Laboratory data, site information and photos are attached.

If you have any questions, please call TRC at (860) 298-9692.

Very Truly Yours,

TRC

Michael C. Kostruba, CSP
Work Assignment Manager

Erik R. Plimpton, P.E., CHMM, CM
Vice President - Program Manager

TRC

Lead Based Paint Measurement Summary Table

Device(s): Niton XLP301-A (24792) X Ray Fluorescence (XRF) Spectrum Analyzer
Site: Groton, Plainfield, Bolton Signal Poles
Project # : 222165.5367.0710
Date(s): 5/31/2016
Inspector: Robert Belding (Lead Inspector #002210)

Number	Interior/ Exterior	Floor	Room	Side	Structure	Feature	Material	Color	Condition	Reading (mg/cm2)	Precision (mg/cm2)	Depth Index	Duration (sec)	Date/Time
1		Shuttlle Calibration								1.3	0.0		239.1	5/31/2016 8:44
2		0.0 Calibration								0.0	0.0	1.0	1.1	5/31/2016 8:48
3		0.0 Calibration								0.0	0.0	1.4	3.7	5/31/2016 8:49
4		0.7 Calibration								0.8	0.1	1.2	7.5	5/31/2016 8:50
5		3.6 Calibration								3.6	0.3	1.3	7.3	5/31/2016 8:50
VOID	*VOID*	*VOID*												
VOID	*VOID*	*VOID*												
8	Exterior	Exterior	Int. 058-210		Pole		Metal	Grey	INTACT	0.0	0.0	1.1	9.4	5/31/2016 9:10
9	Exterior	Exterior	Int. 058-210		Pole		Metal	Grey	INTACT	0.1	0.0	1.1	8.2	5/31/2016 9:10
10	Exterior	Exterior	Int. 058-210		Pole		Metal	Grey	INTACT	0.1	0.0	1.0	3.6	5/31/2016 9:11
11	Exterior	Exterior	Int. 058-211		Pole	Galvanized	Metal	Grey	INTACT	0.0	0.0	1.3	4.5	5/31/2016 9:33
VOID	*VOID*	*VOID*												
VOID	*VOID*	*VOID*												
VOID	*VOID*	*VOID*												
VOID	*VOID*	*VOID*												
VOID	*VOID*	*VOID*												
VOID	*VOID*	*VOID*												
VOID	*VOID*	*VOID*												
VOID	*VOID*	*VOID*												
VOID	*VOID*	*VOID*												
21	Exterior	Exterior	Int. 058-256		Pole	Galvanized	Metal	Grey	DEFECTIVE	0.0	0.0	2.2	5.0	5/31/2016 11:20
22	Exterior	Exterior	Int. 108-208		Pole	Galvanized	Metal	Grey	DEFECTIVE	0.0	0.0	2.0	5.8	5/31/2016 12:16
VOID	*VOID*	*VOID*												
VOID	*VOID*	*VOID*												
25		0.0 Calibration								0.0	0.0	1.0	2.3	5/31/2016 14:23
26		0.7 Calibration								0.7	0.1	1.0	3.6	5/31/2016 14:23
27		3.6 Calibration								3.8	0.2	1.3	13.6	5/31/2016 14:24

Lead paint includes paint found to contain **any detectable** amount of lead
by Atomic Absorption Spectrophotometry (AAS) or X-Ray Fluorescence (XRF).

Side A = Street side; Sides B,C,D follow clockwise

80 Lupes Drive
Stratford, CT 06615

COMPLETE ENVIRONMENTAL TESTING, INC.

Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com

Client: Mr. Erik Plimpton
TRC Environmental Consultants
21 Griffin Rd., North
Windsor, CT 06095

Analytical Report

CET# 6060058

Report Date:June 03, 2016
Project: CTDOT
Project Number: DOT172-435, Groton
PO Number: 22165.5366.0710

436
5367

Connecticut Laboratory Certificate: PH 0116
Massachusetts laboratory Certificate: M-CT903

NELAP ACCREDITED TNI LABORATORY

New York Certification: 11982
Rhode Island Certification: 199

80 Lupes Drive
Stratford, CT 06615

COMPLETE ENVIRONMENTAL TESTING, INC.

Tel: (203) 377-9984
Fax: (203) 377-9952
email: cet1@cetlabs.com

Quality Control Definitions and Abbreviations

Internal Standard (IS)	An Analyte added to each sample or sample extract. An internal standard is used to monitor retention time, calculate relative response, and quantify analytes of interest.
Surrogate Recovery	The % recovery for non-tarer organic compounds that are spiked into all samples. Used to determine method performance.
Continuing Calibration	An analytical standard analyzed with each set of samples to verify initial calibration of the system.
Batch	Samples that are analyzed together with the same method, sequence and lot of reagents within the same time period.
ND	Not detected
RL	Reporting Limit
Dilution	Multiplier added to detection levels (MDL) and/or sample results due to interferences and/or high concentration of target compounds.
Duplicate	Result from the duplicate analysis of a sample.
Result	Amount of analyte found in a sample.
Spike Level	Amount of analyte added to a sample
Matrix Spike Result	Amount of analyte found including amount that was spiked.
Matrix Spike Dup	Amount of analyte foun in duplicate spikes including amount that was spike.
Matrix Spike % Recovery	% Recovery of spiked amount in sample.
Matrix Spike Dup % Recovery	% Recovery of spiked duplicate amount in sample.
RPD	Relative percent difference between Matrix Spike and Matrix Spike Duplicate.
Blank	Method Blank that has been taken through all steps of the analysis.
LCS % Recovery	Laboratory Control Sample percent recovery. The amount of analyte recovered from a fortified sample.
Recovery Limits	A range within which specified measurements results must fall to be compliant.
CC	Calibration Verification

Flags:

- H- Recovery is above the control limits
- L- Recovery is below the control limits
- B- Compound detected in the Blank
- P- RPD of dual column results exceeds 40%
- #- Sample result too high for accurate spike recovery.

NELAP ACCREDITED TNI LABORATORY

Connecticut Laboratory Certification PH0116
Massachussets Laboratory Certification M-CT903

New York Certification 11982
Rhode Island Certification 199

Questions related to this report should be directed to David Ditta, Timothy Fusco, or Robert Blake at 203-377-9984.

Sincerely,

David Ditta
Laboratory Director

Report Comments:

Sample Result Flags:
E- The result is estimated, above the calibration range.
H- The surrogate recovery is above the control limits.
L- The surrogate recovery is below the control limits.
B- The compound was detected in the laboratory blank.
P- The Relative Percent Difference (RPD) of dual column analyses exceeds 40%.
D- The RPD between the sample and the sample duplicate is high. Sample Homogenity may be a problem.
+- The Surrogate was diluted out.
*C1- The Continuing Calibration did not meet method specifications and was biased low for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased low.
*C2- The Continuing Calibration did not meet method specifications and was biased high for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased high.
*F1- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the low side.
*F2- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the high side.
I- The Analyte exceeds %RSD limits for the Initial Calibration. This is a non-directional bias.

All results met standard operating procedures unless indicated by a data qualifier next to a sample result, or a narration in the QC report.

Complete Environmental Testing is only responsible for the certified testing and is not directly responsible for the integrity of the sample before laboratory receipt.

ND is None Detected at the specified detection limit
All analyses were performed in house unless a Reference Laboratory is listed.
Samples will be disposed of 30 days after the report date.

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 6020A in Soil	
Lead	CT,NY

Complete Environmental Testing operates under the following certifications and accreditations:

Code	Description	Number	Expires
CT	Connecticut Public Health	PH0116	09/30/2016
NY	New York Certification (NELAC)	11982	04/01/2016

CET

COMPLETE ENVIRONMENTAL TESTING, INC.

6060058

CHAIN OF CUSTODY RECORD

CET #

Volatile Soils Only:

Date and Time in Freezer

Client:

CET

Page 7 of 7

80 Lupes Drive
Stratford, CT 06615

Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com

Sample ID	Date/Time	Matrix (A=Air, S=Soil, W=Water, DW=Drinking W., C=Cassette, Solid, Wipe, Other (Specify))	Turnaround Time ** (check one): Same Day *	Next Day *	2-3 Days *	Std (5-7 Days)	Organics: 8260 CT List	8260 Aromatics	8260 Halogens	SPLP 8260	TCLP 8260	CT ETPH	8270 CT List	8270 PNAs	PCBs	Pesticides	Herbicides	Metals (check all that apply): 13 Priority Poll	8 RCRA	TOTAL	TCLP 26	SPLP	Field Filtered	Lab To Filter	Additional Analysis	TOTAL # OF CONT.	NOTE #
#1	5/31/16 -0918	paint		X																	X						

PRESERVATIVE (Cl–HCl, N–HNO_3, S–H_2SO_4, Na–NaOH, C=Cool, O–Other)

CONTAINER TYPE (P–Plastic, G–Glass, V–Vial, O–Other)

Soil VOCs Only (M=MeOH B=Sodium Bisulfate W=Water F=Empty Vial E=Encore)

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
	6/1/16 -0845	6/1/16 1120
	6/1/16 1740	

NOTES:

#1 - Buddingtonka/KK-1 - 58-210 - Gray/Red paint

Client / Reporting Information

Company Name: TRC

Address: 21 Griffin Rd North

City: Windsor State: CT Zip: 06095

Report To: Erik Plimpton E-mail: EPlimpton@trcsolutions.com

Phone #: 860-298-9692 Fax #:

Project Information

Project Contact: Erik Plimpton PO.#:

Project: DOT 172-[illegible]435 Project #: 22165.5366.0710

Location: Groton CT Collector(s): KB/MS- 860-817-2415 (Mike Costanzo)

QA/QC: ☒ Std ☐ Site Specific (MS/MSD) * ☐ RCP Pkg * ☐ DQAW *

Data Report: ~~☐ Email~~ ☒ PDF ☐ Excel ☐ Other

RSR Reporting Limits (check one): ☐ GA ☐ GB ☐ SWP ☐ Other (specify)

Lab Use: Evidence of Cooling: Y or N Temp Upon Receipt 2.5 °C

SHEET 1 OF 1

* Additional charge may apply. ** TAT begins when the samples are received at the Lab and all issues are resolved. TAT for samples received after 3 p.m. will start on the next business day.

REV. 7/1/10

PHOTO 1
Groton Int. 58-211 (Route 1 at South Rd.)

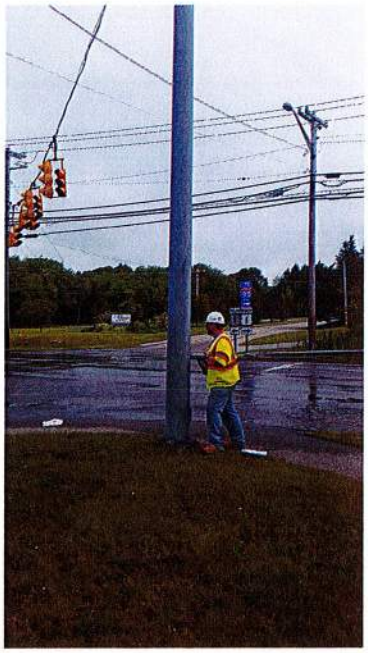


PHOTO 2
Groton Int. 58-210 (Route 1 at Buddington Rd.)

PHOTO 3
Groton Int. 58-236 (Route 1 at Drozdyk Dr.)

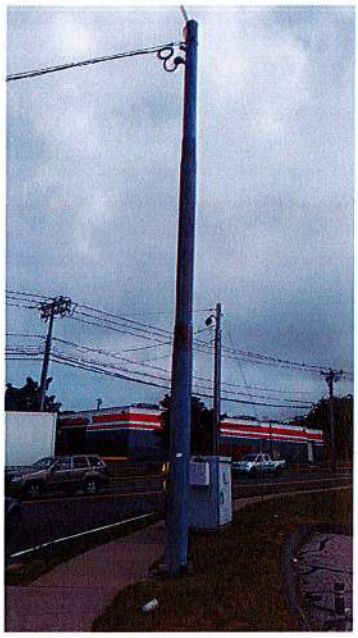


PHOTO 4
Groton Int. 58-203 (Route 12 at Pleasant Valley Rd. and Groton Square Dr.)

PHOTO 5
Groton Int. 58-256 (Route 12 at Ohio Ave.)

PHOTO 6
Groton Int. 58-256 (Route 12 at Ohio Ave.)

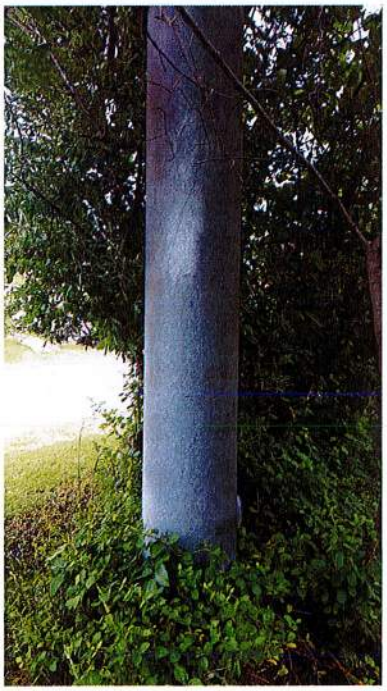
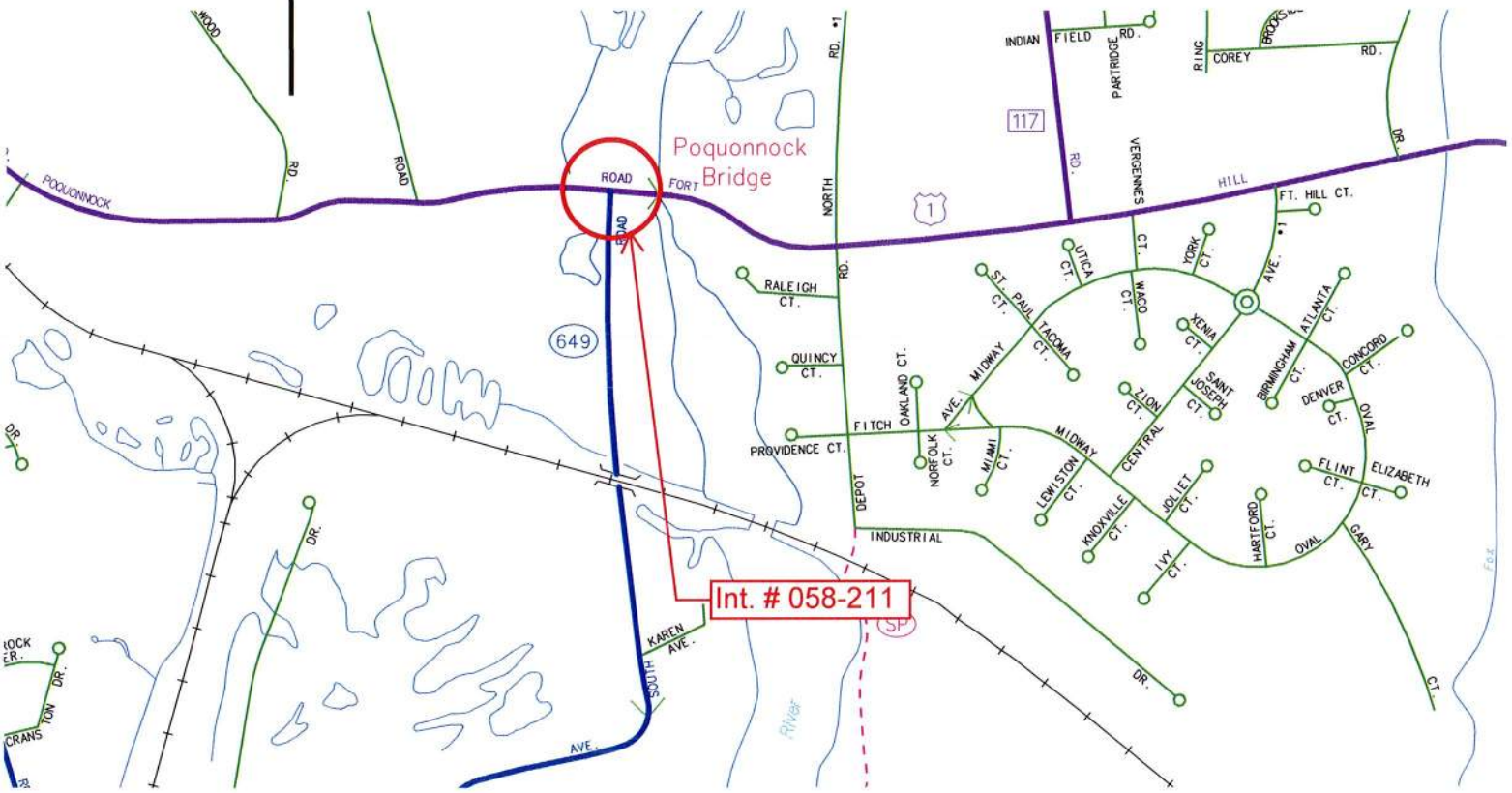


PHOTO 7
Plainfield Int. 108-208 (Route 12 at Route 14A and Cemetery Rd.)

PHOTO 8
Bolton Int. 012-201 (Route 6 at Route 85)

GROTON
Route 1 at SR 649 (South Road)



Pole is not painted
Galvanized steel — VOID XRF Shots
Pic 1+2
NOACM.

NTOR	PHASE 1			PHASE 2			PHASE 3			PHASE 4			PHASE 5			PHASE 6			PHASE 7			PHASE 8			FLASHING OPERATION
NONE	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	
FACE # 1	G←	G←Y	G	G	Y	R				R	R	R													Y
2	G	G	G	G	Y	R				R	R	R													Y
3	R	R	R	G	Y	R				R	R	R													Y
4	R	R	R	R	R	R				G	Y	R													R
5	R	R	R	R	R	R				G	Y	R													R

PRE-EMPT 1 — MOVEMENT DIAGRAM

←YIELD

INTERVALS	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	PHASE 7	PHASE 8
MIN GRN	4	15		9				
WALK		14		8				
PED CLR		1		1				
VEH EXT				3				
MAX 1	4	48		25				
MAX 2	4	48		25				
YELLOW	3	3		3				
RED	0.0	1		1				
ADD INI								
MAX INI								
TBR								
TTR								
MIN GAP								
MODE	NON-LOCK	MAX RECALL	OFF	NON-LOCK	OFF	OFF	OFF	
INI START		THIS PHASE						

MAINT LV 5

DETECTORS

IDENT	SIZE	TURNS	MODE
D4	6' X 15'	3	PRESENCE
D4A	6' X 12'	3	PRESENCE
D4B	6' X 15'	3	PRESENCE

PROGRAM / COORDINATION TYPE- CLOSED LOOP

FUNCTION	TIME	DAYS	CYCLE	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	OFFSET SEC	%	SYSTEM LOC	
FLASH	2200-0500	DAILY												MASTER 58-239	
PATTERN 1	0500 - 0800 1000 - 1730	MON-FRI SUN	80"	7/9	45/56		28/35					55	69	58-210	58-201
PATTERN 2	ALL OTHER TIMES		70"	7/10	38/54		25/36					50	71	58-211	58-208
PATTERN 5	1100 - 1730 0800 - 1730	MON-FRI SAT	90"	7/8	54/68		29/32					65	72	58-213	58-209
														58-214	58-272
														58-235	
														58-236	
														58-238	
														58-237	
														58-251	

TECHNICAL NOTES

STANDARD OVERLAP SKIP FEATURES APPLY

TIMING SHOWN INICATE FREE OPERATION. ACTUAL TIMINGS TO BE CONTROLLED BY CLOSED LOOP LOCAL COORDINATION UNIT.

PHASE 2 ON TO OMIT PHASE 1.
PHASE 2 CHECK CALL PHASE 1.
PRE-EMPTION TO BE INOPERATIVE DURING FLASHING OPERATION.

ENERGY BY - TOWN | NORMAL .591 kW 520 h/mo = 307 kWh/mo
SERVICE POLE # SNET 138 | FLASH .3080 KW 210 h/mo = 65 kWh/mo

PREVIOUS OFFICE RECORD SEE REV. #3

REVISION #4
JOB # | SM #
SIGNAL REVISED NOT ACCOMPLISHED
ADDED PED. BUTTONS AND 12" SIGNAL HEADS, FIRE PRE-EMPTION AND LANE USE CONTROL REGULATORS IN W/B RTE. I.

REVISION # 5 MM
JOB # | S.M. # N/A
TRAFFIC DESIGN H.H.H | ELECT. DES. R.M.W.
SIGNAL REVISED 12-27-90
INCLUDED ITEMS UNDER REVISION #4 (PROJECT 58-241) AS BUILT.

REVISION # 6
JOB # N/A | S M # N/A
TRAFFIC DES. J.F.K. | ELECT. DES.
SIGNAL REVISED 2-21-91
SIGNAL INCLUDED IN CLOSED LOOP SYSTEM UNDER PROJECT 58-241.

REVISION #7 ??
JOB # N/A | SM # N/A
TRAFFIC DESIGN PJD | ELECT DESIGN N/A
SIGNAL REVISED
REVISED CROSSWALK DESIGN TO BAR TYPE

REVISION #8
JOB # 058-91 | SM # N/A
TRAFFIC DESIGN RJC
SIGNAL REVISED 2-26-02
REMOVED EMERGENCY PRE-EMPTION.

REVISION # 9
JOB # N/A | SM # N/A
SIGNAL REVISED 5-10-99
INSTALLED RED LED LAMPS BY STATE FORCES.

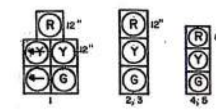
REVISION #10
JOB # 058-135 | SM # N/A
TRAFFIC DES: RJC | ELECT. DES: N/A
SIGNAL REVISED 6/2/02.
REPLACED CABINET.

REVISION # 11
JOB # N/A | SM # N/A
TRAFFIC DES. URS CORP ELECT. DES. URS CORP
SIGNAL REVISED 6/8/04
ADD OPTICAL FIRE PRE-EMPTION

REVISION # 12
ADDED YELLOW & GREEN LEDS 4-21-03

INTERSECTION # 058-211

SIGNAL FACES



ALL CIRCULAR RED INDICATIONS HAVE LED LAMPS.

LEGEND

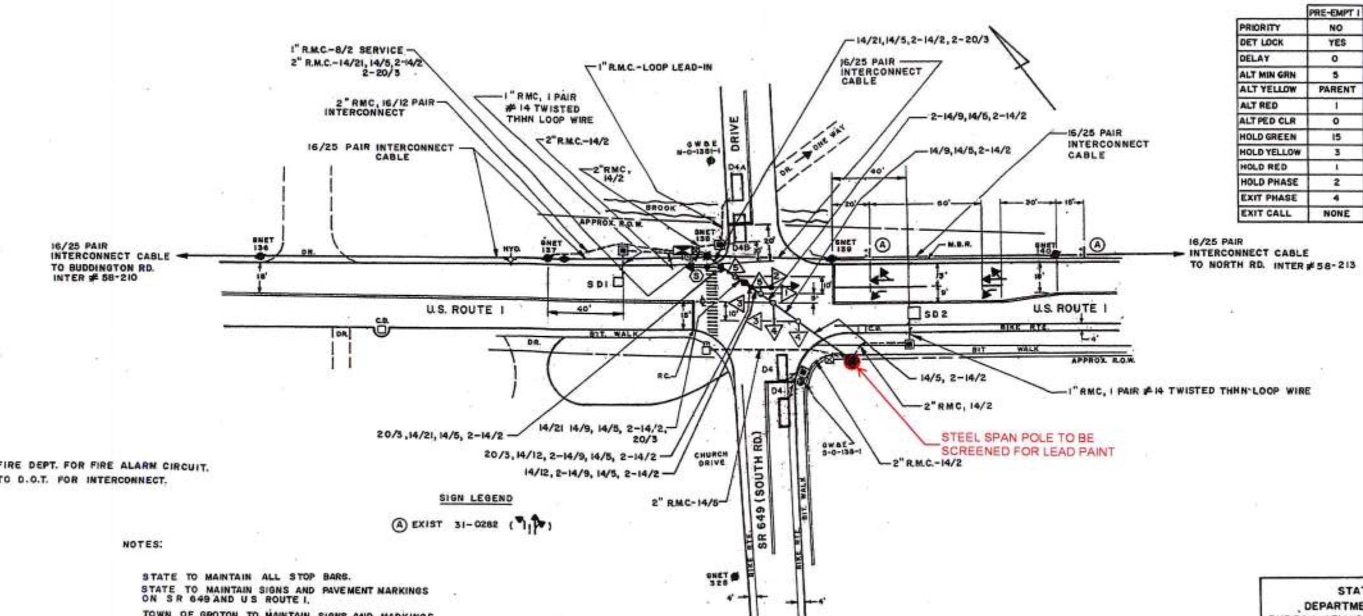
R RED
Y YELLOW
G GREEN
RED ARROW
YELLOW ARROW
GREEN ARROW
W WALK/FL. D.W.
DW. DON'T WALK
FL. FLASHING
PROPOSED WOOD SPAN POLE
EXISTING WOOD SPAN POLE
PROPOSED STEEL SPAN POLE
EXISTING STEEL SPAN POLE
PROPOSED UTILITY POLE
EXISTING UTILITY POLE
PEDESTAL MOUNTING
PEDESTRIAN PUSH BUTTON & SIGN
TRAFFIC SIGNAL FACE
PEDESTRIAN SIGNAL FACE
LOOP DETECTOR
MAGNETIC DETECTOR
SD SYSTEM DETECTOR
EXIST. CONTROLLER
EXIST. HANDHOLE
(R.M.C.) RIGID METAL CONDUIT
STRAIN INSULATOR
MAGNETOMETER PROBES
CABLE CLOSURE
DET. LEADS IN SAW CUT
AUXILIARY TERMINATION CABINET
RADIO ANTENNA
OPTICAL DETECTOR
AUXILIARY EQUIPMENT CABINET

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS OFF. OF TRAFFIC ENG.
TRAFFIC CONTROL SIGNAL

TOWN OF GROTON
ROUTE 1 AT SR 649 (SOUTH RD.)

REV. #4	TRAFFIC	DATE	ELECTRICAL	DATE
FIELD SURVEY	B.R. & N.S.	2-85		
ENGINEER	W.A.P.	8-85	T.V.	11-85
DRAFTER	F.P.	8-85	F.P.	11-85
CHECKED BY	M.M.	9-85	MKM	11-85
SUBMITTED BY	W.A.P.	9-26-85	[illegible]	3-89
APPROVED BY	[illegible]		[illegible]	
DATE		9/85		3-89

CLOSED LOOP DETECTOR CHART	
DETECTOR I.D.	DETECTOR #
D4	4
D4A, D4B	8
SD1	9
SD2	10



	PRE-EMPT 1
PRIORITY	NO
DET LOCK	YES
DELAY	0
ALT MIN GRN	5
ALT YELLOW	PARENT
ALT RED	1
ALT PED CLR	0
HOLD GREEN	15
HOLD YELLOW	3
HOLD RED	1
HOLD PHASE	2
EXIT PHASE	4
EXIT CALL	NONE

INTERCONNECT NOTES:
16/25 PAIR CABLE
15 INSIDE PAIR BELONG TO FIRE DEPT. FOR FIRE ALARM CIRCUIT.
10 OUTSIDE PAIR BELONG TO D.O.T. FOR INTERCONNECT.

SIGN LEGEND

(A) EXIST 31-0282

NOTES:

STATE TO MAINTAIN ALL STOP BARS.
STATE TO MAINTAIN SIGNS AND PAVEMENT MARKINGS ON SR 649 AND US ROUTE 1.
TOWN OF GROTON TO MAINTAIN SIGNS AND MARKINGS ON DRIVE.
(S) BAR TYPE CROSSWALK WITH 16" BARS AND SPACES x 8' MIN. - STATE MAINTAINED
PRE-EMPTION EQUIPMENT TO BE OWNED AND MAINTAINED BY THE TOWN OF GROTON.

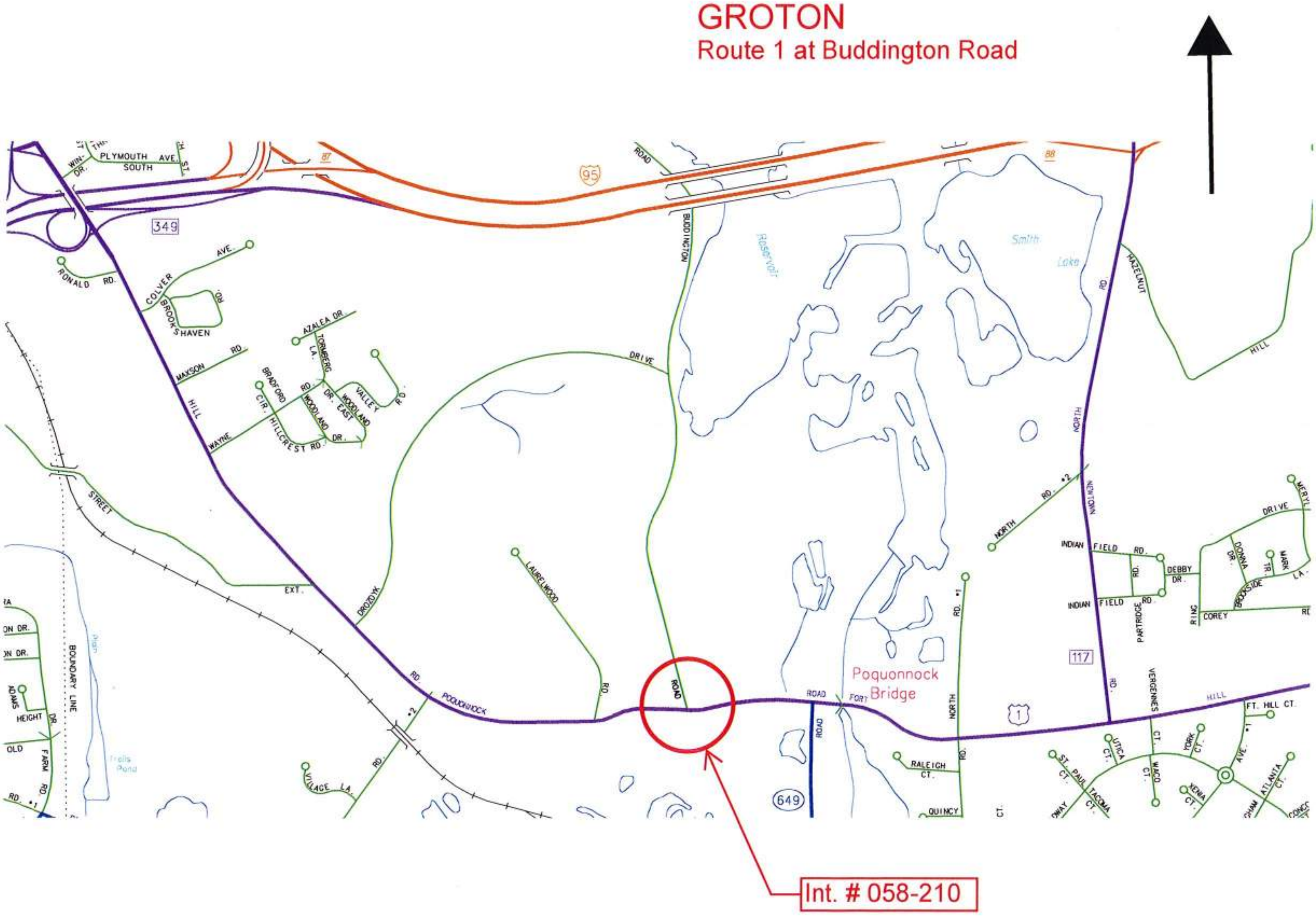
REV. # 11 | INTERSECTION # 058-211

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS OFF. OF TRAFFIC ENG.
TRAFFIC CONTROL SIGNAL LAYOUT

TOWN OF GROTON
U.S. RTE. 1 AT SR 649 (SOUTH RD.)

SCALE: 1" = 40'

GROTON
Route 1 at Buddington Road



pic 3+4+5+6
Silver / Red Paint - No ACM
.06 +- .03 - tel poles
PbChip?

NONE	PRE-EMPT I	MOVEMENT DIAGRAM							
NTOR	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	PHASE 7	PHASE 8	
	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	
FACE # 1	G← G↖ G	G G G	G Y R	R R R					FLASHING OPERATION Y Y R OFF
2	G G G	G G G	G Y R	R R R					
3	R R R	G G G	G Y R	R R R					
4	R R R	R R R	R R R	G Y R					
FL. SIGN	← OFF	← ON →							
	← YIELD								
INTERVALS MIN GRN	6	15	7	9					MAINT LV 5
WALK		14		11					
PED CLR		1		1					
VEH EXT	3	4		3					
MAX 1	20	23	7	25					
MAX 2	20	23	7	25					
YELLOW	3	3	3	3					
RED	0	1	1	2					
ADD INI									
MAX INI									
T0R									
TTR									
MIN GAP									
MODE	NON-LOCK	MAX RECALL	NON-LOCK	NON-LOCK	OFF	OFF	OFF	OFF	
INI START		THIS PHASE							

DETECTORS				PROGRAM			COORDINATION TYPE- CLOSED LOOP										SYSTEM LOC	
IDENT	SIZE	TURNS	MODE	FUNCTION	TIME	DAYS	CYCLE	PHASE SPLITS SEC/% Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	OFFSET SEC	%	MASTER 58-239
D1	6'X 12'	3	PRESENCE	FLASH	2200-0600	MON-SUN												58-210 58-201
D4	8' X 6'	3	PRESENCE	PATTERN 1	0800 - 0800 1000 - 1730	MON-FRI SUN	80"	9 11	35 44	11 14	25 31					0	0	58-211 58-208
D4A	11' X 6'	3	PRESENCE	PATTERN 2	ALL OTHER TIMES		70"	9 13	30 42	11 16	20 29					20	29	58-213 58-204
				PATTERN 5	1100 - 1730 0800 - 1730	MON-FRI SAT	90"	14 16	40 44	11 12	25 28					35	39	58-214 58-272
																		58-235
																		58-236
D4B	6' X10'	3	PRESENCE															58-238
D4C	8' X 6'	3	PRESENCE															58-237
D4D	18' X 6'	3	PRESENCE															58-251

TECHNICAL NOTES

STANDARD OVERLAP SKIP FEATURES APPLY
PHASE 3 TO ALWAYS FOLLOW PHASE 2
PHASE 1 TO OCCUR ONLY IF PHASE 4 IS CALLED
PHASE 2 ON OMIT PHASE 1 AND PHASE 4.
PHASE 4 CHECK CALL PHASE 3.
PHASE 3 ON CALL PHASE 4.
PRE-EMPTION TO BE INOPERATIVE DURING FLASHING OPERATION.
TIMING SHOWN REFLECT FREE OPERATION.
ACTUAL TIMINGS TO BE CONTROLLED BY CLOSED LOOP LOCAL COORDINATION UNIT.

ENERGY BY - TOWN
SERVICE POLE #

NORMAL .731 kW 487 hr/mo = 356 kWh/mo
FLASH .385 kW 243 hr/mo = 94 kWh/mo

PREVIOUS OFFICE RECORD SEE S.T.C. #058-7606-01

REVISION #1
JOB # SM # CONTRACT
SIGNAL REVISED: NOT ACCOMPLISHED
ADDED INTERCONNECTION, ADV. GREEN, LANE USE CONTROL ON ROUTE 1 AND FIRE PRE-EMPTION

REVISION # 2
JOB # SM # N/A
SIGNAL REVISED: 5-14-92
TRAFFIC DESIGN: MM ELECT. DESIGN R.M.W.
ITEMS UNDER REVISION 1, INTERCONNECT REVISED TO CLOSED LOOP INCLUDED IN PROJECT 58-241

REVISION # 5
JOB # N/A SM # N/A
SIGNAL REVISED 5-10-99
INSTALLED RED LED LAMPS BY STATE FORCES.

REVISION # 7
JOB # 058-154 SM # N/A
TRAFFIC DES: RJC ELECT. DES: N/A
SIGNAL REVISED 6/2/02.
REPLACED CABINET.

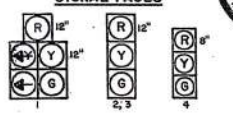
REVISION #3
JOB # SM #
SIGNAL REVISED: 5-14-92
DESIGN: HAYDEN-WEDMAN
ADDED TWO LANE APPROACH ON BUDDINGTON ROAD. WORK TO BE ACCOMPLISHED BY THE TOWN OF GROTON.

REVISION # 4
JOB # N/A SM # N/A
TRAFFIC DESIGN PIO ELECT. DESIGN N/A
SIGNAL REVISED
REVISED CABINET DESIGN TO 332 TYPE

REVISION # 6
JOB # 058-90 SM # N/A
TRAFFIC DESIGN RJC
SIGNAL REVISED 2-26-02
REMOVED EMERGENCY PRE-EMPTION.

OFFICE RECORD CONT'D. ON PLAN SHEET

SIGNAL FACES



ALL CIRCULAR RED INDICATIONS HAVE LED LAMPS.

LEGEND

R RED
Y YELLOW
G GREEN
RED ARROW
YELLOW ARROW
GREEN ARROW
W WALK/FL. D.W.
D DON'T WALK
FL. FLASHING
PROPOSED WOOD SPAN POLE
EXISTING WOOD SPAN POLE
PROPOSED STEEL SPAN POLE
EXISTING STEEL SPAN POLE
PROPOSED UTILITY POLE
EXISTING UTILITY POLE
PEDESTAL MOUNTING
PEDESTRIAN PUSH BUTTON & SIGN
TRAFFIC SIGNAL FACE
PEDESTRIAN SIGNAL FACE
LOOP DETECTOR
MAGNETIC DETECTOR
DET. LEADS IN SAW CUT
EXISTING CONTROLLER
EXISTING HANDHOLE
(R.M.C.) RIGID METAL CONDUIT
STRAIN INSULATOR
MAGNETOMETER PROBES
CABLE CLOSURE
OPTICAL DETECTOR
AUXILIARY EQUIPMENT CABINET

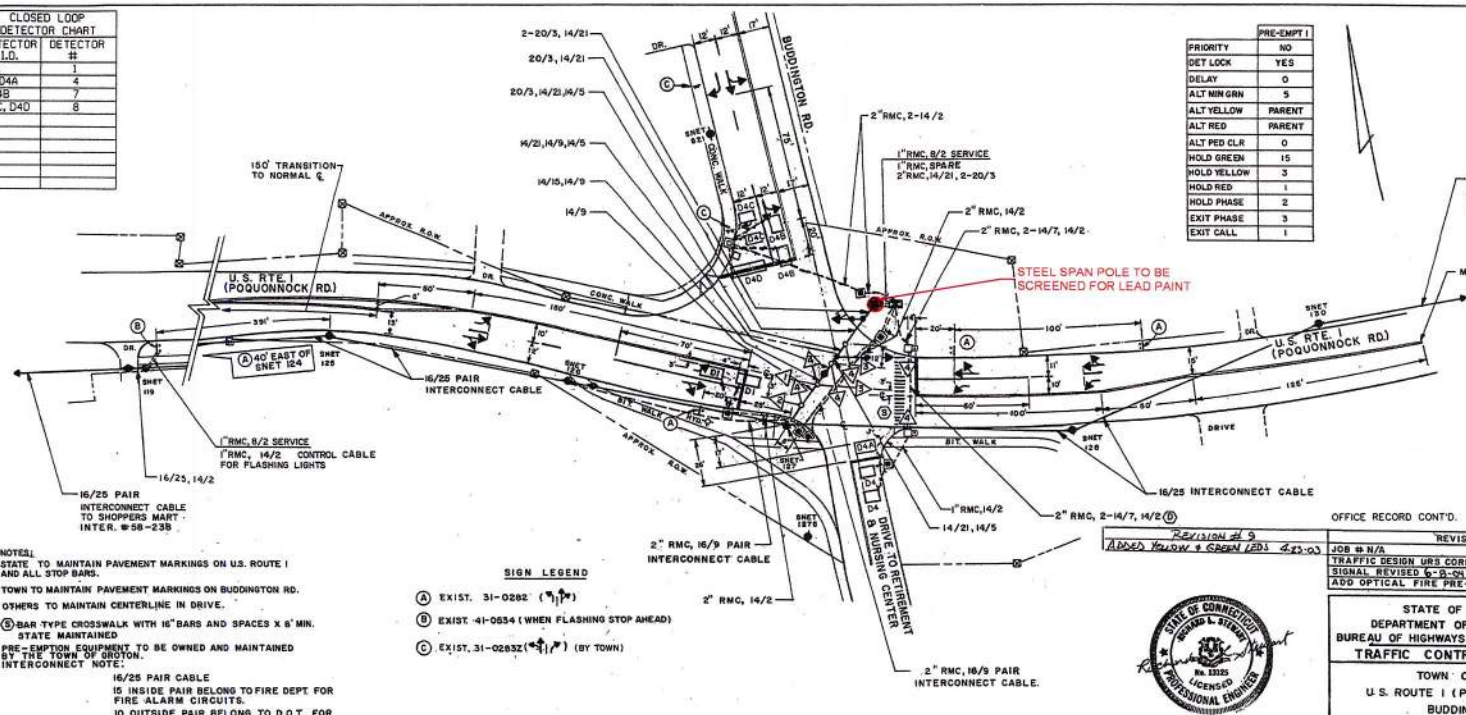
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DIVISION OF TRAFFIC
TRAFFIC CONTROL SIGNAL
TOWN OF GROTON
U. S. ROUTE 1 (POQUONNOCK RD.) AT BUDDINGTON RD.

REV. #1	TRAFFIC		ELECTRICAL	
		DATE		DATE
FIELD SURVEY	N.S./B.R.	2-85		
ENGINEER	M.M.	8-85	T.V.	11-85
DRAFTER	P.P.	9-85	D.B.	11-85
CHECKED BY	R.M.S.	9-85	R.M.W.	11-85
SUBMITTED BY	W.H.D.	9.24.85		
APPROVED BY				
DATE		9/85		

INTER. #FL. SIGN 58-254 INTERSECTION # 58-210

CLOSED LOOP DETECTOR CHART	
DETECTOR I.D.	DETECTOR #
D1	1
D4, D4A	4
D4B	7
D4C, D4D	8

	PRE-EMPT I
PRIORITY	NO
DET LOCK	YES
DELAY	0
ALT MIN GRN	5
ALT YELLOW	PARENT
ALT RED	PARENT
ALT PED CLR	0
HOLD GREEN	15
HOLD YELLOW	3
HOLD RED	1
HOLD PHASE	2
EXIT PHASE	3
EXIT CALL	1



NOTES:
STATE TO MAINTAIN PAVEMENT MARKINGS ON U.S. ROUTE 1 AND ALL STOP BARS.
TOWN TO MAINTAIN PAVEMENT MARKINGS ON BUDDINGTON RD.
OTHERS TO MAINTAIN CENTERLINE IN DRIVE.
Ⓔ BAR TYPE CROSSWALK WITH 18" BARS AND SPACES X 8' MIN. STATE MAINTAINED
PRE-EMPTION EQUIPMENT TO BE OWNED AND MAINTAINED BY THE TOWN OF GROTON.
INTERCONNECT NOTE:
16/25 PAIR CABLE
15 INSIDE PAIR BELONG TO FIRE DEPT. FOR FIRE ALARM CIRCUITS.
10 OUTSIDE PAIR BELONG TO D.O.T. FOR INTERCONNECT.

SIGN LEGEND
Ⓐ EXIST. 31-0282 (R/Y/G)
Ⓑ EXIST. 41-0634 (WHEN FLASHING STOP AHEAD)
Ⓒ EXIST. 31-0283Z (R/Y/G) (BY TOWN)

OFFICE RECORD CONT'D.

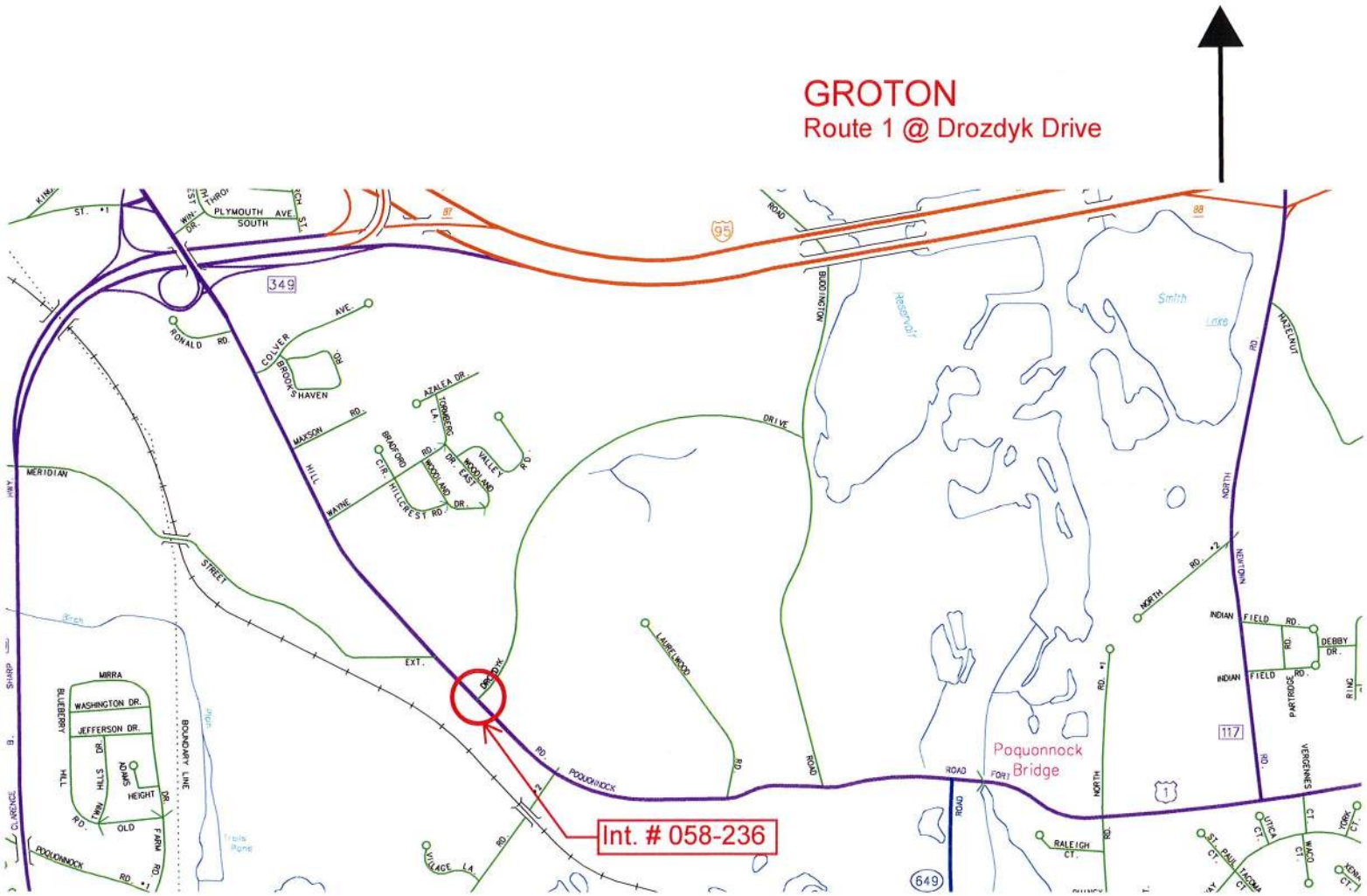
REVISION # 9
ADDED YELLOW & GREEN LEDS 4-25-03

REVISION # 8
JOB # N/A SM # N/A
TRAFFIC DESIGN URS CORP ELECT. DESIGN URS CORP
SIGNAL REVISED 6-8-04
ADD OPTICAL FIRE PRE-EMPTION

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DIVISION OF TRAFFIC
TRAFFIC CONTROL SIGNAL LAYOUT
TOWN OF GROTON
U.S. ROUTE 1 (POQUONNOCK RD.) AT BUDDINGTON RD.
SCALE: 1" = 40'

REV. # 8 INTER #FL. SIGN 58-254 INTERSECTION # 58-210

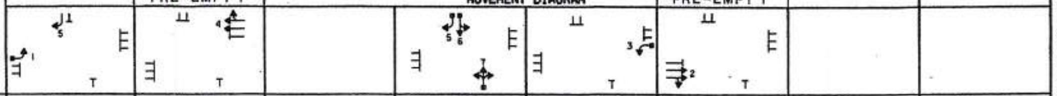
FORM TRA-13 REV. 4-83



Galvanized - 0.01 + 0.02

No ACM

No paint Scrapings



NTOR	PHASE 1 GRN	PHASE 1 CL	PHASE 1 CL	PHASE 2 GRN	PHASE 2 CL	PHASE 2 CL	PHASE 3 GRN	PHASE 3 CL	PHASE 3 CL	PHASE 4 GRN	PHASE 4 CL	PHASE 4 CL	PHASE 5 GRN	PHASE 5 CL	PHASE 5 CL	PHASE 6 GRN	PHASE 6 CL	PHASE 6 CL	PHASE 7 GRN	PHASE 7 CL	PHASE 7 CL	PHASE 8 GRN	PHASE 8 CL	PHASE 8 CL	FLASHING OPERATION
NONE																									
FACE 1	←	←Y	R	R	R	R				R	R	R	R	R	R	R	R	R							R
FACE 2	R	R	R	R	R	R				R	R	R	R	R	R	G	Y	R							Y
FACE 3	R	R	R	R	R	R				R	R	R	←	←Y	R	R	R	R							R
FACE 4	R	R	R	G	Y	R				R	R	R	R	R	R	R	R	R							Y
FACE 5	R →	R Y→	R	R	R	R				G	Y①	R②	R	R	R	R	R	R							R
FACE 6	R	R	R	R	R	R				G	Y	R	R	R	R	R	R	R							R
FACE 7	R	R	R	R	R	R				G	Y	R	R	R	R	R	R	R							R
					← YIELD												← YIELD								

INTERVALS	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	PHASE 7	PHASE 8
MIN GRN	6	15		9	6	15		
WALK		14		21		14		
PED CLR		1		1		1		
VEH EXT	2	4		2	2	4		
MAX 1	20	36		22	20	36		
MAX 2	20	36		22	20	36		
YELLOW	3	3		3	3	3		
RED	1	1		1	1	1		
ADD INI								
MAX INI								
TBR								
TTR								
MIN GAP								
MODE	NON-LOCK	MAX.RECALL	OFF	NON-LOCK	NON-LOCK	MAX.RECALL	OFF	
INI START		THIS PHASE				THIS PHASE		

M. MAINT LV 5

DETECTORS

IDENT	SIZE	TURNS	MODE
D1,D5	6'X6'	3	PRES
D4A	6'X6'	3	PRES
D4C	12'X6'	3	PRES
D4	6'X6'	3	PRES
D4B	10'X6'	3	PRES

PROGRAM / COORDINATION TYPE- CLOSED LOOP

FUNCTION	TIME	DAYS	CYCLE	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	OFFSET SEC	OFFSET %
FLASH	2200-0600	DAILY											
PATTERN 1	0600 - 0800 1000 - 1730	MON-FRI SUN	80"	20/25	34/42		26/33	20/25	34/42			70	88
PATTERN 2	ALL OTHER TIMES		70"	22/31	22/31		26/37	22/31	22/31			26	37
PATTERN 3	1100 - 1730 0800 - 1730	MON-FRI SAT	90"	24/27	40/44		25/28	24/27	40/44			35	39

SYSTEM	LOC
MASTER 58-239	
58-235	58-211
58-236	58-213
58-238	58-214
58-251	58-272
58-237	
58-201	
58-208	
58-209	
58-210	

TECHNICAL NOTES

STANDARD OVERLAP SKIP FEATURES APPLY

TIMINGS SHOWN INDICATE FREE OPERATION. ACTUAL TIMINGS TO BE CONTROLLED BY CLOSED LOOP LOCAL COORDINATION UNIT.

① TO BE Y→ IF PHASE 1 IS NEXT.

② TO BE R→ IF PHASE 1 IS NEXT.

PRE-EMPTION TO BE INOPERATIVE DURING FLASHING OPERATION.

ENERGY BY- TOWN	NORMAL .765 /KW 487 /HR/MO 373 KWH/MO
SERVICE POLE #WAE 8-2458-1	FLASH .385 / KW/ 243 / HR/MO 94 /KWH/MO

PREVIOUS OFFICE RECORD SEE SM# 57871

REVISION #7
JOB # SM # BY CONTRACT
GEOMETRIC IMPROVEMENTS IN PROJECT #58-219.

REVISION #8 M.M
JOB# SM#
TRAFFIC DESIGN: PJB ELECT DESIGN: T.V.
SIGNAL REVISED 1-24-91
ADDED FIRE PRE-EMPTION IN PROJECT 58-241 AS BUILT.

REVISION #9
JOB # N/A SM #
TRAFFIC DESIGN J.F.K. ELECT DESIGN
SIGNAL REVISED 1-29-91
SIGNAL INCLUDED IN CLOSED LOOP SYSTEM UNDER PROJECT 58-241.

REV 12A
GREEN AND YELLOW LEDS INSTALLED
4-21-03

REVISION #10
JOB # N/A SM # N/A
SIGNAL REVISED 5-5-99
INSTALLED RED LED LAMPS BY STATE FORCES.

REVISION #11
JOB # 058-97 SM # N/A
TRAFFIC DESIGN RJC
SIGNAL REVISED 2-26-02
REMOVED EMERGENCY PRE-EMPTION.

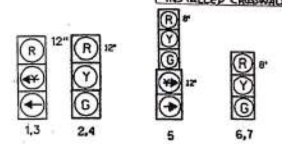
REVISION #12
JOB #058-136 SM #N/A
TRAFFIC DES: RJC ELECT. DES: N/A
SIGNAL REVISED 10/4/02.
REPLACED CABINET.

REVISION # 13
JOB # N/A SM # N/A
TRAFFIC DES. URS CORP ELECT. DES. URS CORP
SIGNAL REVISED 6/8/04
ADD OPTICAL FIRE PRE-EMPTION

REVISION #14
STC# N/A SM# 89998
TRAFFIC DES.: YKN ELECT DES: N/A
SIGNAL REVISED: 6-24-08
INSTALLED CROSSWALK ON RTE. 1.

INTERSECTION • 58-236

SIGNAL FACES



ALL CIRCULAR-RED INDICATIONS HAVE LED LAMPS.

LEGEND

R RED
Y YELLOW
G GREEN
←R- RED ARROW
←Y- YELLOW ARROW
← GREEN ARROW
W/Ø WALK/FL. D.W.
D.W. DON'T WALK
FL. FLASHING
○ PROPOSED WOOD SPAN POLE
● EXISTING WOOD SPAN POLE
PROPOSED STEEL SPAN POLE
EXISTING STEEL SPAN POLE
PROPOSED UTILITY POLE
EXISTING UTILITY POLE
PEDESTAL MOUNTING
PEDESTRIAN PUSH BUTTON & SIGN
TRAFFIC SIGNAL FACE
PEDESTRIAN SIGNAL FACE
LOOP DETECTOR
MAGNETIC DETECTOR
SD SYSTEM DETECTOR
EXIST. CONTROLLER
EXIST. HANDHOLE
(R.M.C.) RIGID METAL CONDUIT
STRAIN INSULATOR
MAGNETOMETER PROBES
CABLE CLOSURE
DET. LEADS IN SAW CUT
AUXILIARY TERMINATION CABINET
RADIO ANTENNA
OPTICAL DETECTOR
AUXILIARY EQUIPMENT CABINET

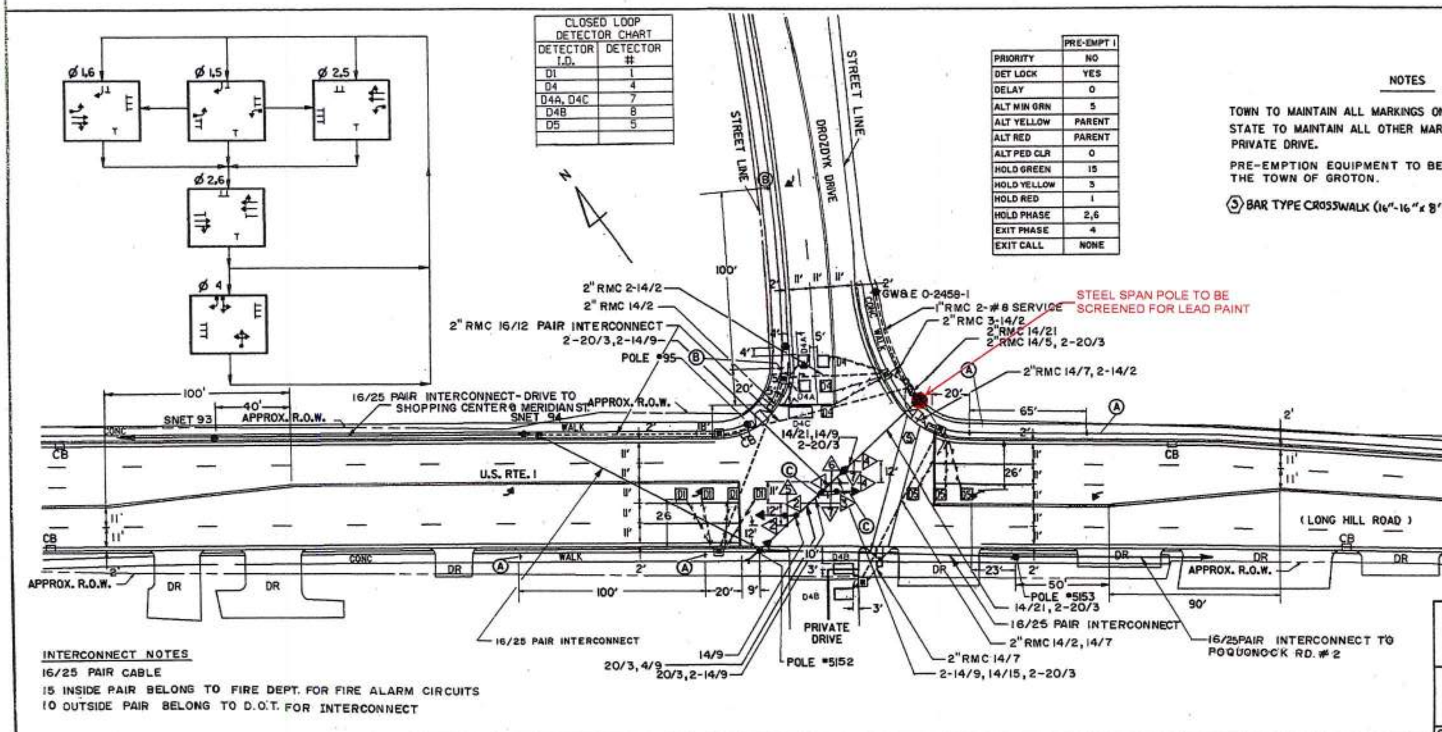
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DIVISION OF TRAFFIC

TRAFFIC CONTROL SIGNAL

TOWN OF GROTON

U.S. RTE. 1 (LONG HILL RD.) AT DROZDYK DRIVE

REV#7	TRAFFIC	DATE	ELECTRICAL	DATE
FIELD SURVEY				
ENGINEER	MWL	6/86	TV	8/86
DRAFTER	MWL	6/86	JJO	9/86
CHECKED BY			MM	8/86
SUBMITTED BY	MRP	10/3/86		
APPROVED BY	[signature]		[signature]	
DATE	10/3/86		10/86	



CLOSED LOOP DETECTOR CHART	
DETECTOR I.D.	DETECTOR #
D1	1
D4	4
D4A, D4C	7
D4B	8
D5	5

	PRE-EMPT I
PRIORITY	NO
DET LOCK	YES
DELAY	0
ALT MIN GRN	5
ALT YELLOW	PARENT
ALT RED	PARENT
ALT PED CLR	0
HOLD GREEN	15
HOLD YELLOW	3
HOLD RED	1
HOLD PHASE	2,6
EXIT PHASE	4
EXIT CALL	NONE

NOTES

TOWN TO MAINTAIN ALL MARKINGS ON DROZDYK DR. EXCEPT STOP BAR. STATE TO MAINTAIN ALL OTHER MARKINGS EXCEPT MARKINGS ON PRIVATE DRIVE.

PRE-EMPTION EQUIPMENT TO BE OWNED AND MAINTAINED BY THE TOWN OF GROTON.

⑤ BAR TYPE CROSSWALK (16"-16" x 8' MIN)-STATE MAINTAINED

Ⓐ EXIST 31-0307
Ⓑ EXIST 31-0283Z
Ⓒ SPAN MTD. 31-0842 (LT TN SIG)

INTERSECTION • 58-236

REV. # 14

INTERCONNECT NOTES
16/25 PAIR CABLE
15 INSIDE PAIR BELONG TO FIRE DEPT. FOR FIRE ALARM CIRCUITS
10 OUTSIDE PAIR BELONG TO D.O.T. FOR INTERCONNECT

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DIVISION OF TRAFFIC

TRAFFIC CONTROL SIGNAL LAYOUT

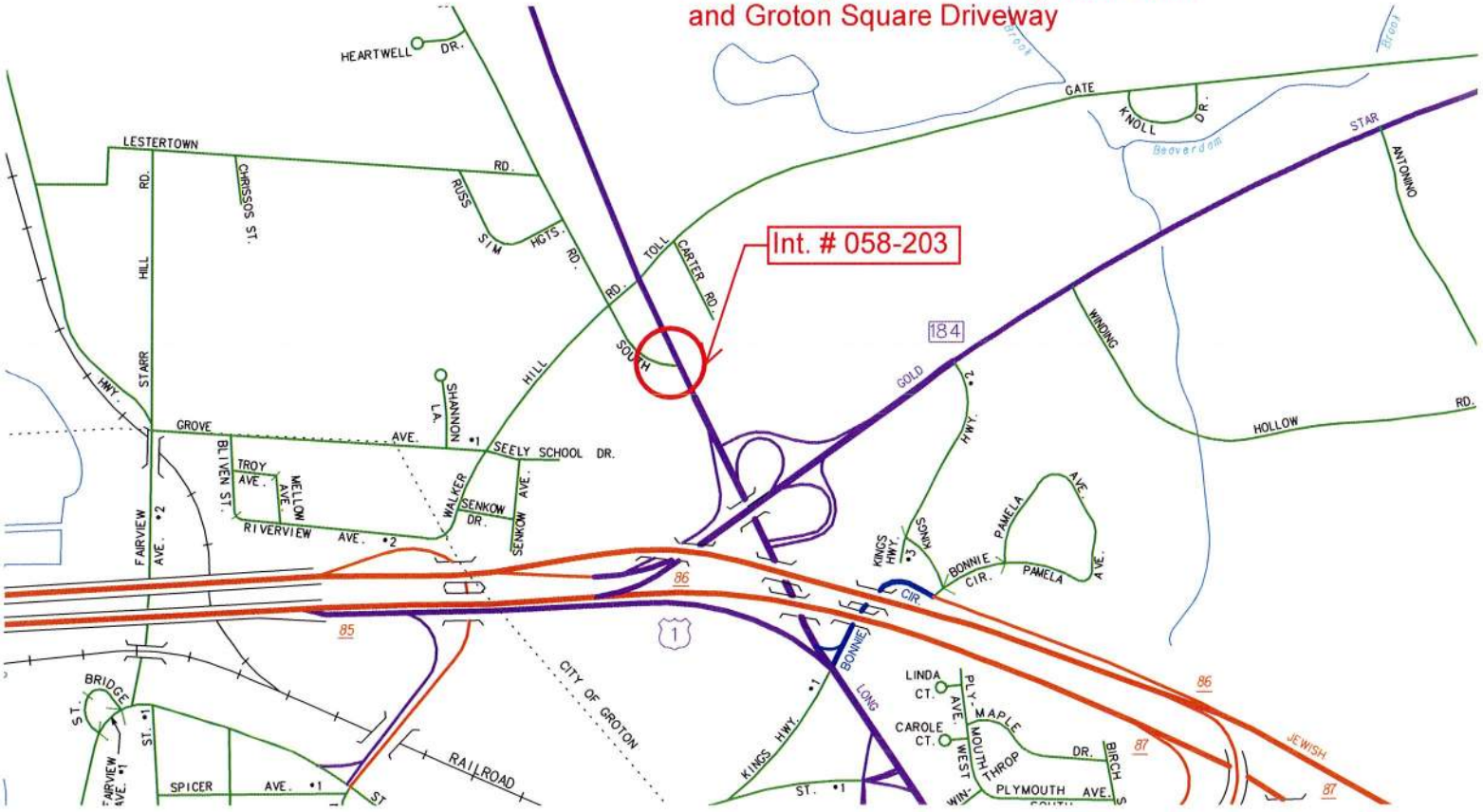
TOWN OF GROTON

U.S. RTE. 1 (LONG HILL RD.) AT DROZDYK DRIVE

SCALE: 1" = 40'

GROTON

Route 12 @ Pleasant Valley Road South
and Groton Square Driveway



Galvanized - .204-.07 / .12 +-.04

NO ACM

REV #5 RED LEDS 5/2/99

	PRE-EMPT. 1	PRE-EMPT. 2	MOVEMENT DIAGRAM	PRE-EMPT. 2	PRE-EMPT. 1		
NTOR	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	PHASE 7	PHASE 8
	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL
FACE # 1	← ← R	R R R		R R R	R R R	R R R		
2	R R R	G Y R		R R R	R R R	R R R		
3	R R R	R R R		G Y R	R → R → R	R R R		
4	R R R	R R R		G Y ① R ②	R ← R ← R	R R R		
5	R R R	R R R		R R R	R R R	R R R		
6	R R R	R R R		R R R	R R R	G Y R		
7	R R R	R R R		G Y R	R R R	R R R		
		YIELD				YIELD		
INTERVALS MIN GRN	6	15		9	6	15		
WALK		15		21		15		
PED CLR		1		1		1		
VEH EXT	3	4		3	3	4		
MAX 1	10	35		23	15	35		
MAX 2	10	35		23	15	35		
YELLOW	3	4		3	3	4		
RED	1	2		1	1	2		
ADD INI								
MAX INI								
TBR								
TTR								
MIN GAP								
MODE	NON-LOCK	MIN RECALL THIS PHASE	OFF	NON-LOCK	NON-LOCK	MIN RECALL THIS PHASE	OFF	OFF
INI START								

FLASHING OPERATION: R R R R Y R

MAINT 24hr ☒ Norm ☐

ENERGY BY - TOWN	NORMAL .747 kW 517 hr/mo = 387 kWh/mo
SERVICE POLE #GWBE0-X46-1	FLASH .385 kW 213 hr/mo = 82 kWh/mo

PREVIOUS OFFICE RECORD SEE BEACON PLAN

REVISION #1
JOB # SM # NA
SIGNAL REVISED 1-29-87
PROVIDED QUAD LEFT CONTROLLER IN
CONJUNCTION WITH RTE 12 WIDENING.
INTERCONNECTED TO ADJACENT SIGNALS.

REVISION # 2
JOB # SM #
TRAFFIC DESIGN M.M. ELECT DESIGN N/A
SIGNAL REVISED 5-15-87
INSTALLED NTOR SIGN AND ADDITIONAL DET
DETECTOR PLEASANT VALLEY RD. SOUTH G
REVISED OFFSETS.

REVISION # 3 MM
STC # SM #
TRAFFIC DESIGN: P.J.B. ELECT. DESIGN: P.L.M.
SIGNAL REVISED 6/12/95

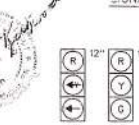
REPLACED ALL HEADS, REVISE INTERCONNECT TO CLOSED LOOP AND REMOVED THRU LANE
USE ARROWS ON RTE. 12 ADDED EMERGENCY
PRE-EMPTION UNDER PROJ. 58-256.
INCLUDED IN CLOSED LOOP SYSTEM.
PRE-EMPTION INSTALLED.

REVISION #4 MM
JOB # 72-45838 SM # N/A
TRAFFIC DESIGN Y.K.N. ELECT. DESIGN N/A
SIGNAL REVISED 11-6-95
REVISED MAINT. OPERATION FROM NORM TO 24 HR.

REVISION #5
INSTALLED YELLOW & GREEN LEDS 6-15-99

INTERSECTION # 58-203

SIGNAL FACES



FACES 1 & 5 TO HAVE 7 VANE STRAIGHT RAY LOUVERS ON RED LENSES.

PRE-EMPTION SETTINGS

	PRE-EMPT 1	PRE-EMPT 2
PRIORITY	NO	NO
DET. LOCK	YES	YES
DELAY	0	0
ALT. MIN. GRN	5	5
ALT. YELLOW	NO	NO
ALT. RED	NO	NO
ALT. PED. CLR.	NO	NO
HOLD GREEN	15	15
HOLD YELLOW	3	3
HOLD RED	2	2
HOLD PHASE	1.5	2.5
EXIT PHASE	4	4
EXIT CALL	1.5	1.5

LEGEND

- R RED
- Y YELLOW
- G GREEN
- RA RED ARROW
- YA YELLOW ARROW
- GA GREEN ARROW
- WA WALK/PL SW
- DW DON'T WALK
- FL FLASHING
- PROPOSED WOOD SPAN POLE
- EXISTING WOOD SPAN POLE
- PROPOSED STEEL SPAN POLE
- EXISTING STEEL SPAN POLE
- PROPOSED UTILITY POLE
- EXISTING UTILITY POLE
- PEDESTAL MOUNTING
- PEDESTRIAN PUSH BUTTON & SIGN
- TRAFFIC SIGNAL FACE
- PEDESTRIAN SIGNAL FACE
- LOOP DETECTOR
- MAGNETIC DETECTOR
- SS SYSTEM DETECTOR
- CONTROLLER
- HANDHOLE
- (R.M.C.) RIGID METAL CONDUIT
- STRAIN INSULATOR
- MAGNETOMETER PROBES
- CABLE CLOSURE
- DET. LEADS IN SAW CUT
- AUXILIARY TERMINATION CABINET
- RADIO ANTENNA
- AUXILIARY EQUIPMENT CABINET
- OPTICAL DETECTOR

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DIVISION OF TRAFFIC
TRAFFIC CONTROL SIGNAL

TOWN OF GROTON
ROUTE 12 AND PLEASANT VALLEY ROAD SOUTH/
GROTON SQUARE DRIVEWAY

REV # 1	TRAFFIC	DATE	ELECTRICAL	DATE
FIELD SURVEY	KASPER	10/86	KASPER	10/86
ENGINEER	ASSOC.		ASSOC.	
DRAFTER				
CHECKED BY				
SUBMITTED BY				
APPROVED BY				
DATE				

DETECTORS

IDENT	SIZE	TURNS	MODE	FUNCTION
D1	6'x 15'	3	PRESENCE	FLASH
D4B	9'x 6'	3	PRESENCE	
D4	9'x 6'	3	PRESENCE	
D4A	11'x 6'	3	PRESENCE	
D5	6'x 15'	3	PRESENCE	CYCLE 1
D4C	9'x 6'	3	PRESENCE	
D4E	20'x 6'	3	PRESENCE	
D4D	16'x 6'	3	PRESENCE	
D6, D2	MAG.		PULSE	

PROGRAM

TIME	DAYS
2200-0500 EST	DAILY
ALL OTHER TIMES	

COORDINATION TYPE - CLOSED LOOP

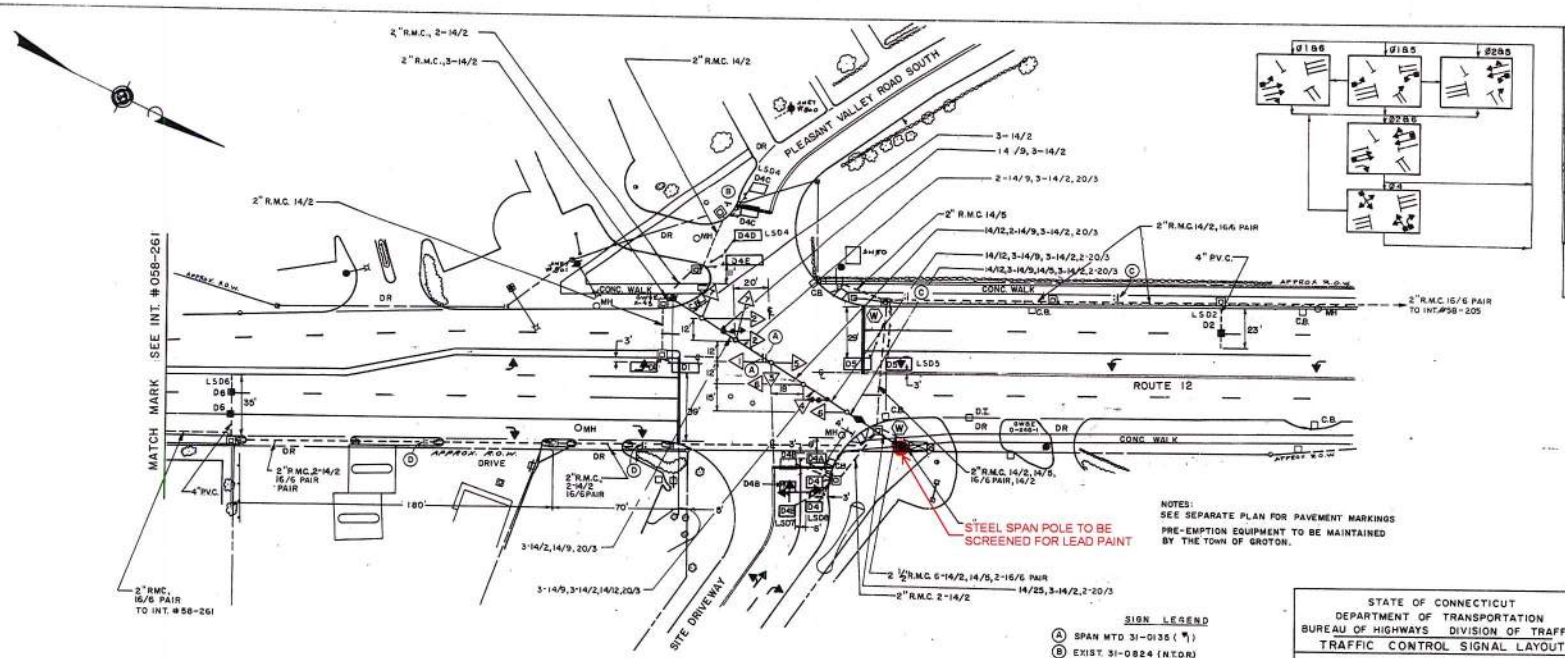
CYCLE	OFFSET #/SEC	YIELD PT %	PERMIS PERIOD	FORCE OFF % Ø	Ø	Ø
90"	1	11				

SYSTEM LOC

MASTER
58-240
58-206
58-203
58-205
58-207
58-256
58-261
58-217

TECHNICAL NOTES

STANDARD OVERLAP SKIP FEATURES APPLY
1. MAIN LINE DETECTORS TO BE INOPERATIVE DURING COORDINATION
② TO BE Y→IF Ø 5 NEXT.
③ TO BE R→IF Ø 5 NEXT.
TIMINGS SHOWN INDICATE FREE OPERATION ACTUAL TIMINGS TO BE DETERMINED BY CLOSED LOOP LOCAL COORDINATION UNIT.
PRE-EMPTION TO BE INOPERATIVE DURING FLASHING OPERATION.



NOTES:
SEE SEPARATE PLAN FOR PAVEMENT MARKINGS
PRE-EMPTION EQUIPMENT TO BE MAINTAINED BY THE TOWN OF GROTON.

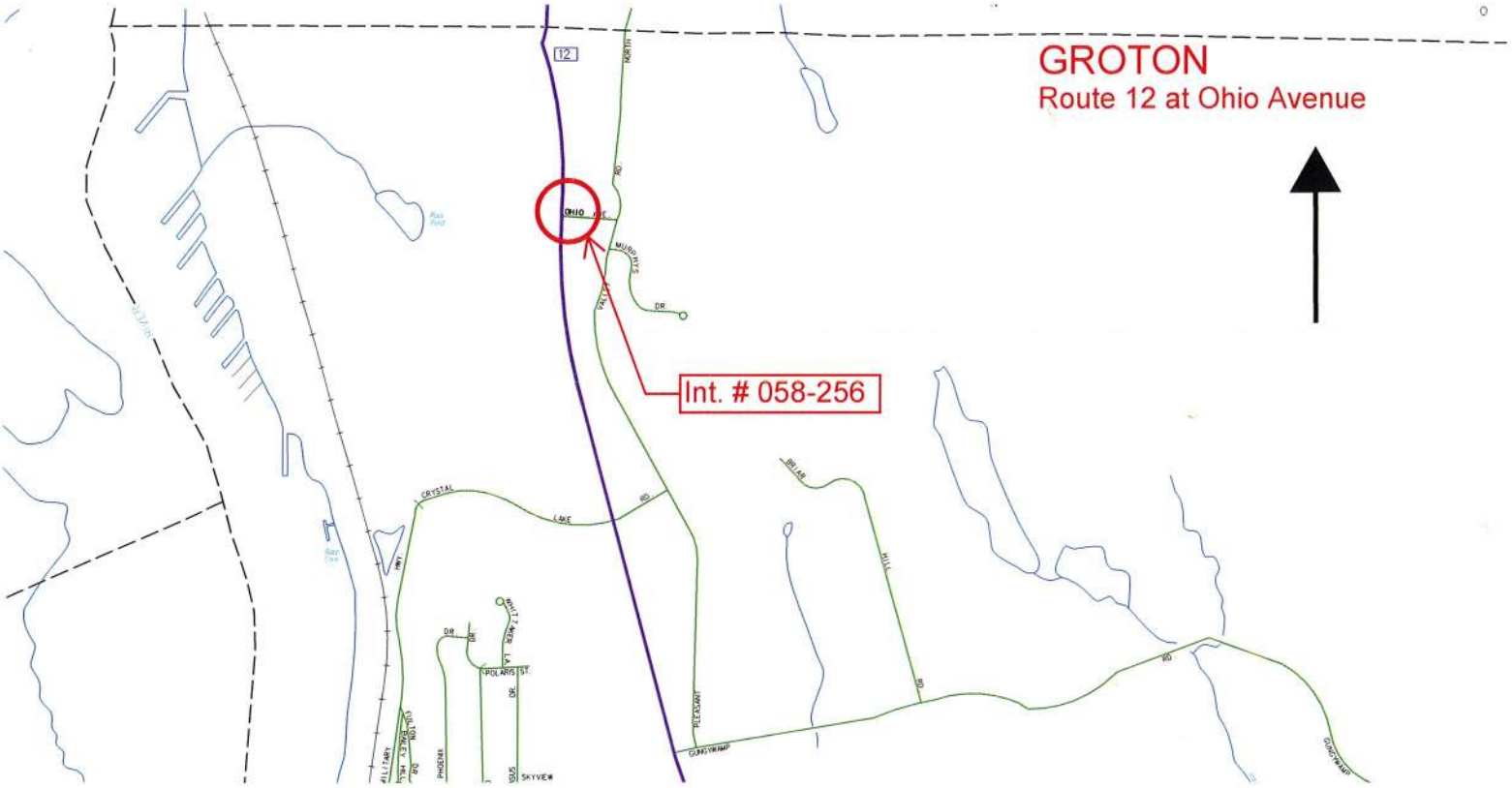
SIGN LEGEND
- (A) SPAN MTD 31-0135 (R)
- (B) EXIST. 31-0824 (NTOR)
- (C) EXIST. 31-0433 (R)
- (D) EXIST. 31-0583 (R)

REV #4 INTERSECTION # 58-203

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DIVISION OF TRAFFIC
TRAFFIC CONTROL SIGNAL LAYOUT

TOWN OF GROTON
ROUTE 12 AND PLEASANT VALLEY ROAD SOUTH/
GROTON SQUARE DRIVEWAY

SCALE 1" = 40'



Galvanized
No Acm
.01 +- .02

REV 2 RED LEDS 3/30/99

	PRE-EMPT 2	PRE-EMPT 1	MOVEMENT DIAGRAM							
NONE										
NTOR	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	PHASE 7	PHASE 8		
	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL	GRN CL CL		
FACE # 1	←G ←G G	G Y R		R R R					FLASHING OPERATION	Y
2	G G G	G Y R		R R R						Y
3	R R R	G Y R		R R R						Y
4	R R R	R R R		G Y R						R
5	R R R	R R R		G Y R						R
		←YIELD								
INTERVALS MIN GRN	4	15		9					MAINT 24hr	
WALK		15		16					Norm	
PED CLR		1		1						
VEH EXT	2			4						
MAX 1	8	50		20						
MAX 2	8	50		20						
YELLOW	3	4		3						
RED	0.1	2		2						
ADD INI										
MAX INI										
TBR										
TTR										
MIN GAP										
MODE	NON-LOCK	MIN RECALL	OFF	NON-LOCK	OFF	OFF	OFF	OFF		
INI START		THIS PHASE								

ENERGY BY TOWN.	NORMAL .534 kW 487 hr/mo = 260 kWh/mo
SERVICE POLE ⇐ 195	FLASH .2845 kW 243 hr/mo = 70 kWh/mo

OFFICE RECORD

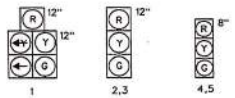
JOB # PROJ. # 58-196	
SIGNAL IN OPERATION 7/20/87 M.M. - M. J.G.	
REVISION # 1 M.M.	
STC # SM #	
TRAFFIC DESIGN: P.J.B. ELECT. DESIGN R.L.M.	
SIGNAL REVISED 6/20/95	
ADDED CLOSED LOOP INTERCONNECT AND REMOVED THRU LANE USE ARROW ON RTE. 12;	
ADDED EMERGENCY PRE-EMPTION UNDER PROJ.58-256, INCLUDED IN CLOSED LOOP SYSTEM;	
PRE-EMPTION INSTALLED'	

INTERSECTION # 058-256

PRE-EMPTION SETTINGS

	PRE-EMPT 1	PRE-EMPT 2
PRIORITY	NO	NO
DET. LOCK	YES	YES
DELAY	0	0
ALT. MIN. GRN	5	5
ALT. YELLOW	NO	NO
ALT. RED	NO	NO
ALT. PED. CLR.	NO	NO
HOLD GREEN	15	15
HOLD YELLOW	3	3
HOLD RED	2	2
HOLD PHASE	2	1
EXIT PHASE	4	2
EXIT CALL	1	4

SIGNAL FACES



DETECTORS

IDENT	SIZE	TURNS	MODE
D1	6X10	3	PRESENCE
D2	MAG		PULSE
D2A	MAG		PULSE
D4A	6X6	3	PRESENCE
D4B	12X6	3	PRESENCE
D4C	22X6	2	PRESENCE

PROGRAM

FUNCTION	TIME E.S.T.	DAYS
FLASH	2200-0600	DAILY
CYCLE 1	ALL OTHER TIMES	

COORDINATION TYPE-CLOSED LOOP

CYCLE	OFFSET # SEC	YIELD PT %	PERMIS PERIOD	FORCE OFF % Ø	Ø	Ø
90"	1 44					

SYSTEM LOC
MASTER
58-240
58-203
58-205
58-206
58-207
58-217
58-256
58-261

TECHNICAL NOTES

STANDARD OVERLAP SKIP FEATURES APPLY

TIMINGS SHOWN INDICATE FREE OPERATION. ACTUAL TIMINGS TO BE DETERMINED BY CLOSED LOOP LOCAL COORDINATION UNIT.

PHASE 2 ON TO OMIT PHASE 1.

D2 & D3 TO BE INOPERABLE DURING COORDINATION.

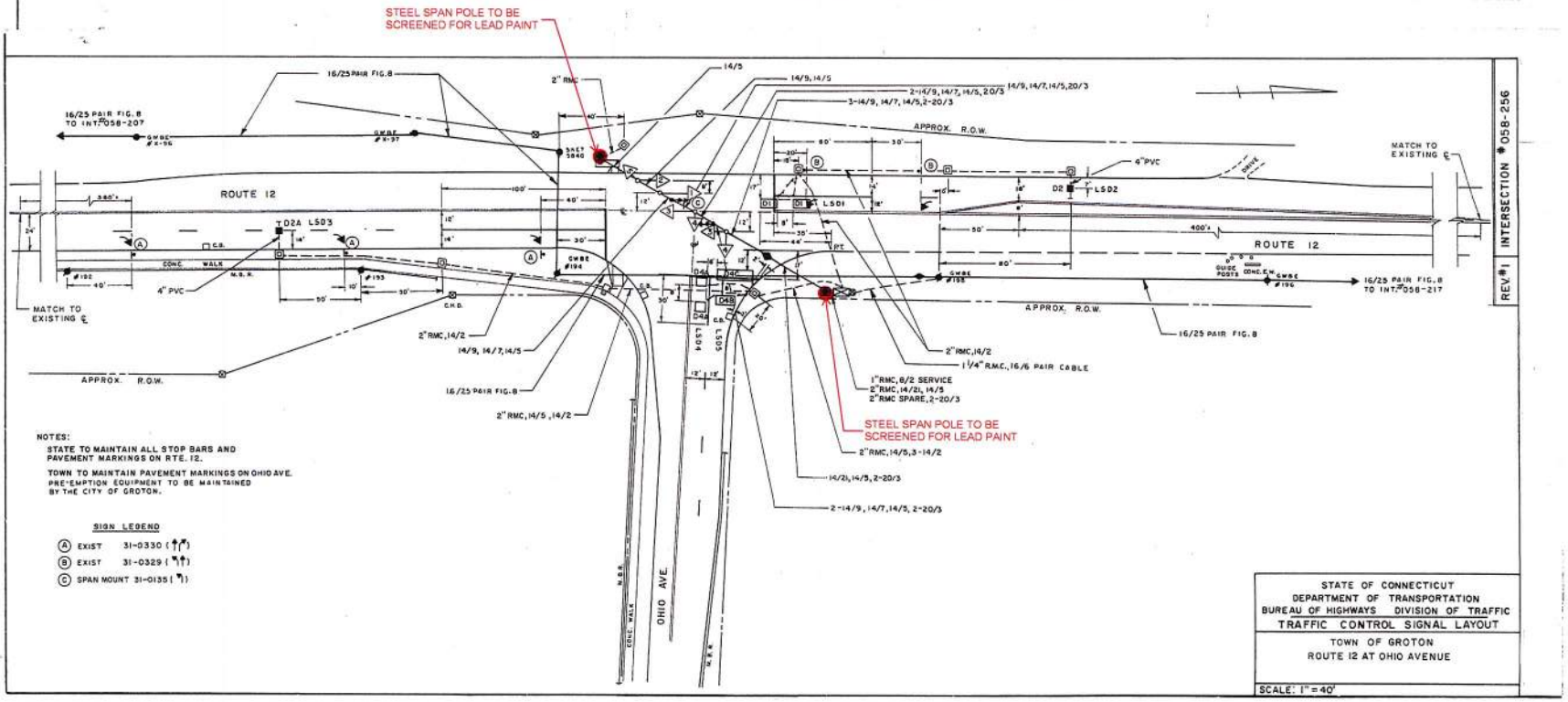
PRE-EMPTION TO BE INOPERATIVE DURING FLASHING OPERATION.

LEGEND

R RED
Y YELLOW
G GREEN
RED ARROW
YELLOW ARROW
GREEN ARROW
WALK/PL.D.W.
DW. DON'T WALK
FL. FLASHING
PROPOSED WOOD SPAN POLE
EXISTING WOOD SPAN POLE
PROPOSED STEEL SPAN POLE
EXISTING STEEL SPAN POLE
PROPOSED UTILITY POLE
EXISTING UTILITY POLE
PEDESTAL MOUNTING
PEDESTRIAN PUSH BUTTON & SIGN
TRAFFIC SIGNAL FACE
PEDESTRIAN SIGNAL FACE
LOOP DETECTOR
MAGNETIC DETECTOR
DET. LEADS IN SAW CUT
CONTROLLER
HANDHOLE
RIGID METAL CONDUIT (R.M.C.)
STRAIN INSULATOR
MAGNETOMETER PROBES
CABLE CLOSURE
AUXILIARY EQUIPMENT CABINET
OPTICAL DETECTOR

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DIVISION OF TRAFFIC
TRAFFIC CONTROL SIGNAL
TOWN OF GROTON
ROUTE 12 AT OHIO AVENUE

	TRAFFIC	ELECTRICAL
		DATE
FIELD SURVEY	TOWN OF GROTON	
ENGINEER	B.B.R. 1-85	R.M.W. 2-85
DRAFTER	J.J.G. 1-85	D.B. 2-85
CHECKED BY	M.M. 1-85	M.T.G. 2-85
SUBMITTED BY	G.A.P. 1-28-85	[illegible] 3-8-85
APPROVED BY	[illegible]	[illegible]
DATE	[illegible]	3/85



NOTES:

STATE TO MAINTAIN ALL STOP BARS AND PAVEMENT MARKINGS ON RTE. 12.

TOWN TO MAINTAIN PAVEMENT MARKINGS ON OHIO AVE.
PRE-EMPTION EQUIPMENT TO BE MAINTAINED BY THE CITY OF GROTON.

SIGN LEGEND

(A) EXIST 31-0330 (↑)
(B) EXIST 31-0329 (↰↑)
(C) SPAN MOUNT 31-0135 (↰)

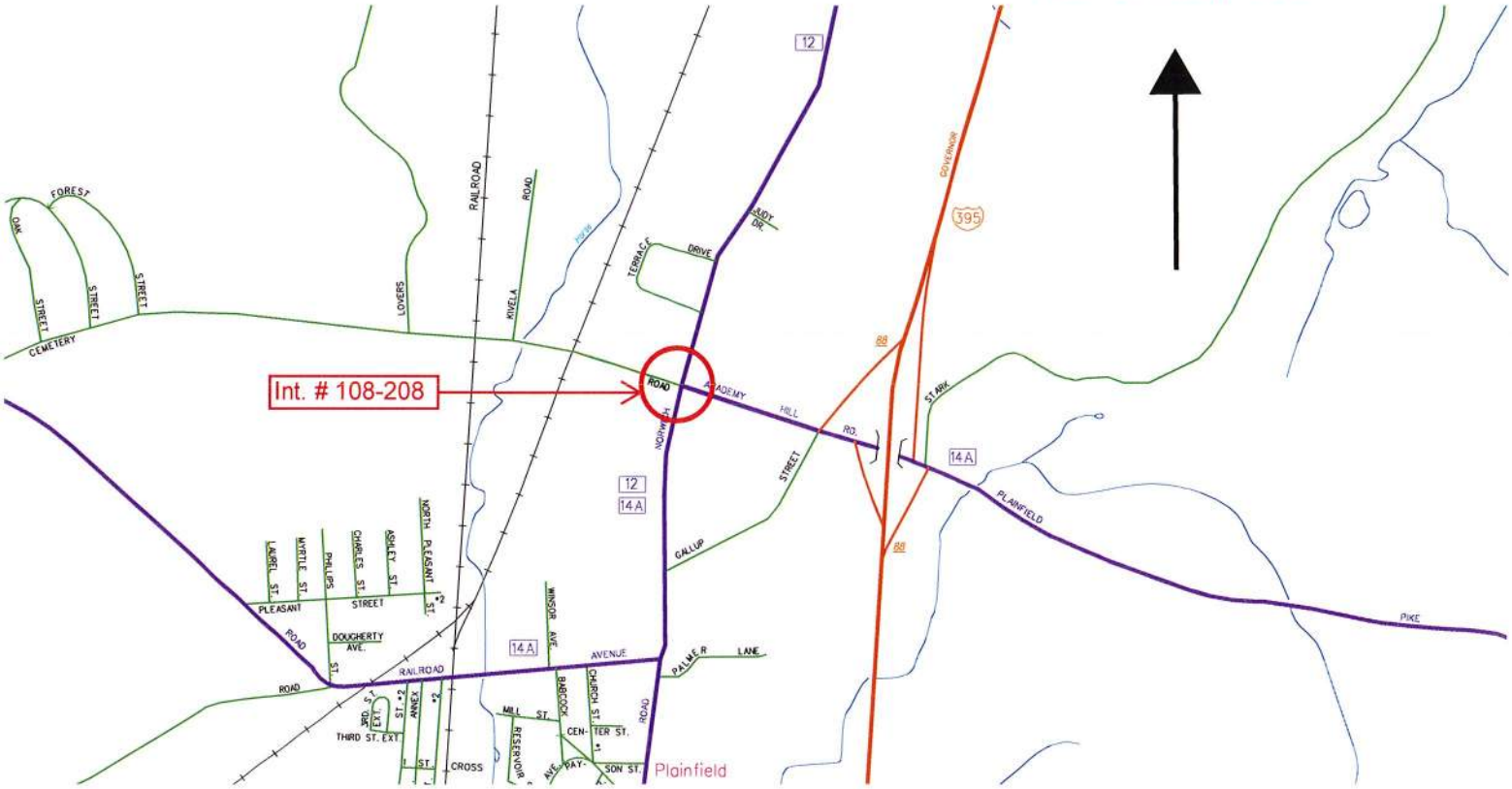
INTERSECTION # 058-256
REV #1

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DIVISION OF TRAFFIC
TRAFFIC CONTROL SIGNAL LAYOUT
TOWN OF GROTON
ROUTE 12 AT OHIO AVENUE
SCALE: 1" = 40'

PLAINFIELD

Route 12 at Route 14A

and Cemetery Road



No Hon Box

Galvanized

NO ACM

0.01 +- 0.02

INTERSECTION # 108-208

MOVEMENT DIAGRAM

NTOR		PHASE 1			PHASE 2			PHASE 3			PHASE 4			PHASE 5			PHASE 6			PHASE 7			PHASE 8		
	FLASH	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL
1	Y				G	Y	R	R	R	R	R	R	R												
2	R				R	R	R	R	R	R	G	Y	R												
P	OFF				DW			WØ			DW														

INTERVALS	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	PHASE 7	PHASE 8
MIN GRN		25		9				
WALK			7					
PED CLR			17					
VEH EXT		4		2				
MAX 1		35		18				
MAX 2		40		25				
YELLOW		4.4	0.1	3.9				
RED		1.8	0	1.1				
ADD INIT								
MAX INIT								
TBR								
TTR								
MIN GAP								
MODE	OFF	MIN RECALL	NON-LOCK	NON-LOCK	OFF	OFF	OFF	OFF
INT START		THIS PHASE						

DETECTORS

IDENT	SIZE (WXL)	TURNS	MODE
D1	9'x6'	3	PULSE
D2	10'x6'	3	PRESENCE
D2A	16'x6'	3	PRESENCE
D3	7'x6'	3	PRESENCE
D3A	12'x6'	3	PRESENCE
D3B	19'x6'	3	PRESENCE

PROGRAM *

FUNCTION	TIME	DAYS
FLASH	0100-0400	DAILY
MAX 1	1400-1800	M-F
MAX 2	ALL OTHER TIMES	

COORDINATION TYPE-

CYCLE	OFFSET %	PHASE SPLITS SEC/% ø1	ø2	ø3	ø4	ø5	ø6	ø7	ø8	PERMIS PERIOD ø	SEC	SYSTEM LOC
												MASTER

TECHNICAL NOTES

* HOURS VARY DUE TO TC-14. REFER TO TECH MEMO.

ENERGY BY- TOWN | ADDRESS # -
MAINT LEVEL 5 | SERVICE POLE- SNET 301
UNMETERED SERVICE

SIGNAL FACES

1: R 12", Y 8", G — 2: R 8", Y, G — P 11" LED

ALL INDICATIONS HAVE LED LAMPS.

OFFICE RECORD

REVISION #6
STC # 108-1001-01 SM #
SIGNAL REVISED : 9-16-10
ADDED PED. PHASE UNDER
PROJ. 108-177
AS BUILT PLAN DRAWN 10/22/10.

LEGEND: R RED, Y YELLOW, G GREEN; RED ARROW; YELLOW ARROW; GREEN ARROW; WØ WALK/ PED. CLR; D.W. DON'T WALK; FL. FLASHING

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUR. OF ENGINEERING & HWY OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

TRAFFIC CONTROL SIGNAL

TOWN OF PLAINFIELD
ROUTE 12 AT ROUTE 14A AND CEMETERY ROAD

REV # 6 | TRAFFIC DATE | ELECTRICAL DATE
ENGINEER / DRAFTER / CHECKED BY: Traffic Engineering Solutions, P.C. December 2009
SUBMITTED BY
APPROVED BY
DATE

CONSTRUCTION NOTES

STAKE ALL R. O. W. PRIOR TO EXCAVATION. ALL WORK TO BE WITHIN EXISTING R. O. W.

ALL TRAFFIC SIGNAL EQUIPMENT IS EXISTING EXCEPT AS NOTED.
- REMOVE PEDESTAL AND PEDESTRIAN PUSH BUTTON AT SOUTHEAST CORNER.
- INSTALL PEDESTAL WITH PEDESTRIAN PUSH BUTTON AND PEDESTRIAN SIGNAL HEADS AT THE SOUTHEAST AND NORTHEAST CORNERS.
- REPLACE PEDESTRIAN PUSHBUTTON WITH ADA COMPLIANT PUSHBUTTON AT SOUTHWEST CORNER.
- INSTALL PEDESTRIAN SIGNAL HEADS AS SHOWN.
- ADD CABLING AS SHOWN ON PLAN.

MODIFY CONTROLLER TO PROVIDE SEQUENCE AND TMING SHOWN
- ADD EXCLUSIVE PEDESTRIAN PHASE.
- PROVIDE 4 COPIES OF REVISED CABINET WIRING DIAGRAMS.

INSTALL 2-INCH RMC INTO EXISTING HANDHOLE AT NORTHEAST CORNER. REMOVE EXISTING 14/5 CABLE FROM SOUTHEAST CORNER TO CONTROLLER. INSTALL 14/7 FROM NEW PEDESTALS BACK TO CONTROLLER.

REMOVE EXISTING 14/5 CABLE AND INSTALL 14/7 FROM NEW PEDESTRIAN SIGNAL HEADS AND PUSHBUTTONS AT SOUTHWEST CORNER BACK TO CONTROLLER.

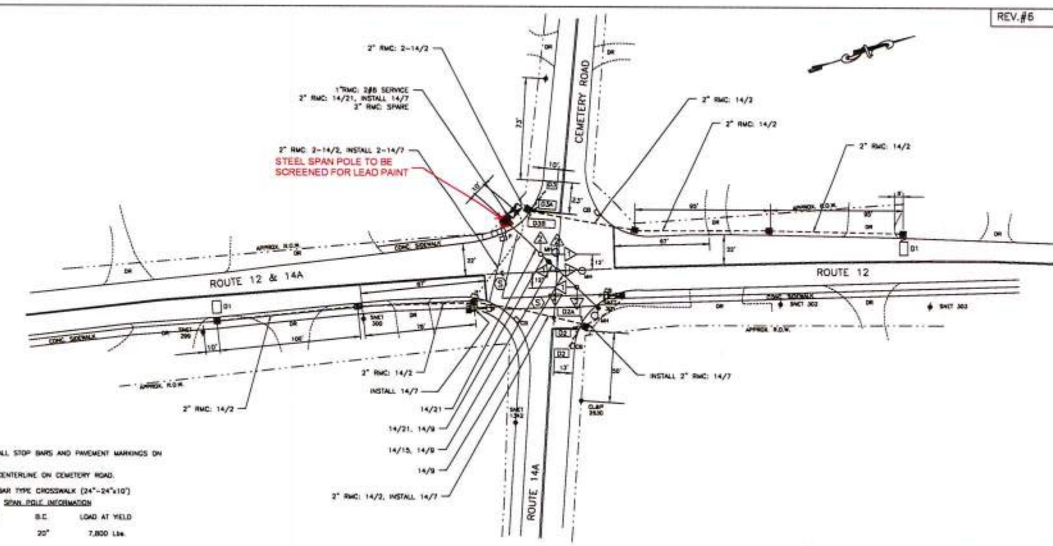
CONSTRUCT PEDESTRIAN HANDICAP RAMPS WITH DETECTABLE WARNING STRIPS AT SOUTHWEST, NORTHEAST AND SOUTHEAST CORNERS AS SHOWN ON SITE PLAN NO. 7.

INSTALL PEDESTRIAN CROSS WALKS AS SHOWN. ALL CONFLICTING PAVEMENT MARKINGS TO BE ERADICATED.

ALL MATERIAL AND CONSTRUCTION METHODS SHALL CONFORM TO THE FOLLOWING CURRENT DOT DOCUMENTS WHICH CAN BE ACCESSED ON THE DOT WEBSITE:
- STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION (FORM 816).
- SUPPLEMENTAL SPECIFICATIONS TO FORM 816.
- TYPICAL INSTALLATION DRAWINGS.
- SPECIAL PROVISIONS TO FORM 816.

ANY PROPOSED REVISIONS TO THE LOCATION OF THE APPURTENANCES SHOW ON THE PLAN MUST BE SUBMITTED FOR REVIEW AND APPROVAL BY THE DIVISION OF TRAFFIC ENGINEERING PRIOR TO INSTALLATION.

REV.#6 | INTERSECTION# 108-208



NOTES:

STATE TO MAINTAIN ALL STOP BARS AND PAVEMENT MARKINGS ON ROUTE 12 AND 14A.

TOWN TO MAINTAIN CENTERLINE ON CEMETERY ROAD.

(S) STATE TO MAINTAIN BAR TYPE CROSSWALK (24"-24"x10')

SPAN POLE INFORMATION

HEIGHT	B.C.	LOAD AT YIELD
30'	20"	7,800 Lbs.

CADD FILE NAME: P:\projects\CONS_ENG\PLAINFIELD\TR_tcs_108_208_006.dgn

TRAFFIC CONTROL SIGNAL LAYOUT
DATE PLOTTED: 11/29/2010 | SCALE = 1" = 40'
ALL DIMENSIONS IN FEET UNLESS OTHERWISE NOTED.

TOWN OF PLAINFIELD
ROUTE 12 AT ROUTE 14A AND CEMETERY ROAD

ENGINEER | DATE

GRAPHIC SCALE IN FEET: 40 20 0 40

REVISIONS	
DATE	DESCRIPTION
12/31/2009	DOT COMMENTS
1/4/2010	DOT COMMENTS
1/5/2010	DOT COMMENTS
1/11/2010	DOT COMMENTS
1/21/2010	DOT COMMENTS

DATE: 11/12/2009	DRAWN: [redacted]
SCALE: 1" = 40'	DESIGN: [redacted]
SHEET: 12 OF 32	CHK BY: [redacted]
DWG. No: HF 168	JOB No: 093045

NORWICH ROAD SIDEWALK PROJECT
ARRA PROJECT No. 108-177

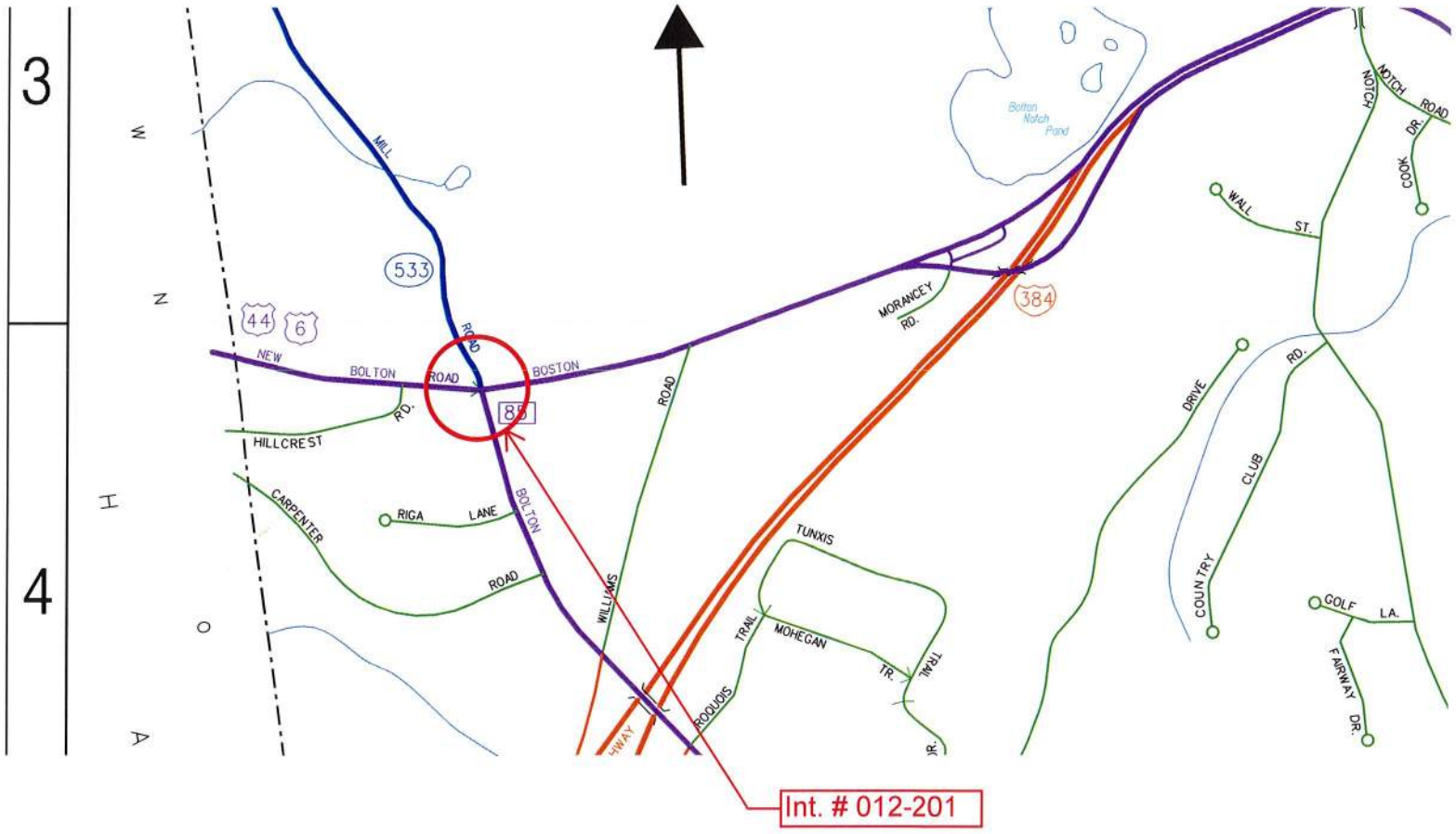
TRAFFIC CONTROL SIGNAL LAYOUT
ROUTE 12 AT ROUTE 14A AND CEMETERY ROAD
PREPARED FOR

TOWN OF PLAINFIELD

NORWICH ROAD (ROUTE 12)
PLAINFIELD, CONNECTICUT

Provost & Rovero, Inc.
Engineering • Surveying • Site Planning
57 East Main Street, P.O. Box 191
Plainfield, Connecticut 06374
(860) 230-0856 - FAX: (860) 230-0860
EMAIL: info@provroinc.com

BOLTON
Route 6/44 at Route 85



Galvanized

No Acm

~~.14 + .04~~

MOVEMENT DIAGRAM

NTOR: NONE	PHASE 1 GRN	PHASE 1 CL	PHASE 1 CL	PHASE 2 GRN	PHASE 2 CL	PHASE 2 CL	PHASE 3 GRN	PHASE 3 CL	PHASE 3 CL	PHASE 4 GRN	PHASE 4 CL	PHASE 4 CL	PHASE 5 GRN	PHASE 5 CL	PHASE 5 CL	PHASE 6 GRN	PHASE 6 CL	PHASE 6 CL	PHASE 7 GRN	PHASE 7 CL	PHASE 7 CL	PHASE 8 GRN	PHASE 8 CL	PHASE 8 CL	FLASHING OPERATION
FACE # 1	G ←	G ←Y	G	G	G	G	G	Y	R				R	R	R										Y
2	G	G	G	G	G	G	G	Y	R				R	R	R										Y
3	R	R	R	G	G	G	G	Y	R				R	R	R										Y
4	R	R	R	R	R	R	R	R	R				G	Y	R										R
FLASHING SIGN	OFF						ON																		

INTERVALS	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	PHASE 7	PHASE 8
MIN GRN	4	8	9		6			
WALK					12			
PED CLR					1			
VEH EXT		2.5			2.0			
MAX 1	4	45	9		30			
MAX 2	4	45	9		30			
YELLOW	3	3	5		3			
RED	1	2	2		1.5			
ADD INI		1.5						
MAX INI		20						
TBR								
TTR								
MIN GAP		2.5						
MODE	MAX RECALL	MIN RECALL	NON-LOCK		NON-LOCK			
INI START		THIS PHASE						

MAINT LV 2

DETECTORS

IDENT	SIZE	TURNS	MODE
D.I	MAG		PULSE
D2	6' X 10'	3	DELAY 8"
D3	6' X 6'	3	DELAY 8"
D4	12' X 6'	3	PRESENCE
D5	6' X 10'	3	DELAY 8"
D4A	16' X 6'	3	PRESENCE
D4B	24' X 6'	3	PRESENCE

PROGRAM

FUNCTION	TIME	DAYS

COORDINATION

CYCLE SAFETY CRT	OFFSET %/SEC	YIELD PT %	PERMIS PERIOD	FORCE OFF % Ø	Ø	Ø

SYSTEM LOC
MASTER

TECHNICAL NOTES

STANDARD OVERLAP SKIP FEATURES APPLY

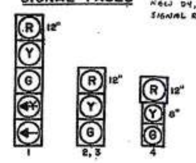
ENERGY BY - STATE	NORMAL .921 kW 730 hr/mo = 672.02 kWh/mo
SERVICE POLE #	FLASH KW hr/mo = kWh/mo

PREVIOUS OFFICE RECORD SEE REV. #2	REVISION # 6
REVISION # 3	JOB # 12-13 SM # 88044
JOB # SM #	TRAFFIC DESIGN TNL ELECT DESIGN N/A
SIGNAL REVISED 10-1-87	SIGNAL REVISED 1/18/01
ADDED FLASHING "STOP AHEAD" SIGN,	TIMING REVISED
PED. PUSH BUTTONS AND A WEST BND.	REVISION # 7
ADVANCE	JOB # N/A SM # N/A
REVISION # 4	SIGNAL REVISED 2/27/01.
JOB # 12-90702 SM # N/A	INSTALLED RED, YELLOW AND GREEN LED
TRAFFIC DES.-JLO/ ELECT. DES.-N/A	LAMPS BY STATE FORCES.
SIGNAL REVISED - 6-2-89	REVISION # 8
REVISED Ø 5 YELLOW FROM 3" TO 4" AND	JOB # 12-26 SM # N/A
Ø5 ALL RED FROM 2" TO 3"	TRAFFIC DES: MFM ELECT. DES: N/A
REVISION #5	SIGNAL REVISED 9-1-03.
JOB # N/A SM # N/A	REVISED MAINTENANCE LEVEL FROM 5 TO 2.
TRAFFIC DESIGN-JLO ELECT. DES. N/A	REVISION #9
SIGNAL REVISED 10-2-90	JOB # SM # 88014 -
REVISED Ø2 MAX TIME FROM 50" TO 45"	TRAFFIC DES: MFM ELECT DES: DHS
REVISED ISLAND	SIGNAL REVISED: 10-27-04
	REMOVED RAISED ISLAND REVISED DETECTORS ON RTE.85,

INTERSECTION # 012-201

SIGNAL FACES

REV #10
NEW D4, D4A, D4B LOOPS INSTEAD
SIGNAL REVISED: 10/27/04



FACES 1, 2 AND 3 HAVE BACK PLATES
ALL INDICATIONS HAVE LED LAMPS.

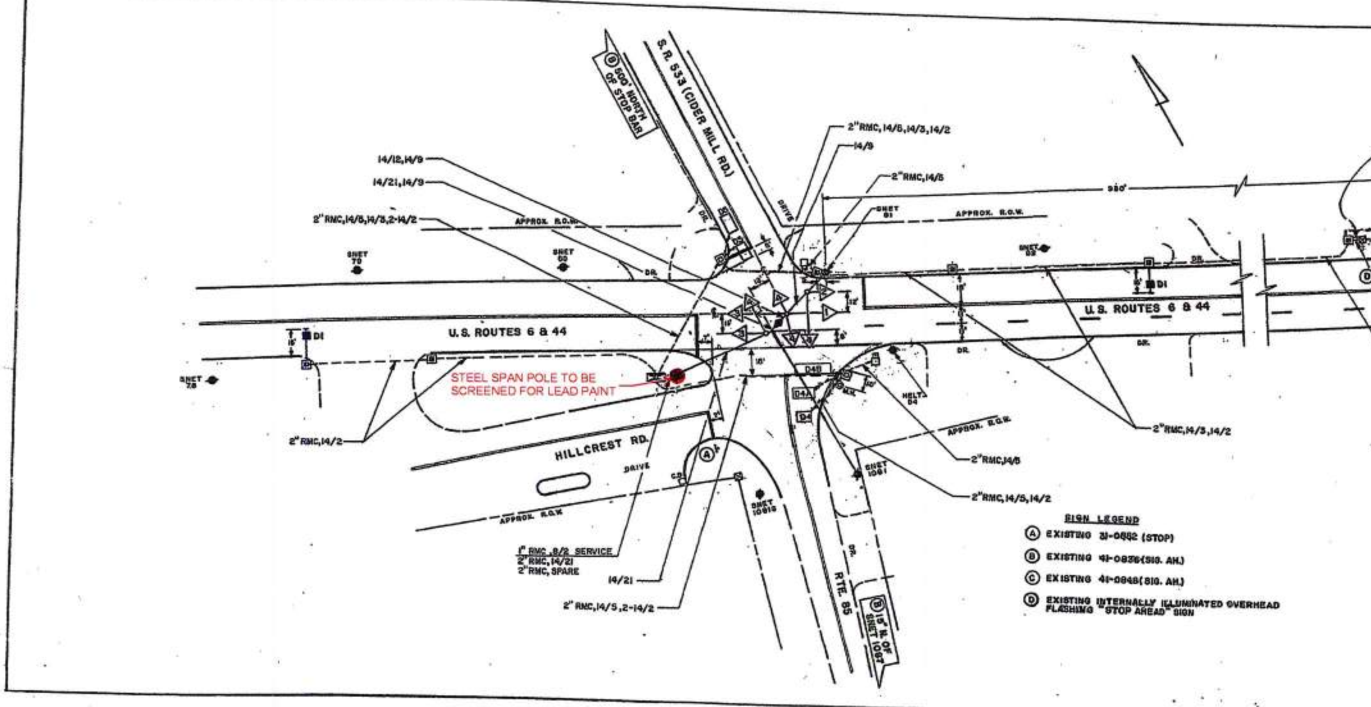
LEGEND

R RED
Y YELLOW
G GREEN
RED ARROW
YELLOW ARROW
GREEN ARROW
W WALK/FL. D.W.
D.W. DON'T WALK
FL. FLASHING
PROPOSED WOOD SPAN POLE
EXISTING WOOD SPAN POLE
PROPOSED STEEL SPAN POLE
EXISTING STEEL SPAN POLE
PROPOSED UTILITY POLE
EXISTING UTILITY POLE
PEDESTAL MOUNTING
PEDESTRIAN PUSH BUTTON & SIGN
TRAFFIC SIGNAL FACE
PEDESTRIAN SIGNAL FACE
LOOP DETECTOR
MAGNETIC DETECTOR
SD SYSTEM DETECTOR
CONTROLLER
HANDHOLE
(R.M.C.) RIGID METAL CONDUIT
STRAIN INSULATOR
MAGNETOMETER PROBES
CABLE CLOSURE
DET. LEADS IN SAW CUT
AUXILIARY TERMINATION CABINET
RADIO ANTENNA

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DIVISION OF TRAFFIC
TRAFFIC CONTROL SIGNAL

TOWN OF BOLTON
U.S. RTES. 6 & 44 AT RTE. 85 &
S.R. 533 (CIDER MILL RD.)

REV. #3	TRAFFIC	DATE	ELECTRICAL	DATE
FIELD SURVEY				
ENGINEER	G.B.R.	4-85	G.D.O.	4-85
DRAFTER	F.P.	4-85	D.B.	4-85
CHECKED BY	[illegible]	4-10-85	M.R.M.	4-85
SUBMITTED BY	[illegible]	4-10-85	[illegible]	1-85
APPROVED BY	[signature]		[signature]	
DATE	4/10/85		4/85	



NOTES:

STATE TO MAINTAIN ALL STOP BARS

TOWN TO MAINTAIN CENTER LINE ON HILLCREST RD.

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DIVISION OF TRAFFIC
TRAFFIC CONTROL SIGNAL LAYOUT

TOWN OF BOLTON
U.S. RTES. 6 & 44 AT RTE. 85 &
S.R. 533 (CIDER MILL RD.)

SCALE: 1" = 40'

REV. # 9 INTERSECTION # 012-201