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195 Church Street
P.O. Box 1950
New Haven, CT 06509

August 18, 2017

VIA E-MAIL AND HAND-DELIVERY

Attorney Melanie Bachman
Executive Director/Staff Attorney
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: **DOCKET NO. 474 -** The Connecticut Light & Power Company d/b/a Eversource Energy application for a Certificate of Environmental Compatibility and Public Need for the Greater Hartford-Central Connecticut Reliability Project that traverses the municipalities of Hartford, West Hartford, and Newington, which consists of (a) construction, maintenance and operation of a new 115-kilovolt (kV) electric transmission line within existing Eversource, Amtrak and public road rights-of-way and associated facilities extending overhead approximately 2.4 miles and underground approximately 1.3 miles between Eversource's existing Newington Substation in the Town of Newington and existing Southwest Hartford Substation in the City of Hartford; (b) modifications to a .01 mile section within existing Eversource right-of-way of the existing overhead 115-kV electric transmission line connection to the Newington Substation (Newington Tap); and (c) related modifications to Newington Substation and Southwest Hartford Substation.

Dear Attorney Bachman:

In connection with the above-referenced Docket No. 474, I am enclosing the original and fifteen (15) copies of the following items:

1. Eversource Energy's Responses to the Connecticut Department of Transportation's (CTDOT) Comments dated August 14, 2017;
2. CTDOT Comments dated August 14, 2017; and
3. Route Map to be used in the introductory presentation by Ken Bowes at the Public Comment Session.

We respectfully request that Items 1 and 3 be added to the list of Eversource's Exhibits for Identification listed on the Hearing Program.

Very truly yours,

Anthony M. Fitzgerald

Anthony M. Fitzgerald

AMF/mkw
Enclosures
cc: Service List dated June 9, 2017 attached (w/encls.)
Sohrab Afrazi (CTDOT) (via email w/encls.)

LIST OF PARTIES AND INTERVENORS
SERVICE LIST

Status Granted	Document Service	Status Holder (name, address & phone number)	Representative (name, address & phone number)
Applicant	☒ E-Mail	The Connecticut Light and Power Company d/b/a Eversource Energy	Kenneth Roberts Project Manager Eversource Energy 56 Prospect Street Hartford, CT 06103 (860) 728-4826 kenneth.roberts@eversource.com Kathleen M. Shanley Manager, Transmission Siting Eversource Energy 56 Prospect Street Hartford, CT 06103 (860) 728-4527 kathleen.shanley@eversource.com Jeffery Cochran, Esq. Senior Counsel, Legal Department Eversource Energy 107 Selden Street Berlin, CT 06037 (860) 665-3548 jeffery.cochran@eversource.com Anthony M. Fitzgerald, Esq. Carmody Torrance Sandak & Hennessey LLP 195 Church Street P.O. Box 1950 New Haven, CT 06509 (203) 777-5501 afitzgerald@carmodylaw.com

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Melanie Bachman
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Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: ***Docket No. 474: The Connecticut Light & Power Company d/b/a Eversource Energy application for a Certificate of Environmental Compatibility and Public Need for the Greater Hartford-Central Connecticut Reliability Project that traverses the municipalities of Hartford, West Hartford, and Newington, which consists of (a) construction, maintenance and operation of a new 115-kilovolt (kV) electric transmission line within existing Eversource, Amtrak and public road rights-of-way and associated facilities extending overhead approximately 2.4 miles and underground approximately 1.3 miles between Eversource's existing Newington Substation in the Town of Newington and existing Southwest Hartford Substation in the City of Hartford; (b) modifications to a .01 mile section within existing Eversource right-of-way of the existing overhead 115-kV electric transmission line connection to the Newington Substation (Newington Tap); and (c) related modifications to Newington Substation and Southwest Hartford Substation***

Dear Ms. Bachman:

I am writing on behalf of Eversource Energy ("Eversource") to respond to comments regarding the Greater Hartford-Central Connecticut Reliability Project ("Project') filed with the Connecticut Siting Council ("Council") by the Connecticut Department of Transportation ("CTDOT") by letter dated August 14, 2017 (the "Letter"). As described in various sections of its Application for a Certificate of Environmental Compatibility and Public Need for the Project ("Application"), Eversource is well aware of the need to coordinate Project construction with CTDOT. To this end, Eversource had consulted with CTDOT prior to receipt of the Letter, and Eversource and CTDOT had scheduled a further meeting for August 17, 2017. The Eversource and CTDOT representatives used this previously scheduled meeting to discuss the CTDOT comments. Our responses, below, reflect the information gained as a result of the August 17 meeting.

For ease of reference by the Council, I have copied verbatim the comments received from CTDOT, and inserted Eversource's response directly below each comment in bold text. In addition, a copy of the CTDOT August 14, 2017 letter, with attachments, is enclosed with this letter.

Comments from CTDOT Division of Facilities and Transit

1. The Eversource preferred route (Route) uses the Amtrak rail corridor for a portion of the installation. As part of the New Haven-Hartford-Springfield (NHHS) Rail program, CTDOT will be adding commuter rail service to the same Amtrak rail corridor. The new service, called the CT**rail** Hartford Line (Hartford Line), is scheduled to launch in May 2018 and will increase the number of corridor trains passing through the Route area. Initially, the number of trains will increase from 6 to 17 daily roundtrips (22 additional trains) which will operate from 5:30 a.m. until midnight.

    a. The CTDOT is concerned that the proposed Route construction could impact the newly established service at a critical time. We request that Eversource be required to perform the construction in such a manner and at such times that will not interrupt the newly established commuter rail service. This will require the Route construction within the Amtrak corridor be largely performed during night hours (approx. midnight until 5:30 a.m.). With this qualification and subject to the following comments, CTDOT generally endorses the preferred route as proposed.

    EVERSOURCE RESPONSE:

    For the construction of the Project's 2.4-mile overhead segment along the Amtrak ROW, Eversource will work with CTDOT and Amtrak to coordinate a construction schedule that will not interrupt the new commuter rail service. As discussed on pp. 4-3, 4-10 to 4-11, 6-22, and 6-24 of the Application, Eversource recognizes the importance of close coordination with both CTDOT and Amtrak to develop an acceptable Project construction schedule. Eversource anticipates that additional details regarding the schedule for overhead line construction activities along the Amtrak ROW will be provided in the Project's Development and Management ("D&M") Plan.

2. Additionally, as part of the NHHS program, CTDOT is proposing to construct a new railroad station at Flatbush Avenue in the Town of West Hartford (Station). The Station is currently under design and is scheduled for construction in 2020. The 30 percent (30%) design plans for the Station will be available in 1-2 months and should be used by Eversource to provide a design compatible with the Station. The Route in the area of the Station (see Volume 3, Sheet 10) depict steel monopoles No. 47 and No. 48 to be

installed at either end of the Station with the aerial transmission lines spanning directly over the overpass and east side pedestrian platform.

The CTDOT has questions and concerns with the Route in the area of the Station as follows:

a. The Route locates transmission lines directly over portions of the Station. Does Eversource believe permanently locating transmission lines over occupied portions of the Station pose any safety concerns? If so, consider either undergrounding the segment through the Station proper, developing an alternate aerial route that avoids passing over the Station, or lastly further developing the design in a manner that mitigates safety concerns.

b. The proposed locations of steel monopole structures No. 47 and No. 48 may conflict with the Station design. The exact location of these structures needs to be closely coordinated by Eversource with the 30 percent (30%) design to avoid conflict.

c. The plan and profile sheet 4 of 6 in Volume 3 appears to indicate that the lowest conductor at mid-span over the Station is approximately 50' above top of rail. However, the roof top elevation of the Station is approximately 53' above top of rail. Wire profiles in the Station area will need to be raised significantly (and monopole structure height) to provide sufficient clearance to the Station. The minimum wire height would need to accommodate Station construction as well as future maintenance and repairs. Absent sufficient wire clearance and depending on the scope and nature of Station work, the existence of energized overhead transmission lines would require transmission line outages.

d. Eversource provided a potential route variation at the Station location as described in Volume 1 Section 11.4.3. The route variation attempts to avoid the Station by locating the transmission lines to the east overhead through the Station parking lot. The route variation is not recommended as CTDOT is planning a multi-story parking garage at this location. The parking garage plans are concept level documents and currently do not provide sufficient detail to allow Eversource the ability to produce a compatible design.

EVERSOURCE RESPONSE:

During the August 17 meeting, CTDOT representatives indicated that the construction of the proposed Station is a high priority. CTDOT has not yet acquired the property where the proposed Station would be built, but indicated that it intends to move forward with site acquisition, with the goal of construction of Phase I (the platform and the pedestrian walkway over the

railroad tracks) in 2020, and with the construction of Phase II (the parking garage, to be located to the east of the railroad corridor) at an undetermined date. CTDOT will not be able to provide 30% design plans for Phase I to Eversource for 1-2 months. CTDOT only has conceptual plans for the parking garage at this point, but the conceptual plans reviewed with Eversource would render the potential route variation discussed in Section 11.4.3 (pp. 11-25 to 11-26) of the Application infeasible. (Note: The potential route variation identified in the Application was based on Eversource's previous consultations with Amtrak, at which time the Station was anticipated to include an associated surface parking lot.)

The construction of transmission lines over the proposed Station will not pose any safety concerns because, once Eversource receives CTDOT's 30% design plans, it has at least two options to ensure that adequate clearances are maintained over the proposed Station. These options are:

- **Structures 47 and 48 can be constructed to maintain the required clearances to the proposed Station by increasing their height from the currently proposed height of 107 feet. Until Eversource is able to review the 30% design plans, it cannot determine the precise height of Structures 47 and 48 needed to achieve required clearances over the Station, but it expects the "worst case scenario" would be that Structures 47 and 48 would be approximately 140 feet, based upon the Station design information provided to date by CTDOT. However, depending on the final design of the Station, Structures 47 and 48 may only need to be in the range of 125-130 feet.**

- **Eversource could design and build the structures in the vicinity of the Station with the expectation that the height of Structures 47 and 48 may need to be increased at a later date, once it is certain that the proposed Station will in fact be built, in a manner similar to the conceptual design now available. Specifically, Structures 46 and 49 would be built as deadend structures with drilled shaft foundations, and Structures 47 and 48 would be designed with flange joints that would allow the height of these structures to be raised if the proposed Station is built. Eversource anticipates that the cost of building this "design flexibility" into the Project would increase Project cost, as compared to simply building Structures 47 and 48 as taller structures as part of the Project. Eversource will be prepared to present cost estimate data to the Council regarding the incremental cost of this option.**

Once CTDOT provides the 30% design of the proposed Station, Eversource would be able to calculate the precise height of Structures 47 and 48 needed to maintain required clearances over the proposed Station. However, because Eversource cannot, at the present time, determine the precise height required for Structures 47 and 48, Eversource proposes that the design of Structures 46 through 49 be deferred to the D&M Plan stage, at which time Eversource expects to have more complete information from CTDOT on the design of the Station and confirmation that CTDOT has moved forward with site acquisition and planning for the proposed Station.

As to the parking garage, Eversource agrees that, until such time as CTDOT can provide actual designs for the proposed parking garage, a definitive route variation at this location cannot be proposed and would not be necessary if Eversource's preferred option of constructing over the proposed Station is approved. If the parking garage is planned and designed before the new line is built, Eversource can propose a route variation via an amendment to the D&M Plan, if that were necessary. If that happens after the line is built, Eversource would need to apply for a modification of the Certificate.

3. As depicted in Volume 1, Exhibit C, Sheets 3 and 4, the proposed underground transmission line is within Route 173 (Willard Avenue) from Spring Street to Shepard Drive. The alignment as depicted does not propose any vaults within the state highway right of way, and as such is acceptable. As the design is further developed, and in the event vaults within the Route 173 segment become necessary, every effort must be made to locate vaults outside the state highway right of way.

EVERSOURCE RESPONSE:

As noted above and as described in the Application, the present Project design includes only three vaults, none of which are proposed within the state right of way. As design of the underground segment of the Project proceeds, Eversource agrees to make every effort to maintain the present design of locating the vaults outside the state highway right of way.

4. As depicted in Volume 1, page 3-15, the typical cross section provides 30" minimum bury depth from existing grade to the top concrete encasement for the duct bank. Per the CTDOT's Utility Accommodation Manual, underground utility facilities shall be installed at a minimum depth of 36" from top of facility to existing pavement or ground surface. Eversource should revise the buried depth to 36" minimum for the segments of the underground installations located within highway right of way.

EVERSOURCE RESPONSE:

Eversource agrees to revise the burial depth to 36" minimum for the 0.14-mile segment of the underground cable system planned for location within the state highway right of way.

5. General Comment: In the course of designing highway projects, CTDOT regularly engages with utility companies to expose and accurately locate their underground facilities in an effort to produce highway designs that minimize the impacts to existing utility facilities. On many occasions, CTDOT has experienced the challenges of utility companies to expose and accurately locate existing buried electric transmission facilities in conjunction with the design of highway projects. We believe that, at least partially, the challenge can be attributed to the use of flow fill to expedite the restoration of trench excavations. The use of flow fill makes locating the limits of the concrete encased duct bank difficult and has resulted in conflicts only discovered once the highway project is in construction. In an effort to avoid costly delays in highway construction projects due to the inability to accurately locate the facility, CTDOT would ask that Eversource be required to develop standard means/methods to accurately locate the facility when installed in a public highway.

EVERSOURCE RESPONSE:

At its meeting with CTDOT, Eversource committed to work with CTDOT to develop a mutually acceptable method to address these concerns. The particular method chosen after these consultations will be described in the D&M Plan. Eversource submits that, in light of the parties' commitment to consult further on this issue, it would be premature for the Council to make any orders in this docket concerning this issue, particularly since standardized means and methods may not be appropriate or optimal in all situations.

Comments from CTDOT Division of Traffic Engineering

6. Coordination will be needed with CTDOT District 1 Maintenance for allowable work hours within CTDOT right of way.

EVERSOURCE RESPONSE:

Eversource will coordinate with CTDOT District 1 Maintenance regarding work hours within CTDOT right of way.

7. Project No. 0155-0174 consists of the painting of Bridge No. 00477, the Amtrak Bridge over SR 529 (New Britain Avenue), in West Hartford. The project is currently in design and is anticipated to be advertised in January 2018 at this time. The project construction will include lane closures. Eversource should coordinate as necessary.

   EVERSOURCE RESPONSE:

   Eversource will coordinate as necessary.

8. Enclosed are signal plans for the two signalized intersections (Intersection Nos. 155-225 and 155-226) in proximity to the proposed overhead crossing of SR 529 (New Britain Avenue) in West Hartford. These signals are part of a closed loop signal system and have a hard wire interconnect between them. It appears this interconnect is underground between CL&P Nos. 2717 and 2718. The interconnect is overhead to the east of CL&P No. 2718. Eversource should insure the interconnect facility is protected from damage during Route construction.

   EVERSOURCE RESPONSE:

   Eversource will insure the interconnect facility is protected from damage during construction.

9. There is an existing at-grade railroad crossing with railroad gate devices at Oakwood Avenue No. 1 in West Hartford. Eversource should ensure the proposed structure (STR No. 40) and overhead crossing will not conflict with the existing railroad devices. The traffic signal plan (Intersection No. 155-264) for this at-grade railroad crossing is enclosed.

   EVERSOURCE RESPONSE:

   Eversource will ensure the proposed structure (STR No. 40) and overhead crossing will not conflict with the existing railroad devices.

   Comment from CTDOT Bureau of Highway Operations

10. An encroachment permit will be required for work within CTDOT right of way. Highway restoration requirements may necessitate milling and paving of the roadway from curb to curb. Restoration requirements will be determined based on the plans submittal to the CTDOT District 1 Maintenance office.

EVERSOURCE RESPONSE:

Eversource will coordinate with the CTDOT District 1 Maintenance office when restoration requirements are determined by that office in connection with the encroachment permit.

Very truly yours,

Anthony M. Fitzgerald

AMF/da
Enclosures

cc: Sohrab Afrazi (CTDOT)
Service List

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546
Phone: (860) 594-3262

August 14, 2017

Ms. Melanie Bachman
Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Dear Ms. Bachman:

Subject: Docket 474 (Eversource)
115-Kilovolt Electric Transmission Facility
Towns of Hartford, Newington and West Hartford

Thank you for your letter dated July 21, 2017, requesting written comments on the above referenced application. The Connecticut Department of Transportation (CTDOT) has reviewed the application and associated documents and offers the following comments:

Division of Facilities and Transit

1. The Eversource preferred route (Route) uses the Amtrak rail corridor for a portion of the installation. As part of the New Haven-Hartford-Springfield (NHHS) Rail program, CTDOT will be adding commuter rail service to the same Amtrak rail corridor. The new service, called the CT***rail*** Hartford Line (Hartford Line), is scheduled to launch in May 2018 and will increase the number of corridor trains passing through the Route area. Initially, the number of trains will increase from 6 to 17 daily roundtrips (22 additional trains) which will operate from 5:30 a.m. until midnight.

    a. The CTDOT is concerned that the proposed Route construction could impact the newly established service at a critical time. We request that Eversource be required to perform the construction in such a manner and at such times that will not interrupt the newly established commuter rail service. This will require the Route construction within the Amtrak corridor be largely performed during night hours (approx. midnight until 5:30 a.m.). With this qualification and subject to the following comments, CTDOT generally endorses the preferred route as proposed.

2. Additionally, as part of the NHHS program, CTDOT is proposing to construct a new railroad station at Flatbush Avenue in the Town of West Hartford (Station). The Station is currently under design and is scheduled for construction in 2020. The 30 percent (30%) design plans for the Station will be available in 1-2 months and should be used by Eversource to provide a design compatible with the Station. The Route in the area of the Station (see Volume 3, Sheet 10) depict steel monopoles No. 47 and No. 48 to be installed at either end of the Station with the aerial transmission lines spanning directly over the overpass and east side pedestrian platform.

The CTDOT has questions and concerns with the Route in the area of the Station as follows:

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concrete encased duct bank difficult and has resulted in conflicts only discovered once the highway project is in construction. In an effort to avoid costly delays in highway construction projects due to the inability to accurately locate the facility, CTDOT would ask that Eversource be required to develop standard means/methods to accurately locate the facility when installed in a public highway.

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8. Enclosed are signal plans for the two signalized intersections (Intersection Nos. 155-225 and 155-226) in proximity to the proposed overhead crossing of SR 529 (New Britain Avenue) in West Hartford. These signals are part of a closed loop signal system and have a hard wire interconnect between them. It appears this interconnect is underground between CL&P Nos. 2717 and 2718. The interconnect is overhead to the east of CL&P No. 2718. Eversource should insure the interconnect facility is protected from damage during Route construction.

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Bureau of Highway Operations

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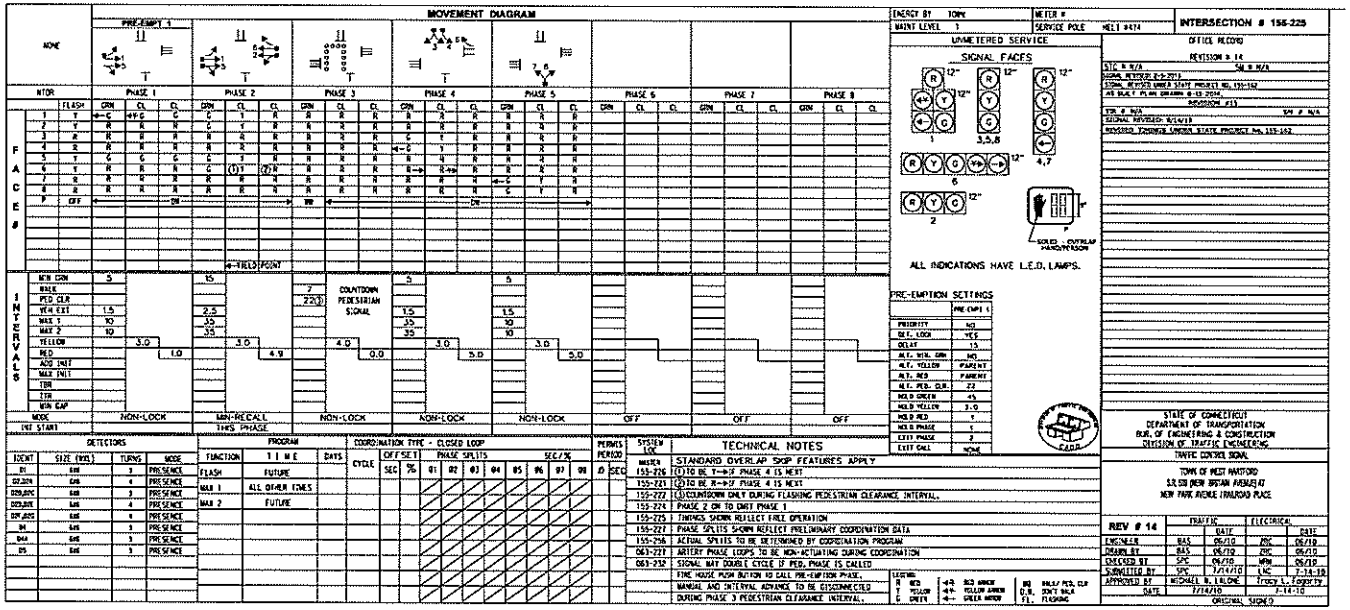
Very truly yours,

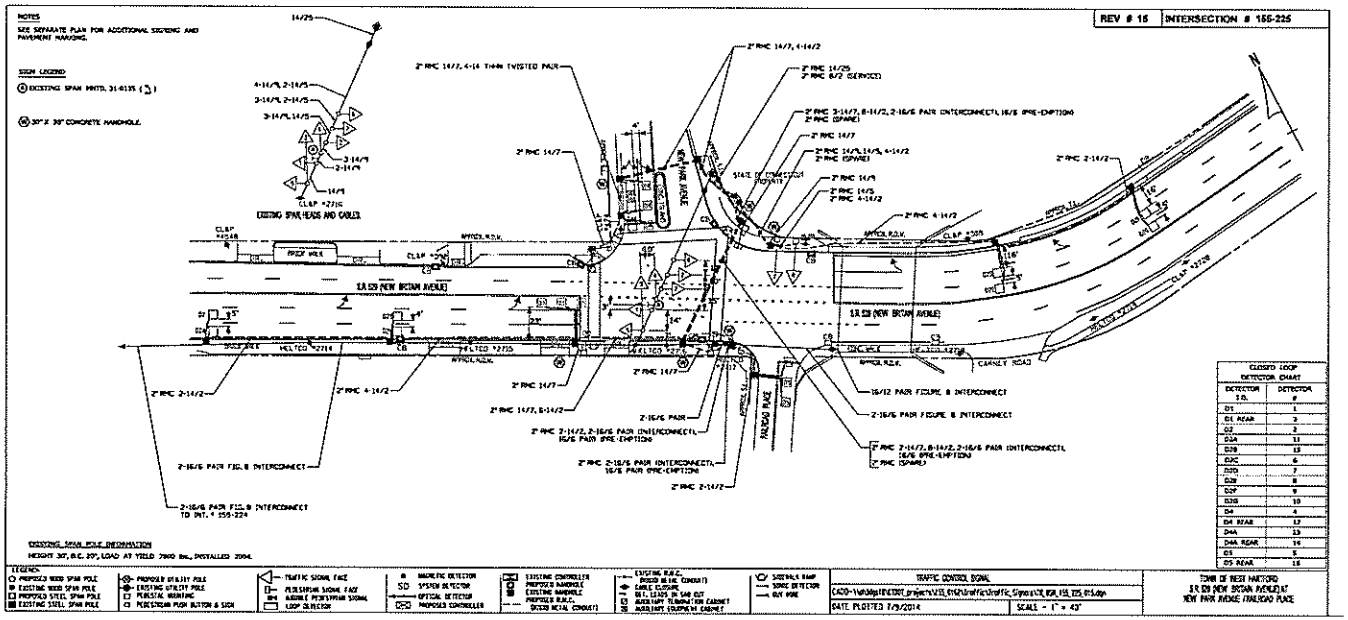
Sohrab Afrazi
2017.08.14
11:35:09-04'00'

Sohrab Afrazi
Transportation Principal Engineer
Utilities Section
Bureau of Engineering and Construction

Enclosures

bcc: Michael G. Piteo:mab
Mark D. Rolfe
Scott A. Hill
Dennis Solensky
John DeCastro
Mark Carlino-Tracy L. Fogerty-Gregory R. Palmer
John E. Bernick
James A. Fallon-Sohrab Afrazi-Michael G. Piteo-Craig Wallace
Christopher J. Bonsignore-Bruce A. Olmstead
S:\Desser\Utilities Section\Clerical Folder\Sohrab Afrazi\Docket 474(Eversource)


MOVEMENT DIAGRAM
NONE
PRE-EMPT 1
PHASE 1
PHASE 2
PHASE 3
PHASE 4
PHASE 5
PHASE 6
PHASE 7
PHASE 8
FACE #
INTERVALS
MIN GRN
WALK
PED CLR
VEH EXT
MAX 1
MAX 2
YELLOW
RED
ADD INIT
MAX INIT
TBR
TBR
MIN GAP
MODE
NON-LOCK
4-YIELD POINT
MIN RECALL
TWO PHASE
COUNTDOWN PEDESTRIAN SIGNAL
ENERGY BY TOWN
METER #
MAINT LEVEL 1
SERVICE POLE HELT #474
UNMETERED SERVICE
SIGNAL FACES
ALL INDICATIONS HAVE L.E.D. LAMPS.
PRE-EMPTION SETTINGS
PRE-EMPT 1
PRIORITY NO
DET. LOCK YES
DELAY 15
ALT. MIN. GRN NO
ALT. YELLOW PARENT
ALT. RED PARENT
ALT. PED. CLR. 22
HOLD GREEN 45
HOLD YELLOW 3.0
HOLD RED 1
HOLD PHASE 1
EXIT PHASE 2
EXIT CALL NONE
INTERSECTION # 155-225
OFFICE RECORD
REVISION # 14
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUR. OF ENGINEERING & CONSTRUCTION
DIVISION OF TRAFFIC ENGINEERING
TRAFFIC CONTROL SIGNAL
TOWN OF WEST HARTFORD
S.R.529 (NEW BRITAIN AVENUE) AT
NEW PARK AVENUE / FARLEY PLACE
DETECTORS
PROGRAM
COORDINATION TYPE - CLOSED LOOP
OFFSET
PHASE SPLITS
SEC/%
TECHNICAL NOTES
STANDARD OVERLAP SKIP FEATURES APPLY
REV # 14
TRAFFIC
ELECTRICAL
ENGINEER BAS 06/10 JSC 06/10
DRAWN BY BAS 06/10 JSC 06/10
CHECKED BY SPC 06/10 MPM 06/10
SUBMITTED BY SPC 7/14/10 MC 7-14-10
APPROVED BY MICHAEL B. LALONE TIMOTHY L. FOGARTY
DATE 7/14/10 7-14-10
ORIGINAL SIGNED


REV # 15
INTERSECTION # 155-225
NOTES
SEE SEPARATE PLAN FOR ADDITIONAL SIGNING AND PAVEMENT MARKING.
SIGN LEGEND
EXISTING SPAN WIRES AND CABLES
S.R.529 (NEW BRITAIN AVENUE)
NEW PARK AVENUE
FARLEY PLACE
CARNEY ROAD
CLOSED LOOP DETECTOR CHART
DETECTOR I.D.
DETECTOR #
EXISTING SPAN POLE INFORMATION
LEGEND
TRAFFIC CONTROL SIGNAL
DATE PLOTTED 7/9/2014
SCALE - 1" = 40'
TOWN OF WEST HARTFORD
S.R.529 (NEW BRITAIN AVENUE) AT
NEW PARK AVENUE / FARLEY PLACE

NONE

MOVEMENT DIAGRAM

PRE-EMPT. 1

ENERGY BY TOWN | ADDRESS #
MAINT LEVEL 2 | SERVICE POLE HELCO 385
UNMETERED SERVICE

INTERSECTION # 155-226

SIGNAL FACES

ALL INDICATIONS HAVE LED LAMPS.

OFFICE RECORD
REVISION #18
TR # N/A SM # N/A
SIGNAL REVISED 12/8/15
RELOCATED PEDESTRIAN SIGNAL WITH ACCESSIBLE AND COUNTDOWN UNDER PROJECT 171-381.
AS-BUILT PLAN DRAWN

NTOR	FLASH	PHASE 1 GRN	CL.	CL.	PHASE 2 GRN	CL.	CL.	PHASE 3 GRN	CL.	CL.	PHASE 4 GRN	CL.	CL.	PHASE 5 GRN	CL.	CL.	PHASE 6 GRN	CL.	CL.	PHASE 7 GRN	CL.	CL.	PHASE 8 GRN	CL.	CL.
1	Y	← G	W	G	G	Y	R	R	R	R	R	R	R	R	R	R							R	R	R
2	Y	G	G	G	G	Y	R	R	R	R	R	R	R	R	R	R							R	R	R
3	Y	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R							R	G	G
4	R	R	R	R	R	R	R	R	R	R	← G	Y	R	R	R	R							R	R	R
5	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R							R	R	R
6	R	R	R	R	R	R	R	R	R	R	R	R	R	← G	Y	R							R	R	R
7	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R							R	R	R
P	OFF	←			DW		→	WW	←		DW		→							←			DW		→

YIELD PT.

INTERVALS	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	PHASE 7	PHASE 8
MIN GRN	5	15	7 ⑦ 20 ⑦	9	5			65
WALK			ACCESSIBLE PEDESTRIAN SIGNAL	3				
PED CLR				20	2.0			
VEH EXT	2.0	2.5		7	7			65
MAX 1	7	35		20				65
MAX 2	7	35		20				
YELLOW	3.0	3.0	4.0	3.0	3.0			3.0
RED	0.0	2.0	0.0	1.5	1.0			2.0
ADD UNIT			COUNTDOWN PEDESTRIAN SIGNAL					
MAX UNIT								
TBR								
TTR								
MIN GAP								
MODE	MIN RECALL	MIN RECALL	NON-LOCK	NON-LOCK	NON-LOCK	OFF	OFF	ON/OMIT
INT START		THIS PHASE						

PRE-EMPTION SETTINGS

	PRE-EMPT 1
PRIORITY	NO
DET. LOCK	YES
DELAY	0
ALT. MIN. GRN	5
ALT. YELLOW	PARENT
ALT. RED	PARENT
ALT. PED. CLR.	20
HOLD GREEN	65
HOLD YELLOW	3.0
HOLD RED	2.0
HOLD PHASE	8
EXIT PHASE	2
EXIT CALL	NONE

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION
DIVISION OF TRAFFIC ENGINEERING
TRAFFIC CONTROL SIGNAL

TOWN OF WEST HARTFORD
SR 529 (NEW BRITAIN AVE.) AT
SOUTH ST. AND PRIVATE DRIVE

REV # 18	TRAFFIC	ELECTRICAL
ENGINEER	09-2014 DATE	09-2014 DATE
DRAWN BY		
CHECKED BY		
SUBMITTED BY		
APPROVED BY		
DATE		

Vanasse Hangen Brustlin, Inc
100 Great Meadow Road, Suite 209
Wethersfield, CT 06109

DETECTORS

IDENT	SIZE (WXL)	TURNS	MODE
D1	6' X 12'	3	PRESENCE
D2/D2A	6' X 6'	4	PRESENCE
D2B/D2C	6' X 6'	4	PRESENCE
D2D/D2E	6' X 6'	4	PRESENCE
D3F/D7D	6' X 6'	4	PRESENCE
D4	FUTURE		
D4A	FUTURE		
D5	5' X 6'	3	PRESENCE
SD1	10' X 6'	3	PRESENCE

PROGRAM

FUNCTION	TIME	DAYS
FLASH	FUTURE	
MAX 1	ALL OTHER TIMES	
MAX 2	FUTURE	
PATTERN 1	0630-0900 1900-2100	M-F
PATTERN 2	0900-1800 2100-1200	SA/SU
PATTERN 3	ALL OTHER TIMES	
PATTERN 4	FUTURE	
PATTERN 5	1500-1830	M-F
FREE	2200-0600	DAILY

COORDINATION TYPE - CLOSED LOOP

CYCLE SEC	OFFSET SEC	OFFSET %	PHASE SPLITS SEC / % #1	#2	#3	#4	#5	#6	#7	#8
75*	0	0	20	55			20	55		
85*	0	0	20	65			20	65		
95*	0	0	20	75			20	75		

PERMIS PERIOD	SYSTEM LOC.	TECHNICAL NOTES
	MASTER	STANDARD OVERLAP SKIP FEATURES APPLY
	155-226	PRE-EMPTION TO BE IN OPERATIVE DURING FLASHING OPERATION.
	155-221	PHASE 2 DN TO OMIT PHASE 1.
	155-222	ARTERY DETECTORS TO BE NON-ACTUATING DURING COORDINATION.
	155-224	FIREHOUSE PUSH BUTTON TO CALL PRE-EMPTION PHASE.
	155-225	① SPEECH MESSAGE ("THE WALK LIGHT IS ON") ONLY DURING PEDESTRIAN WALK INTERVAL.
	155-227	② COUNTDOWN ONLY DURING FLASHING PEDESTRIAN CHANGE INTERVAL.
	155-226	MANUAL AND INTERVAL ADVANCE TO BE DISCONNECTED DURING PHASE 3 PEDESTRIAN
	063-227	CHANGE INTERVAL.
	063-232	

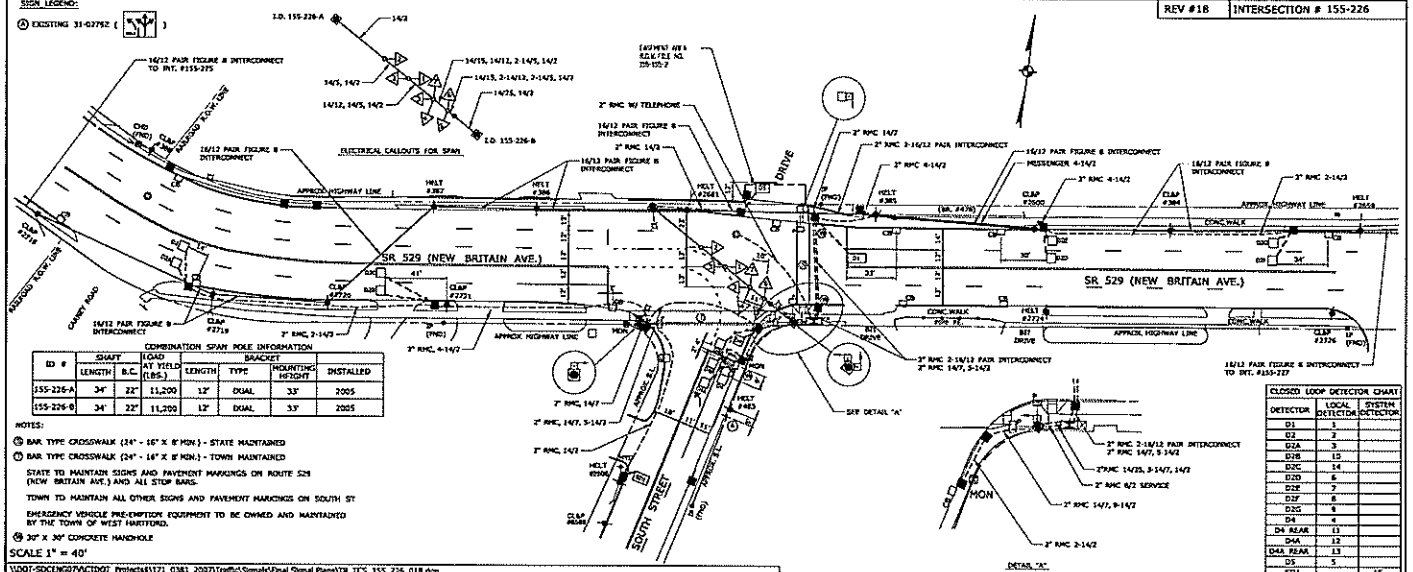
LEGEND:

R	RED	←R	RED ARROW
Y	YELLOW	←Y	YELLOW ARROW
G	GREEN	←G	GREEN ARROW
FL.	FLASHING	WB	WALK/PED. CLR
		DW	DON'T WALK

CONSTRUCTION NOTES :

SIGN LEGEND:

Ⓐ EXISTING 31-07752 ( )



REV #18 | INTERSECTION # 155-226

COMBINATION SPAN POLE INFORMATION

ID #	SHAFT LENGTH	SHAFT B.C.	LOAD AT YIELD (LBS.)	BRACKET LENGTH	BRACKET TYPE	BRACKET MOUNTING HEIGHT	INSTALLED
155-226-A	34'	22"	11,200	12'	DUAL	33'	2005
155-226-B	34'	22"	11,200	12'	DUAL	33'	2005

CLOSED LOOP DETECTOR CHART

DETECTOR	LOCAL DETECTOR	SYSTEM DETECTOR
D1	1	
D2	2	
D2A	3	
D2B	15	
D2C	14	
D2D	6	
D2E	7	
D3F	8	
D2S	9	
D4	4	
D4 REAR	11	
D4A	12	
D4A REAR	13	
D5	5	
SD1	10	15

NOTES:

Ⓢ BAR TYPE CROSSWALK (24" - 16" X 8' MIN.) - STATE MAINTAINED

Ⓣ BAR TYPE CROSSWALK (24" - 16" X 8' MIN.) - TOWN MAINTAINED

STATE TO MAINTAIN SIGNS AND PAVEMENT MARKINGS ON ROUTE 529 (NEW BRITAIN AVE.) AND ALL STOP BARS.

TOWN TO MAINTAIN ALL OTHER SIGNS AND PAVEMENT MARKINGS ON SOUTH ST

EMERGENCY VEHICLE PRE-EMPTION EQUIPMENT TO BE OWNED AND MAINTAINED BY THE TOWN OF WEST HARTFORD.

Ⓗ 30" X 30" CONCRETE HANDHOLE

SCALE 1" = 40'

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NO.	DATE	INIT.	DESCRIPTION
			REVISIONS

REV # 18 | INTERSECTION # 155-226

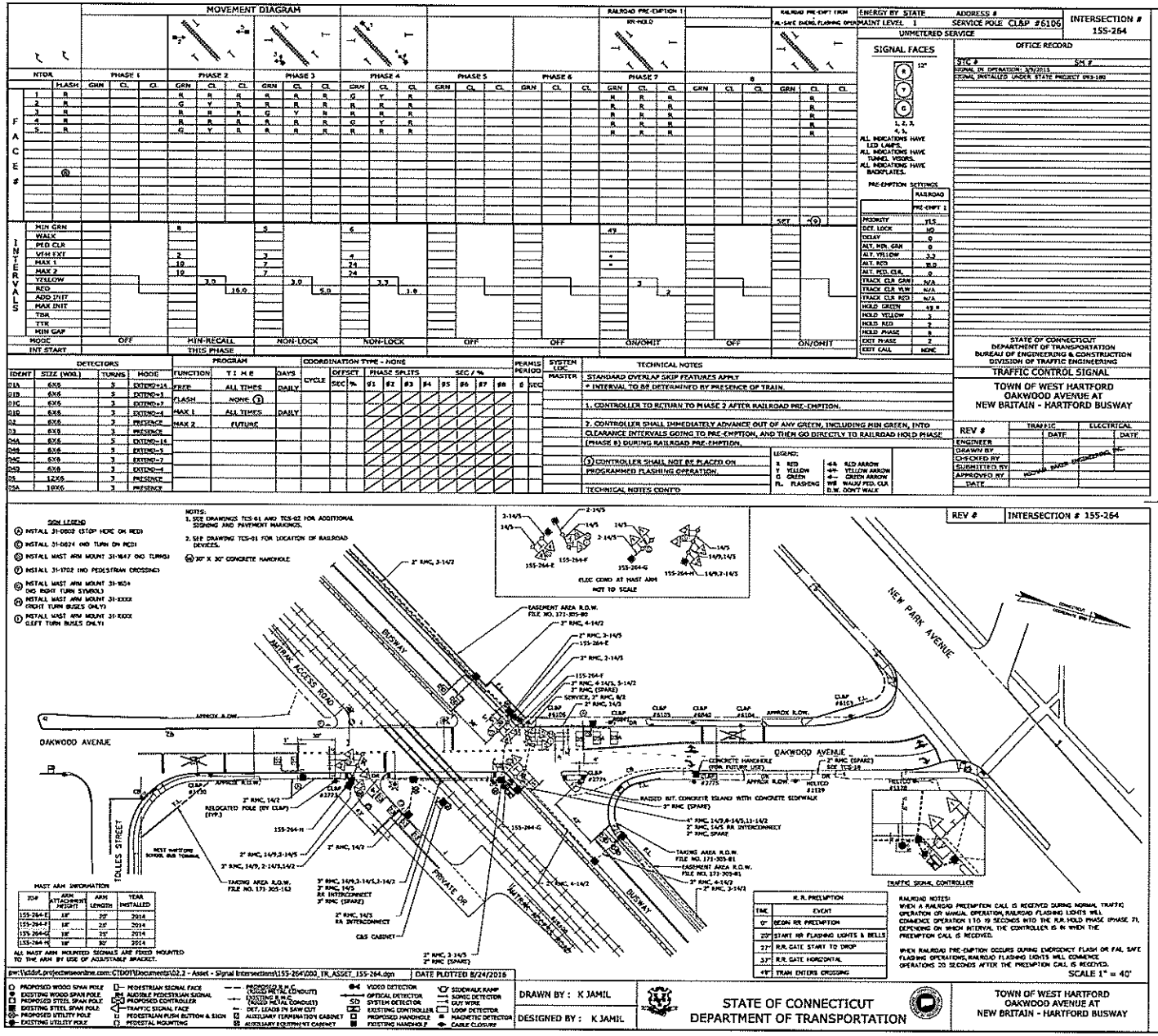
TOWN: TOWN OF WEST HARTFORD
PROJECT NO. 171-381
DRAWING NO. TCS-16
SHEET NO.
DRAWING TITLE: TRAFFIC CONTROL SIGNAL PLAN

DRAWN BY : KA
DESIGNED BY : KA
DATE PLOTTED : 4/20/2016

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

TOWN OF WEST HARTFORD
SR 529 (NEW BRITAIN AVE.) AT
SOUTH ST. AND PRIVATE DRIVE

PROPOSED WOOD SPAN POLE
EXISTING WOOD SPAN POLE
PROPOSED STEEL SPAN POLE
EXISTING STEEL SPAN POLE
PROPOSED UTILITY POLE
EXISTING UTILITY POLE
PEDESTRIAN SIGNAL FACE
DIRECTIONAL ARW. FOR PUSH BUTTON
PROPOSED CONTROLLER
TRAFFIC SIGNAL FACE
PEDESTRIAN PUSH BUTTON & SIGN
PEDESTAL MOUNTING
PROPOSED RUN & CONDUIT (UNDERGROUND)
EXISTING RUN & CONDUIT (UNDERGROUND)
DET. LEADS IN SAW CUT
AUXILIARY TERMINATION CABINET
MISCELLANY EQUIPMENT CABINET
VIDEO DETECTOR
OPTICAL DETECTOR
SYSTEM DETECTOR
EXISTING CONTROLLER
PROPOSED HANDHOLE
EXISTING HANDHOLE
SIDEWALK RAMP
SONIC DETECTOR
GUY WIRE
LOOP DETECTOR
MAGNETIC DETECTOR
CABLE CLOSURE



CONSTRUCTION NOTES :

RAILROAD OPERATIONAL NOTES
RAILROAD PRE-EMPTION (NORMAL OPERATION)

1. TRAIN ENTERS TRACK CIRCUIT, RAILROAD PROVIDES IMMEDIATE PRE-EMPTION CIRCUIT TO THE TRAFFIC SIGNAL CONTROLLER CABINET.
2. THE TRAFFIC SIGNAL CONTROLLER IMMEDIATELY ADVANCES THE SEQUENCE TO THE RAILROAD PRE-EMPT HOLD PHASE (PHASE 8) VIA THE PROPER YELLOW AND RED CLEARANCE INTERVALS.
3. THE TRAFFIC SIGNAL CONTROLLER WILL HOLD IN THE PRE-EMPTION HOLD PHASE (PHASE 8).
4. THE RAILROAD FLASHING LIGHTS, AND BELL(S) WILL COMMENCE OPERATIONS 1 TO 10 SECONDS INTO RAILROAD HOLD PHASE (PHASE 8) DEPENDING UPON WHAT INTERVAL THE TRAFFIC CONTROL SIGNAL IS IN WHEN THE PRE-EMPTION CALL IS RECEIVED. STANDARD RAILROAD TIMING FOR LIGHTS, BELL(S), AND GATES WILL COMMENCE OPERATION A MINIMUM OF 29 SECONDS PRIOR TO THE TRAIN ENTERING THE CROSSING.
5. WHEN THE TRAIN HAS LEFT THE CROSSING AND THE TRACK CIRCUIT, THE RAILROAD DEVICES WILL DEACTIVATE AND THE TRAFFIC CONTROL SIGNAL SHALL RETURN TO NORMAL OPERATION, PHASE 2.

RAILROAD PRE-EMPTION FROM (FAIL-SAFE/EMERGENCY FLASHING OPERATION)

1. TRAIN ENTERS TRACK CIRCUIT, RAILROAD PROVIDES IMMEDIATE PRE-EMPTION CIRCUIT TO THE TRAFFIC SIGNAL CONTROLLER CABINET.
2. THE TRAFFIC SIGNAL IMMEDIATELY CHANGES FROM AN ALL RED FLASHING OPERATION TO A STEADY RED ON ALL TRAFFIC SIGNAL INDICATIONS.
3. THE RAILROAD FLASHING LIGHTS, AND BELLS WILL COMMENCE OPERATION 20 SECONDS AFTER THE PRE-EMPTION CALL IS RECEIVED. STANDARD RAILROAD TIMING FOR LIGHTS, BELLS, AND GATES WILL COMMENCE OPERATION A MINIMUM OF 29 SECONDS PRIOR TO THE TRAIN ENTERING THE CROSSING.
4. WHEN THE TRAIN HAS LEFT THE CROSSING AND THE TRACK CIRCUIT, THE RAILROAD DEVICES WILL DEACTIVATE AND THE TRAFFIC CONTROL SIGNAL SHALL RETURN TO FAIL-SAFE/ EMERGENCY ALL-RED FLASHING OPERATION.

TECHNICAL NOTES (CONT'D)

4. WHEN RAILROAD PRE-EMPTION OCCURS DURING THE CLEARANCE INTERVAL OF ANY PHASE, THE CONTROLLER TO DROP NEXT PHASE CALL FINISH TIMING THE CLEARANCE INTERVALS GOING TO PRE-EMPTION, AND THEN GO DIRECTLY TO RAILROAD HOLD PHASE (PHASE 8).
5. POLICE BOX MANUAL SHALL BE ABLE TO BE PRE-EMPTED BY THE RAILROAD CIRCUIT. THE POLICE BOX MANUAL CONTROL SHALL REMAIN INOPERATIVE FROM THE TIME A PRE-EMPTION CALL IS RECEIVED UNTIL THE CONTROLLER LEAVES THE RAILROAD HOLD PHASE (PHASE 8) AND RETURNS TO PHASE 2 GREEN.
6. ANY CHANGE IN THE CLEARANCE INTERVALS DENOTED ON THIS PLAN MAY REQUIRE A MODIFICATION OF RAILROAD TRACK CIRCUIT.
7. THE CONTROLLER SHALL BE A "MENU DRIVEN" TYPE WITH INTERNAL RAILROAD PRE-EMPTION.
8. FLASHING OPERATION TO REVERT TO "RAILROAD PRE-EMPTION FROM FAIL-SAFE/ EMERGENCY FLASHING OPERATION" UPON RECEIPT OF PRE-EMPTION CALL.
9. RAILROAD DEVICES TO ACTIVATE 20 SECONDS AFTER RAILROAD PRE-EMPTION CALL IS RECEIVED.
10. D1D, D1A, D4D AND D4A TO CALL PHASE 4.
11. A CALL ON PHASE 4 SHALL FORCE OFF MAX TIMINGS ON PHASE 2 AND PHASE 3.

NOTES

1. ROADWAY CONSTRUCTION WILL BE BY THE CONNECTICUT DEPARTMENT OF TRANSPORTATION AND FUTURE MAINTENANCE OF THE ROADWAY APPROACHES SHALL BE RESPONSIBILITY OF THE TOWN OF WEST HARTFORD.
2. TRACK CIRCUIT DESIGN BY AMTRAK.
3. RAILROAD WARNING DEVICES AND CIRCUIT TIMINGS BY AMTRAK IN ACCORDANCE WITH THE CONN. STATE TRAFFIC ADMINISTRATION REGULATIONS.
4. INSTALLATION OF THE RAILROAD PRE-EMPT 14/5 CABLES AND TESTING OF THE PRE-EMPTION WILL HAVE TO BE COORDINATED WITH AMTRAK. CONTACT KEITH HOLT SR. DIRECTOR OPERATION AT 215-349-1028.
5. CONTRACTOR IS RESPONSIBLE FOR NOTIFYING "CALL BEFORE YOU DIG (1 800 922 4455)" PRIOR TO COMMENCING EXCAVATION.

NO.	DATE	INIT.	DESCRIPTION

REVISIONS

MICHAEL BAKER ENGINEERING, INC.

TOWN: WEST HARTFORD

DRAWING TITLE: TRAFFIC SIGNAL LAYOUT

PROJECT NO. 093-180
DRAWING NO. TCS-04
SHEET NO. 14.14.004-1.C79

REV # | INTERSECTION # 155-264