Village of Essex Junction, Vermont
Crescent Connector Project
Draft Environmental Assessment

Appendix A

Agency Coordination Letters and Responses

1962-2012 Celebrating 50 Years

621803F1
April 3, 2013

Addressee…….

Subject: Village of Essex Junction, Vermont
STP 5300 (13)
Crescent Connector Project

Dear Addressee:

The Village of Essex Junction, in cooperation with the Vermont Agency of Transportation and the Chittenden County Regional Planning Commission, has begun studies for a proposed "Crescent Connector." The Village has retained Dubois & King, Inc. to complete an Environmental Assessment for this project.

The first segment of the new Crescent Connector Road will connect Vermont Route 2A with Vermont Route 117, starting just south of the Burlington Branch of the New England Central Railroad line and terminating at Route 117 at the intersection of Railroad Street and Route 117. This segment will cross one set of existing railroad tracks with an at-grade crossing. The second segment will involve upgrades to Railroad Street between Vermont Route 117 and Vermont Route 15. Schematics of these two segments of the Connector are attached.

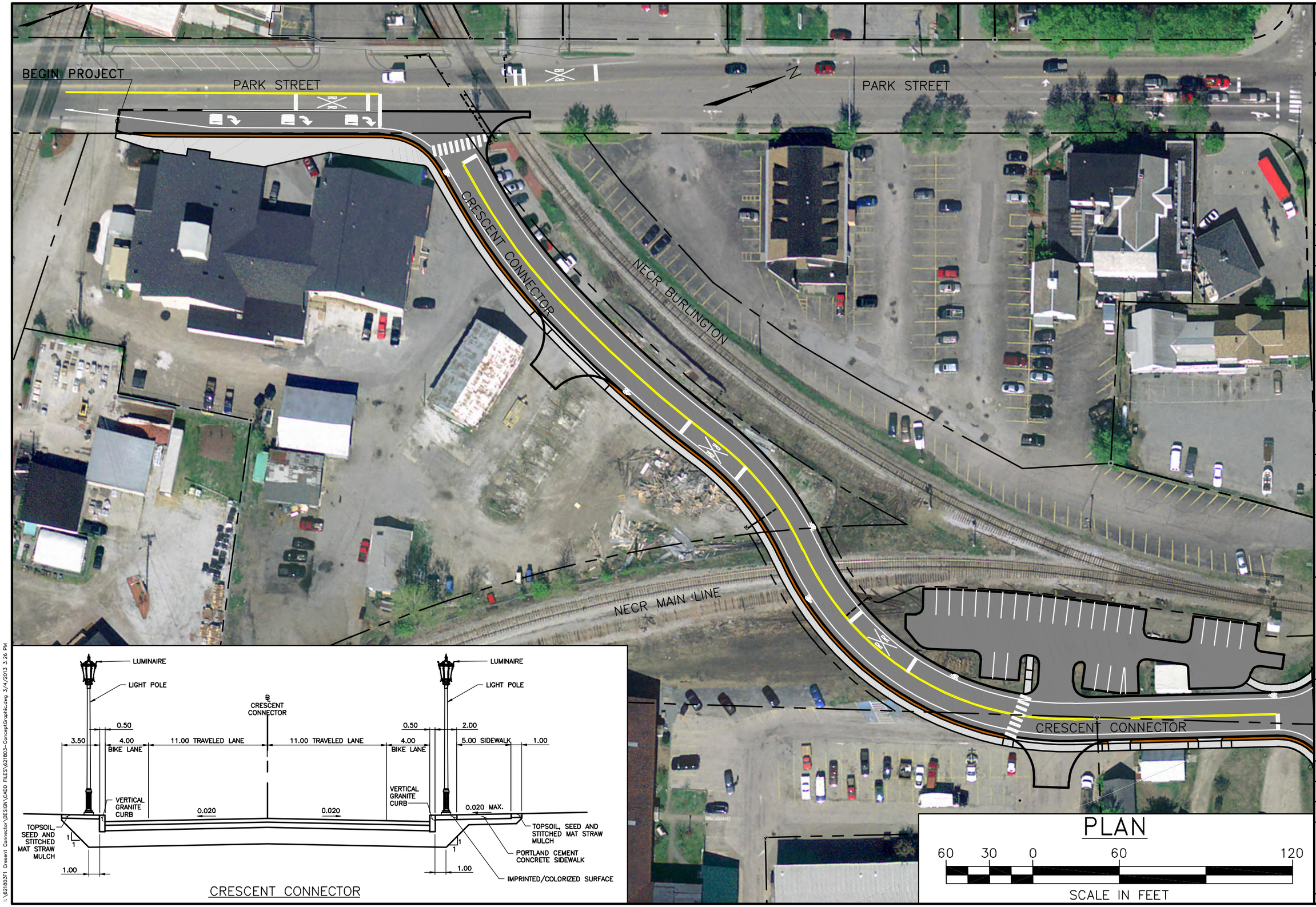
The purpose of this letter is to advise you of this project, and to request that you review the attached schematics and provide initial comment to us regarding any issues you may have. If you have any questions, or require additional information, please do not hesitate to contact me at (802) 728-3376. We appreciate your assistance with this project.

Very truly yours,

DuBOIS & KING, INC.

Evan P. Detrick, P.E.
Manager – Transportation Department

Attachments – Schematics of two phases



CRESCENT CONNECTOR

PLAN

60 30 0 60 120

SCALE IN FEET

DuBois & King inc.
ENGINEERING • PLANNING • MANAGEMENT • DEVELOPMENT
28 NORTH MAIN ST.
RANDOLPH, VT 05060
TEL: (802) 728-3376
FAX: (802) 728-4930
www.dubois-king.com
WILLISTON, VT
SPRINGFIELD, VT
BEDFORD, NH
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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION CONCEPTUAL PLANS

NO.	DATE	DESCRIPTION	BY	CK'D

FOR

VILLAGE OF ESSEX JUNCTION
LINCOLN STREET
ESSEX JUNTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

PLAN SHEET 1

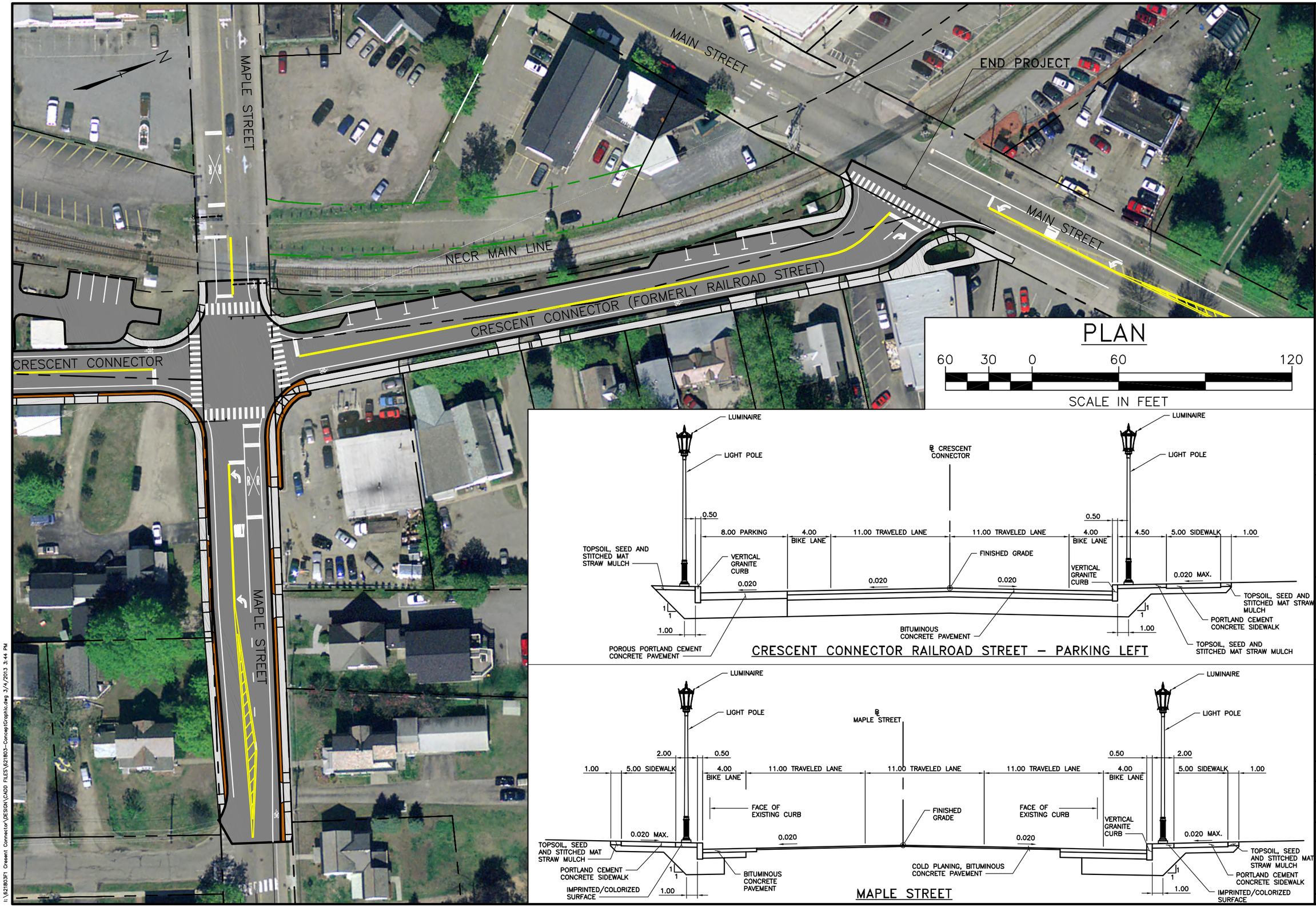
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	621803
PROJ. ENG.	D&K ARCHIVE #
EPD	

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1

SHEET 1 OF 2

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PLAN

60 30 0 60 120

SCALE IN FEET

CRESCENT CONNECTOR RAILROAD STREET – PARKING LEFT

MAPLE STREET

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SPRINGFIELD, VT
BEDFORD, NH
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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION CONCEPTUAL PLANS

NO.	DATE	DESCRIPTION	BY	CK'D

FOR

Village of Essex Junction

VILLAGE OF ESSEX JUNCTION
LINCOLN STREET
ESSEX JUNTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

PLAN SHEET 2

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2

SHEET 2 OF 2

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23.0 AGENCIES AND ORGANIZATIONS

VILLAGE OF ESSEX JUNCTION CRESCENT CONNECTOR - STP 5300(13)

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DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO
ATTENTION OF

8 Carmichael Street, Suite 205
Essex Junction, Vermont 05452
April 25, 2013

DUBOIS & KING, INC
FILE # 621803
SUBJ
APR 29 2013
REFD TO:
NOTED:

Regulatory Division
CENAE-R-61

Mr. Evan Detrick, P.E.
Manager – Transportation Department
DuBois & King, Inc.
P.O. Box 339
Randolph, Vermont 05060

Dear Mr. Detrick:

I have received your April 23, 2013 letter and attachments regarding the Village of Essex Junction's proposed Crescent Connector Project in the Village of Essex Junction, Vermont. I would like to take this opportunity to thank you for your early coordination on this project.

You have asked for my input as to any issues we may have on the project. Although I am not aware of any wetlands or streams along the proposed alignment, there could be some small wetlands along the first segment of the project. A project specific delineation of waters and wetlands within the project corridor should be conducted as the project progresses.

Any placement of fill below the Ordinary High Water mark of any waterway and/or in wetlands would fall within Corps of Engineers jurisdiction. You will need to ensure that wetland and waterway impacts have been minimized to the maximum degree practicable. Alternative alignments and locations to avoid and minimize impacts to waters of the U.S. should be thoroughly investigated.

Again, thank you for providing the opportunity to comment at this early phase of the project. Please call me at 802 872-2893 if you have any questions.

Sincerely,

Martha Abair
Senior Project Manager
Regulatory Division

DuBois & King INC.

Evan Detrick <edetrick@dubois-king.com>

Fwd: For Evan Detrick - re: Crescent Connector

Evan Detrick <edetrick@dubois-king.com> Thu, May 2, 2013 at 11:51 AM
To: Evan Detrick <edetrick@dubois-king.com>

From: **Kamman, Neil** <Neil.Kamman@state.vt.us>
Date: Tue, Apr 30, 2013 at 12:59 PM
Subject: For Evan Detrick - re: Crescent Connector
To: "info@dubois-king.com" <info@dubois-king.com>
Cc: "LaFlamme, Pete" <Pete.LaFlamme@state.vt.us>, "Mears, David" <David.Mears@state.vt.us>, "Desch, George" <George.Desch@state.vt.us>, "Schwer, Chuck" <Chuck.Schwer@state.vt.us>, "Jamieson, Cathy" <Cathy.Jamieson@state.vt.us>, "Kline, Mike" <Mike.Kline@state.vt.us>, "Quackenbush, Alan" <Alan.Quackenbush@state.vt.us>, "Monks, Padraic" <Padraic.Monks@state.vt.us>

Good Day Evan,

The Department is in receipt of your letter dated 4/23 requesting input on prospective issues associated with the Env. Assessment for the subject project. The schematics you provided have been circulated through the Watershed Management and Waste Management and Prevention Divisions of DEC. No specific red flags were noted based upon our evaluation. At this level of cursory review, the project does not appear to have impacts on surface water resources, although the scope of the project indicates the likely need for coverage under the Department's stormwater program. As this is an older urbanized site, there exists the possibility that solid or hazardous waste may be present. If the project encounters any contaminated soils or other regulated waste, this require reporting the Department and proper disposal. Dennis Fekert or Chuck Schwer would be suitable contacts.

With Regards,

Neil C. Kamman

Monitoring, Assessment and Planning Program

VT Department of Environmental Conservation - Watershed Management Division

1 National Life Dr., Building Main 2

Montpelier, VT 05620-3522

Telephone: 802 490-6137

Neil.kamman@state.vt.us

Village of Essex Junction, Vermont
Crescent Connector Project
Draft Environmental Assessment

Appendix B

Essex Junction Crescent Connector Traffic Analysis

RSG INC.
RESOURCE SYSTEMS GROUP, INC.

Transportation and Environment

Crescent Connector
EA Technical Traffic Assessment
Essex Junction, VT



18 October 2013

Prepared by
Resource Systems Group, Inc.
for
DuBois & King, Inc.

Resource Systems Group, Inc.
55 Railroad Row
White River Junction, VT 05001
TEL 802.295.4999 | FAX 802.295.1006
www.rsginc.com

TABLE OF CONTENTS

1.0 INTRODUCTION 1
2.0 PURPOSE AND NEED 1
3.0 REGULATORY APPLICABILITY 1
4.0 EXISTING ENVIRONMENT 2
4.1 Determination of Study Area Peak Hours 4
4.2 Volume Adjustment Factors 4
4.3 Traffic Volume Graphics 5
5.0 IMPACT OF NO ACTION: CONGESTION ANALYSIS 10
5.1 No Action Level-of-Service Results 10
5.1.1 AM Peak Hour 10
5.1.2 PM Peak Hour 11
6.0 PROPOSED ACTION 13
7.0 MITIGATION 13
8.0 CONCLUSION 21

LIST OF FIGURES

Figure 8. Level-of-Service Criteria for Signalized and Unsignalized Intersections 2
Figure 1. Study Area Intersections 3
Figure 2. Peak Hour for the Study Intersections 4
Figure 3: Average Annual Weekday Volume Adjustment Factors (Raw to AAWDT), AM and PM Peak Hours 5
Figure 4. 2015AM Peak Hour No Build 6
Figure 5. 2015 PM Peak Hour No Build 7
Figure 6: 2025 AM Peak Hour No Build Traffic Volumes 8
Figure 7: 2025 PM Peak Hour No Build Traffic Volumes 9
Figure 10. PM Peak Hour No Build LOS Results 12
Figure 12: 2015 AM Peak Hour Build Traffic Volumes 15
Figure 13: 2025 AM Peak Hour Build Traffic Volumes 16
Figure 14: 2015 PM Peak Hour Build Traffic Volumes 17
Figure 15: 2025 PM Peak Hour Build Traffic Volumes 18
Figure 16: AM Peak Hour Build LOS Results 19
Figure 17: PM Peak Hour Build LOS Results 20

1.0 INTRODUCTION

This report documents the approach for estimating peak hour traffic volumes and resulting traffic operational performance before and after the proposed Crescent Connector is constructed (No Build/Build).

An important aspect of the proposed roadway is the need to optimize traffic signal coordination during peak periods. For this reason, the operational performance (i.e. Level of Service analysis) associated with No Build conditions reflects existing time-of-day signal timing plans. The operational performance associated with Build conditions reflects optimized, coordinated signal timing plans.

2.0 PURPOSE AND NEED

The purpose of this project is to create an additional route connecting VT 2A with VT 117 and VT 15 in order to open up three large Village center properties to economic development and facilitate regional travel to destinations south, east and northeast of the Village as well as improve local circulation in the Village center. The additional route will improve operations at the congested Five Corners intersection by reducing vehicular travel through the intersection. The project will also support economic development and employment growth in the Village by providing access to under-developed parcels, and creating the potential for a multimodal transportation center.

Input from the Steering Committee and Local Concerns meeting as well as analyses of existing traffic conditions in the project area identified the following needs:

1. **Improve regional mobility and local connectivity in the Village.** Currently there are no alternate routes linking VT 2A (south of Five Corners) with VT 117 and VT 15 (east and northeast of the Five Corners respectively) that would facilitate regional and local travel by allowing vehicles to bypass the congested Five Corners intersection.
2. **Reduce traffic congestion and increase safety at the Five Corners intersection.** Excessive traffic congestion creates the following conditions:

- Vehicle delays at the Five Corners intersection exceed the threshold for Level of Service (LOS) F on multiple approaches during peak hour travel (AM and PM). The overall intersection LOS is also F during PM peak hour;
- Traffic volumes exceed approach capacities during peak hours of travel (AM and PM);
- Long vehicle queues disrupt access to adjoining business; and
- The segment of the VT2A roadway that includes Five Corners is designated as a High Crash Location by VTrans.

3. **Increase development potential and promote economic growth in the Village center.** Certain prominent, brownfield parcels located in the commercial heart of the Village, particularly those adjacent to the rail lines, have a large amount of underutilized or vacant space that lacks suitable access.-This situation hampers their attractiveness to new businesses, as well as their ability to obtain state and local permits for development.

3.0 REGULATORY APPLICABILITY

The Vermont Agency of Transportation (VTrans) has a level-of-service policy to provide guidance for highway-related improvements. Level-of-service (LOS) is a qualitative measure describing the operating conditions as perceived by motorists driving in a traffic stream. LOS is estimated using the procedures

outlined in the 2000 Highway Capacity Manual. In addition to traffic volumes, key inputs include the number of lanes at each intersection and the traffic signal timing plans. The LOS results are based on the existing lane configurations and control types (signalized or unsignalized) at each study intersection.

The 2000 Highway Capacity Manual defines six qualitative grades to describe the level of service at an intersection. Level-of-Service is based on the average control delay per vehicle. Figure 1 shows the various LOS grades and descriptions for signalized and unsignalized intersections.

Figure 1. Level-of-Service Criteria for Signalized and Unsignalized Intersections

		Unsignalized	Signalized
LOS	Characteristics	Total Delay (sec)	Total Delay (sec)
A	Little or no delay	≤ 10.0	≤ 10.0
B	Short delays	10.1-15.0	10.1-20.0
C	Average delays	15.1-25.0	20.1-35.0
D	Long delays	25.1-35.0	35.1-55.0
E	Very long delays	35.1-50.0	55.1-80.0
F	Extreme delays	> 50.0	> 80.0

The delay thresholds for LOS at signalized and unsignalized intersections differ because of the driver's expectations of the operating efficiency for the respective traffic control conditions. According to HCM procedures, an overall LOS cannot be calculated for two-way stop-controlled intersections because not all movements experience delay. In signalized and all-way stop-controlled intersections, all movements experience delay and an overall LOS can be calculated.

The VTrans policy on level of service is:

- Overall LOS C should be maintained for state-maintained highways and other streets accessing the state's facilities
- Reduced LOS may be acceptable on a case-by-case basis when considering, at minimum, current and future traffic volumes, delays, volume to capacity ratios, crash rates, and negative impacts as a result of improvement necessary to achieve LOS C.
- LOS D should be maintained for side roads with volumes exceeding 100 vehicles/hour for a single lane approach (150 vehicles/hour for a two-lane approach) at two-way stop-controlled intersections.

In practice, levels of service below overall LOS C are often present at intersections around Vermont, particularly in urban areas, such as the Crescent Connector project area. While not all of these intersections can, or should, be expanded to improve vehicular LOS, efforts should be focused on reducing delays and queuing. Improving traffic flow through traffic signalization is usually considered one of the best options for achieving the VTrans LOS policy objectives in constrained urban environments.

4.0 EXISTING ENVIRONMENT

With regard to traffic, the Existing Environment can be described by traffic volumes and traffic performance, as indicated by Level-of-Service.

A total of 7 intersections were incorporated into the traffic analysis in order to appropriately account for shifts in traffic that would be caused by the proposed Crescent Connector:

- VT 15/Summit



- Five Corners
- VT2A/Crescent Connector/Railroad Street
- VT117/Crescent Connector
- VT2A/Iroquois
- VT2a/South/River
- VT15/Railroad Street

The Phase A portion of the Crescent Connector project initially included 6 intersections. The 7th intersection, VT15/Railroad Street, has been added as Phase B. Phase B involves the full reconstruction and partial realignment of Railroad Street, which is the northerly extension of the Crescent Connector around Five Corners.

The 7 study area intersections are shown in Figure 2.

Figure 2. Study Area Intersections



4.1 Determination of Study Area Peak Hours

RSG conducted weekday turning movement counts from 6:45 AM – 6:00 PM on 27 October 2012 and Saturday turning movement counts from 11:00 AM – 1:00 PM on 29 October 2012. The counts were obtained for the 6 initial study intersections. For the Phase B intersection at VT15/Railroad Street, counts were obtained by D.L. Hamlin Civil Engineers in June 2012.

As the weekday and Saturday peak hour varies with each intersection, an overall study area peak hour was established based on the peak hour of the summed network traffic volumes.

Figure 3 shows the peak hour for each individual intersection.

Figure 3. Peak Hour for the Study Intersections

	AM Peak Hour	PM Peak Hour
VT15/S Summit St (RSG 10/12)	7:15-8:15	4:45-5:45
Five Corners (RSG 10/12)	7:30-8:30	4:45-5:45
VT2A/Crescent Connector (RSG 10/12)	7:30-8:30	4:30-5:30
VT2A/Iroquois/Franklin (RSG 10/12)	7:30-8:30	4:45-5:45
VT2A/South St/River St (RSG 10/12)	7:30-8:30	4:30-5:30
VT117/RR St (RSG 10/12)	7:15-8:15	4:30-5:30
VT 15/Railroad St ('09)	7:45-8:45	4:30-5:30

For the Environmental Assessment, the AM peak hour is 7:30-8:30 and the PM peak hour is 4:30-5:30. For the Noise analysis, the AM peak hour is the controlling period. This has been determined from continuous sound monitoring over at least a day. Vehicle speeds are lower in the PM peak, resulting in lower sound levels during that period.

For the Air Quality analysis the PM peak hour is the controlling period due to the highest daily traffic volumes and congestion, and therefore vehicle emissions.

4.2 Volume Adjustment Factors

Raw traffic volumes have been adjusted in two ways in order to measure the traffic, noise, and air quality impacts of the proposed Crescent Connector. First, volumes were adjusted to represent average weekday daily traffic. This adjustment prepares the traffic volumes for a traffic signal optimization/coordination analysis. VTrans temporary counter P6D129 on VT2A in Williston was used to establish these adjustment factors. Figure 4 shows the adjustment factors by intersection.



Figure 4: Average Annual Weekday Volume Adjustment Factors (Raw to AAWDT), AM and PM Peak Hours

	AM	PM
VT 15/Summer Street	1.02	1.05
Five Corners	1.02	1.01
VT2A/Crescent Connector	1.02	1.05
VT2A/Iroquois/Franklin	1.02	1.05
Vt2A/South St./River St.	1.02	1.05
VT117/Railroad Street	1.02	1.05
Vt15/Railroad Street	1.00	1.00

Second, traffic volumes were adjusted for the Build and Design year, determined to be 2015 and 2025, respectively. To obtain Design Year (2025) traffic volumes, a 1.015 adjustment factor was applied.

4.3 Traffic Volume Graphics

AM and PM peak hour No Build (Existing Condition) traffic volumes for the study area were obtained from traffic counts conducted in October 2012 while schools were in session.

No Build volumes represent the balanced raw volumes with the application of adjustments designed to reflect average annual weekday daily traffic (AAWDT). No annual adjustment was deemed necessary to reflect 2015 traffic volumes. Figure 5 and Figure 6 show 2015 traffic volumes, for the No Build, for the AM and PM peak hours, respectively.



Figure 5. 2015AM Peak Hour No Build

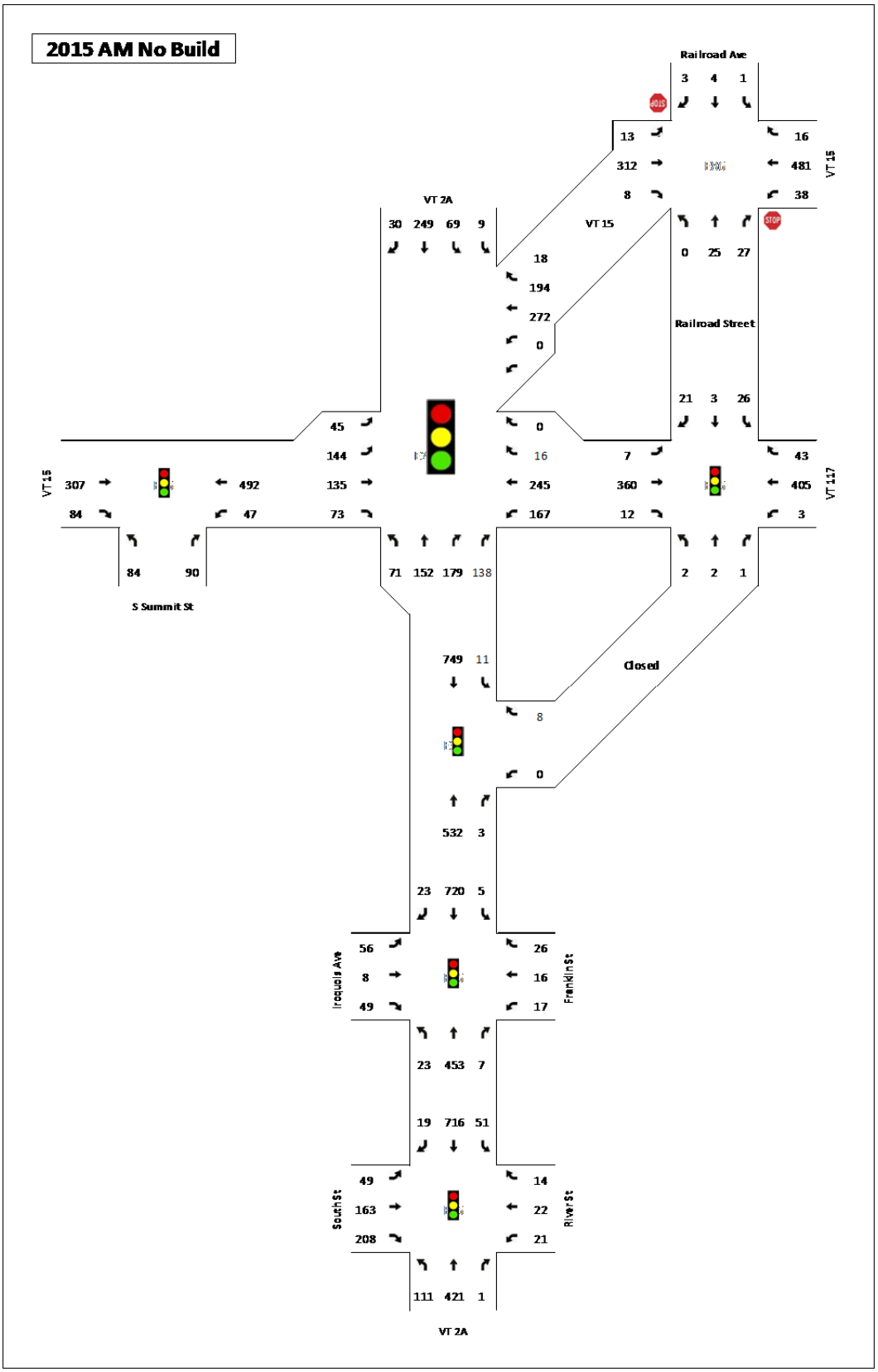


Figure 6. 2015 PM Peak Hour No Build

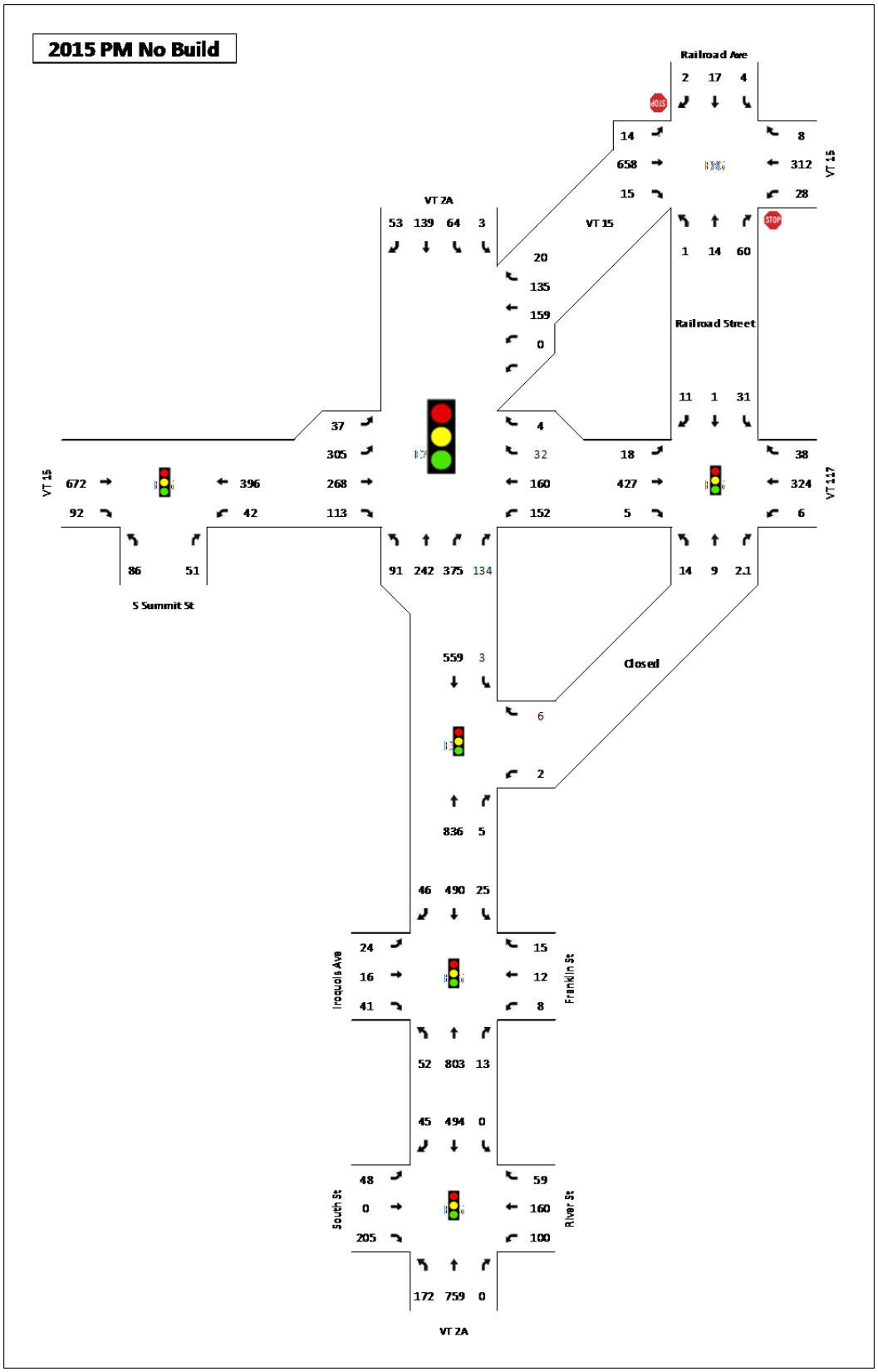


Figure 7: 2025 AM Peak Hour No Build Traffic Volumes

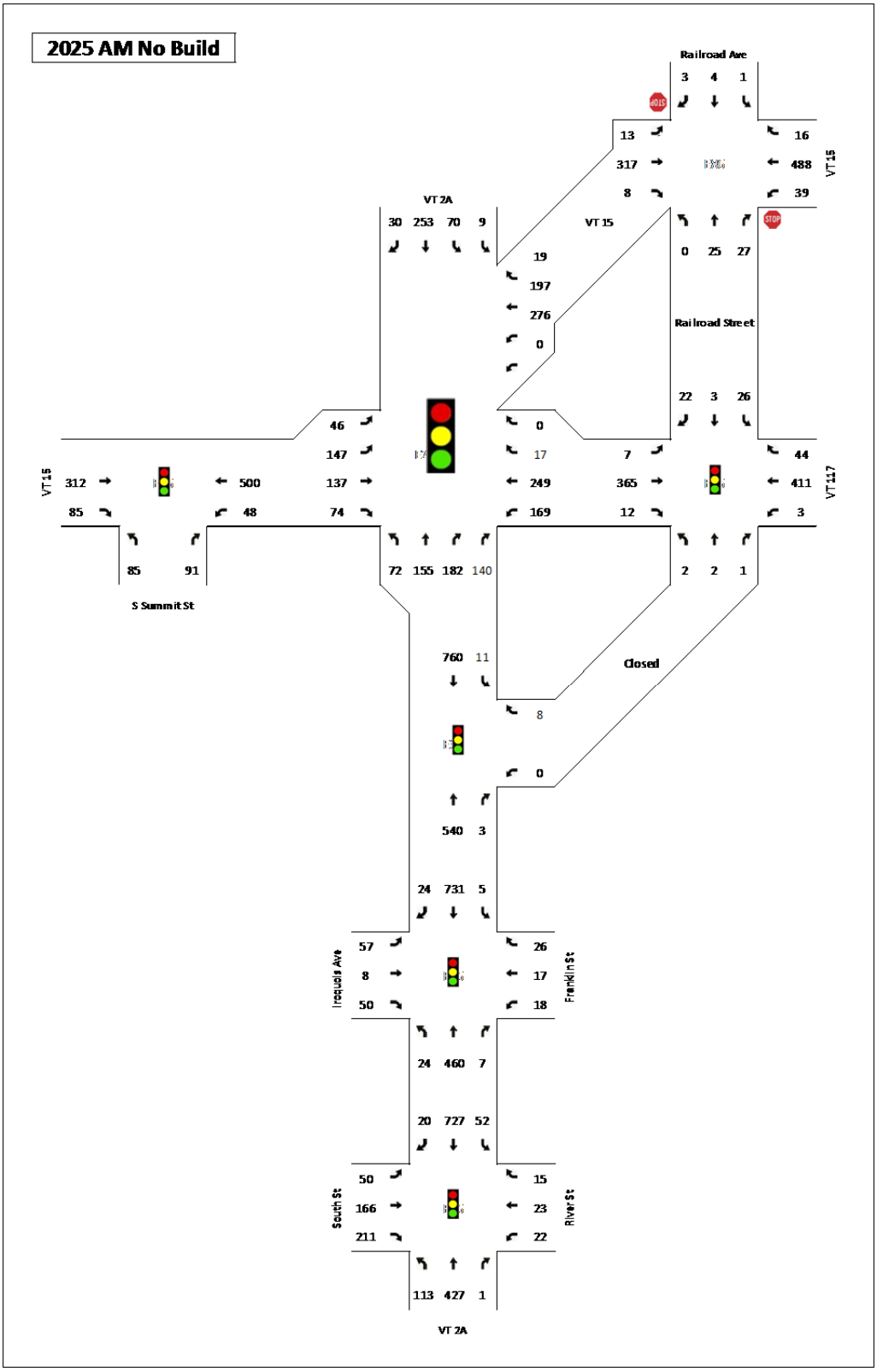
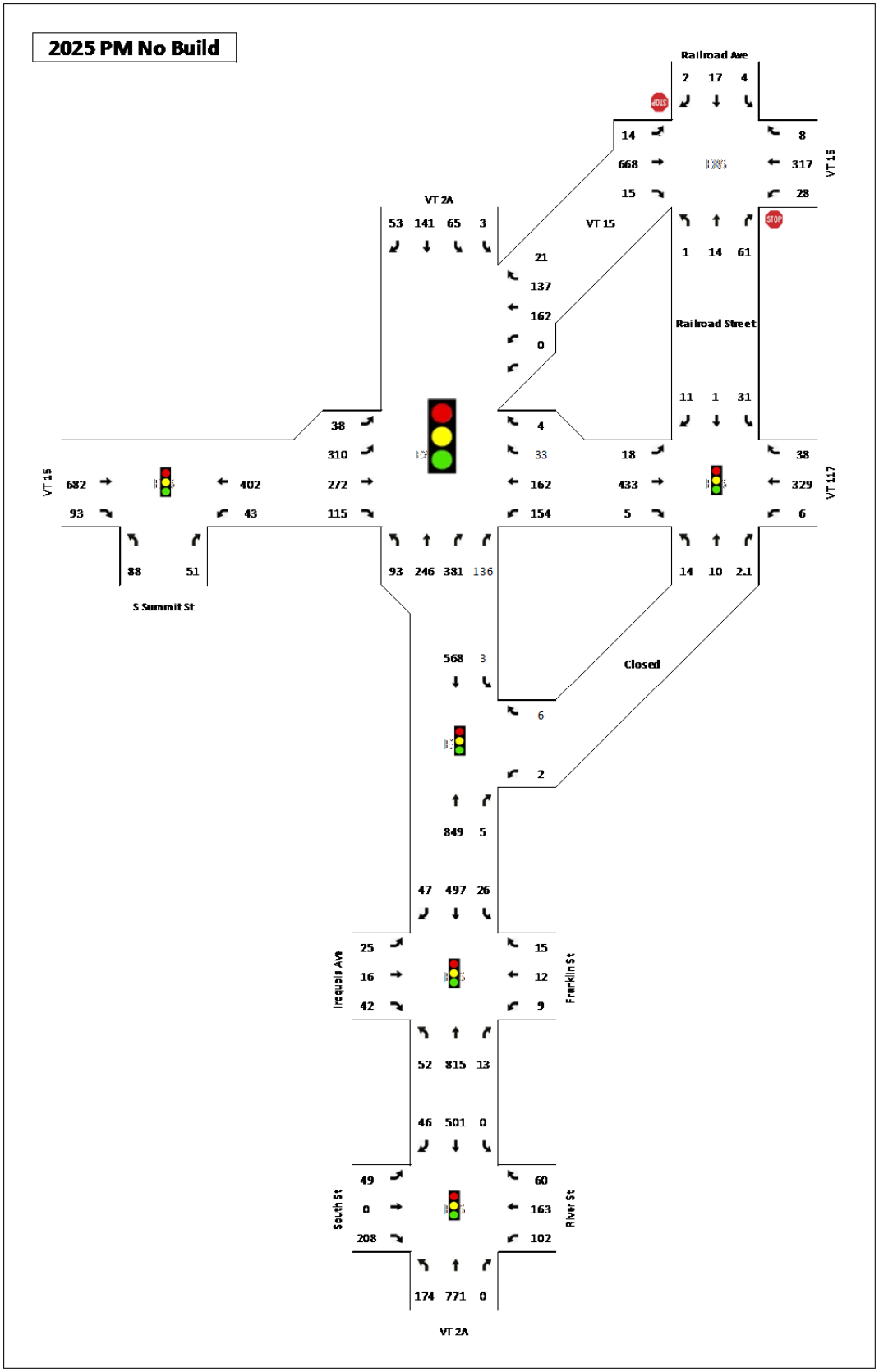


Figure 8: 2025 PM Peak Hour No Build Traffic Volumes



Assumptions: assume no ped calls at VT2A/River Street, currently the ped timing is not included in the cycle length so it gets thrown out of coord any time a ped call occurs; we will model it as having no ped calls.

5.0 IMPACT OF NO ACTION: CONGESTION ANALYSIS

From a traffic standpoint, the Impact of No Action is best described through a congestion analysis utilizing Highway Capacity Manual procedures. This section reports on the results of an LOS analysis under No Action conditions.

5.1 No Action Level-of-Service Results

The Highway Capacity Manual congestion reports within Synchro (v8), a traffic analysis software package from Trafficware, were used to assess congestion at the study intersections. Figure 9 and Figure 10 present the LOS results during the weekday PM and Saturday midday peak hours, respectively.

5.1.1 AM Peak Hour

Figure 9 shows the No Build level-of-service results for the AM peak hour for 2015 and 2025.

Figure 9. AM Peak Hour No Build LOS Results

Signalized Intersections	AM Peak Hour					
	2015 No Build			2025 No Build		
	LOS	Delay	v/c	LOS	Delay	v/c
VT15/S Summit St						
Overall	B	15	0.49	B	15	0.50
EB, along VT 15	B	12	-	B	13	-
WB, along VT 15	A	7	-	A	7	-
NB, exiting S Summit St	D	47	-	D	47	-
Five Corners						
Overall	F	90	0.96	F	93	0.98
EB, from VT 15	F	>100	-	F	>100	-
WB, from VT 117	E	78	-	F	80	-
NB, along VT 2A	D	47	-	D	47	-
SB, along VT 2A	E	76	-	E	77	-
SWB, from VT 15	F	>100	-	F	>100	-
VT2A/Crescent						
Overall	n/a			n/a		
WB, exiting Crescent Connector						
NB, along VT 2A						
SB, along VT 2A						
VT2A/Iroquois/Franklin						
Overall	B	17	0.69	B	17	0.70
EB, from Iroquious Ave	D	44	-	D	44	-
WB, from Franklin St	D	44	-	D	44	-
NB, along VT 2A	B	11	-	B	11	-
SB, along VT 2A	B	15	-	B	15	-
VT2A/South St/River St						
Overall	E	71	1.01	E	75	1.03
EB, from South St	E	56	-	E	58	-
WB, from River St	C	30	-	C	30	-
NB, along VT 2A	C	24	-	C	24	-
SB, along VT 2A	F	>100	-	F	>100	-

Unsignalized Intersections	AM Peak Hour					
	2015 No Build			2025 No Build		
	LOS	Delay	v/c	LOS	Delay	v/c
VT 117/Railroad Street						
EB, along VT 117	A	<1	0.01	A	<1	0.01
WB, along VT 117	A	<1	0.29	A	<1	0.29
SB, exiting Railroad St	C	16	0.13	C	16	0.14
VT 15/Railroad St						
EB, from Ivy Lane	C	20	0.04	C	20	0.04
WB, from Railroad St	C	17	0.12	C	17	0.13
NB Left, from VT 15	A	9	0.01	A	9	0.01
NB Through/Right, along VT 15	A	<1	0.21	A	<1	0.21
SB Left, from VT 15	A	8	0.03	A	8	0.04
SB Through/Right, along VT 15	A	<1	0.32	A	<1	0.33

5.1.2 PM Peak Hour

Figure 10 shows the No Build level of service results for the AM peak hour for 2015 and 2025.

Figure 10. PM Peak Hour No Build LOS Results

Signalized Intersections	PM Peak Hour 2015 No Build LOS	Delay	v/c	2025 No Build LOS	Delay	v/c
VT15/S Summit St						
Overall	C	20	0.69	C	21	0.71
EB, along VT 15	C	23	-	C	24	-
WB, along VT 15	A	7	-	A	8	-
NB, exiting S Summit St	D	48	-	D	48	-
Five Corners						
Overall	F	>100	0.90	F	>100	0.91
EB, from VT 15	F	>100	-	F	>100	-
WB, from VT 117	F	>100	-	F	>100	-
NB, along VT 2A	E	77	-	E	77	-
SB, along VT 2A	F	81	-	F	81	-
SWB, from VT 15	F	84	-	F	85	-
VT2A/Crescent						
Overall	n/a			n/a		
WB, exiting Crescent Connector						
NB, along VT 2A						
SB, along VT 2A						
VT2A/Iroquois/Franklin						
Overall	B	17	0.70	B	18	0.71
EB, from Iroquious Ave	E	65	-	E	65	-
WB, from Franklin St	E	65	-	E	65	-
NB, along VT 2A	B	16	-	B	17	-
SB, along VT 2A	A	10	-	A	10	-
VT2A/South St/River St						
Overall	F	90	0.81	F	92	0.82
EB, from South St	F	>100	-	F	>100	-
WB, from River St	F	91	-	F	90	-
NB, along VT 2A	F	>100	-	F	>100	-
SB, along VT 2A	B	20	-	C	20	-

Unsignalized Intersections	PM Peak Hour 2015 No Build LOS	Delay	v/c	2025 No Build LOS	Delay	v/c
VT 117/Railroad Street						
EB, along VT 117	A	<1	0.02	A	<1	0.02
WB, along VT 117	A	<1	0.23	A	<1	0.23
SB, exiting Railroad St	C	17	0.13	C	17	0.13
VT 15/Railroad St						
EB, from Ivy Lane	D	28	0.14	D	29	0.14
WB, from Railroad St	C	18	0.16	C	18	0.16
NB Left, from VT 15	A	8	0.01	A	8	0.01
NB Through/Right, along VT 15	A	<1	0.43	A	<1	0.44
SB Left, from VT 15	A	9	0.04	A	9	0.04
SB Through/Right, along VT 15	A	<1	0.20	A	<1	0.21

6.0 PROPOSED ACTION

The Village of Essex Junction initiated the Crescent Connector Road Scoping Study in 2010 to address critical congestion in the village center. The preferred alternative of the Crescent Connector includes the following key features:

- A revised road alignment as suggested by the Village consulting engineer (DLHCE).
- Revised northbound right turn lane geometry on VT2A, including necessary modifications to the existing on-street parking on VT2A.
- Parking accommodations along the new Crescent Connector Road, which are nearly identical to those proposed in the previous preferred alternative.
- Revised curb radii for the intersections of the Crescent Connector with VT2A and VT117 to accommodate WB62 tractor trailers.
- Templates for WB-62 tractor trailers were used to ensure these vehicles could negotiate the northbound right turn (VT2A to Connector Rd.) and eastbound right turns (VT117 to Connector Road)—see Figures 1 and 2. Please note that the green lines represent the rear wheels, the yellow lines the front wheels, and the green dashed line the cab overhang.

The revised Crescent Connector Road preferred alternative is shown in Figure 3. A full size drawing of the revised preferred alternative is provided in Appendix 1.

7.0 MITIGATION

The approximate alignment of the proposed mitigation, the Crescent Connector, is shown in Figure 11. The mitigation represented by the proposed action impacts traffic flow and the resulting operational performance for all time periods. For the purposes of the Environmental Assessment, traffic operations during the AM and PM peak hours are quantitatively estimated because these are the hours of greatest traffic flow and impact.

Figure 11: Approximate Alignment of the Crescent Connector



The Crescent Connector will cause the majority of vehicles (75%) traveling to or from VT2A, VT117 and VT15 east of Five Corners will use the new roadway.

Figure 12 - Figure 15 show the estimated project area traffic volumes -- for the 2015 AM peak hour, 2025 AM peak hour, 2015 PM peak hour, and 2025 PM peak hour, respectively -- assuming the Crescent Connector is constructed.

For the AM peak hour in 2015, the Crescent Connector attracts approximately 650 vehicles, removing a similar amount of traffic from Five Corners. For the 2025 AM peak hour, an estimated 660 vehicles use the Crescent Connector.

For the PM peak hour in 2015, over 712 vehicles use the Connector, and this diverted traffic increases slightly in 2025. For both periods, 2015 and 2025, traffic at Five Corners is reduced accordingly.

Figure 12: 2015 AM Peak Hour Build Traffic Volumes

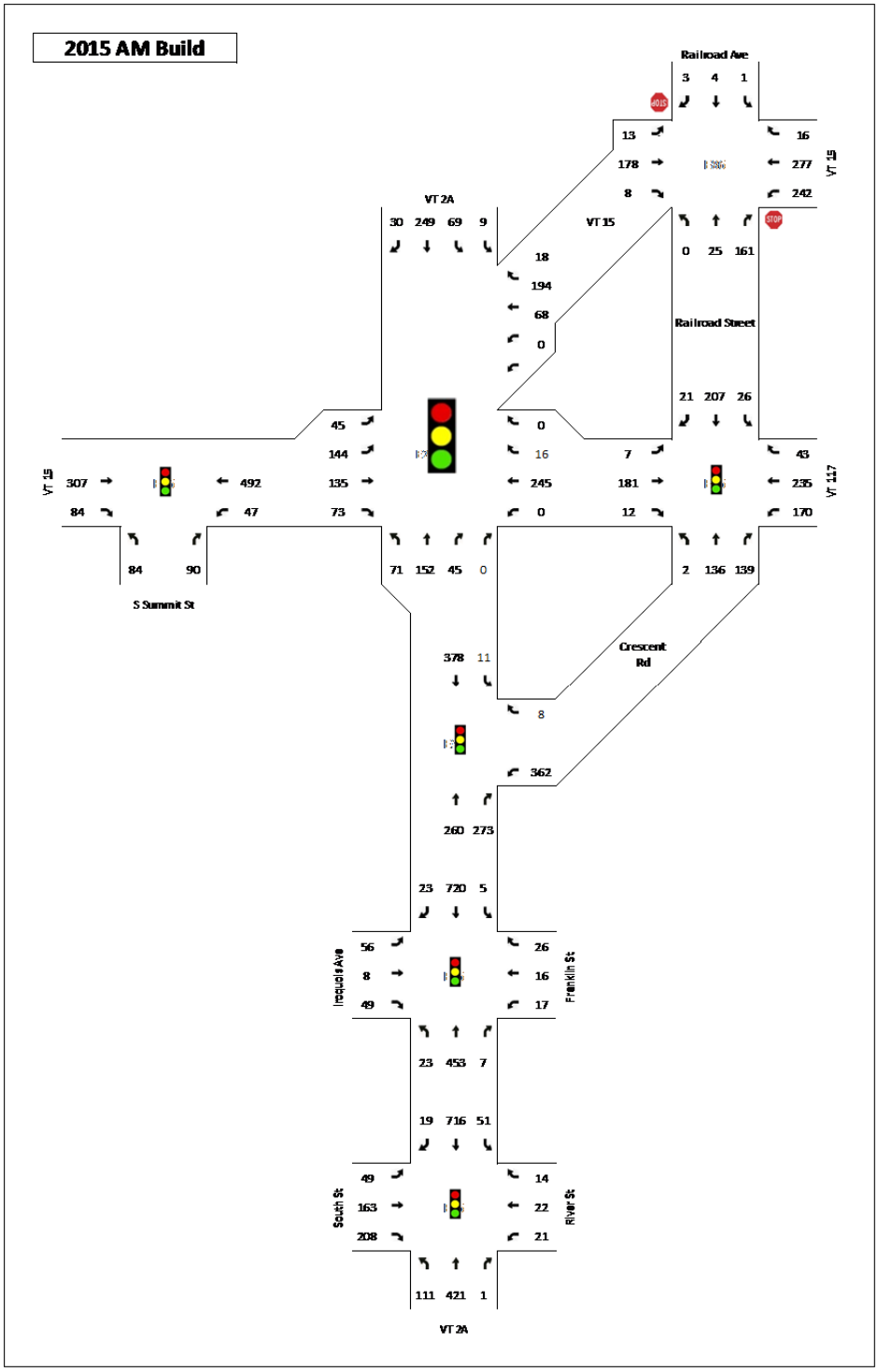


Figure 13: 2025 AM Peak Hour Build Traffic Volumes

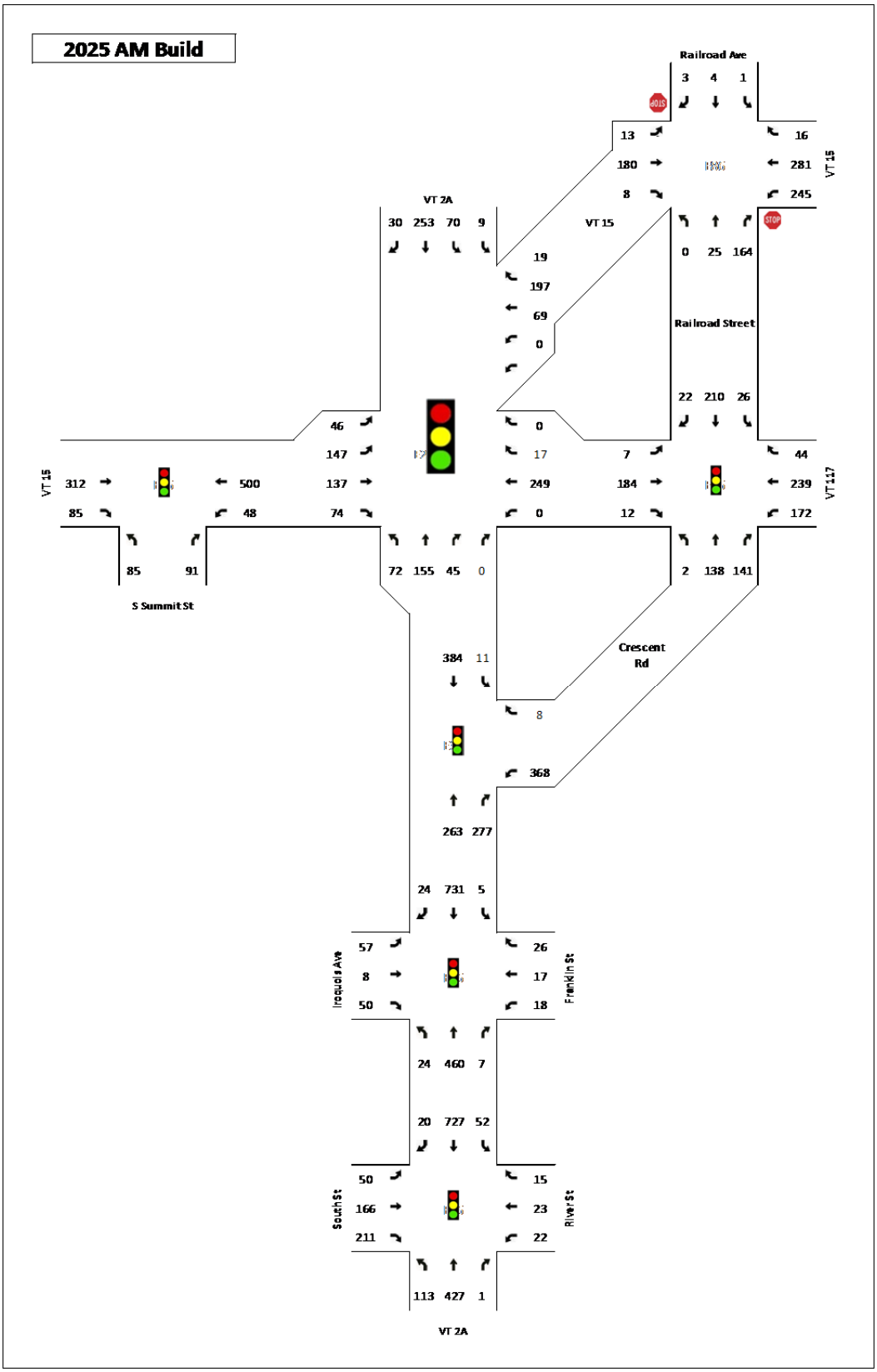


Figure 12 - Figure 15 show the resulting impacts on congestion attributable to the Crescent Connector for the 2015 AM peak hour, 2025 AM peak hour, 2015 PM peak hour, and 2025 PM peak hour, respectively.

For the AM peak hour, the intersection of the Crescent Connector with VT2A and with VT117 operates acceptably at LOS B and A , respectively. The impacts at the Five Corners intersection are positive, in reducing delay and the volume-to-capacity ratio from estimated No Build conditions.

For the PM peak hour, there are also positive impacts on reducing congestion due to the proposed action. For the Five Corners intersection, LOS is improved from F to E. For the VT2A/South/River intersection, LOS is improved from LOS F to D.

Figure 14: 2015 PM Peak Hour Build Traffic Volumes

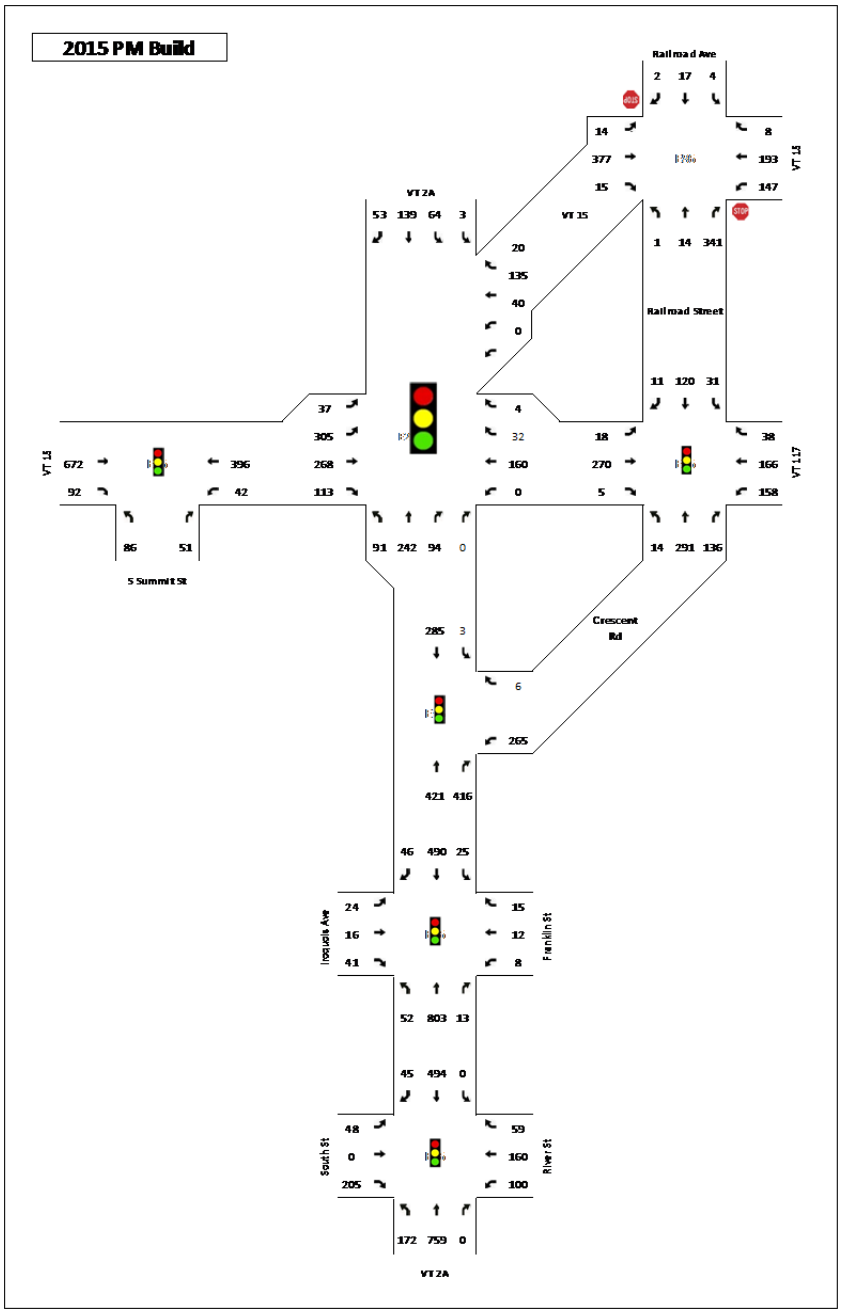


Figure 15: 2025 PM Peak Hour Build Traffic Volumes

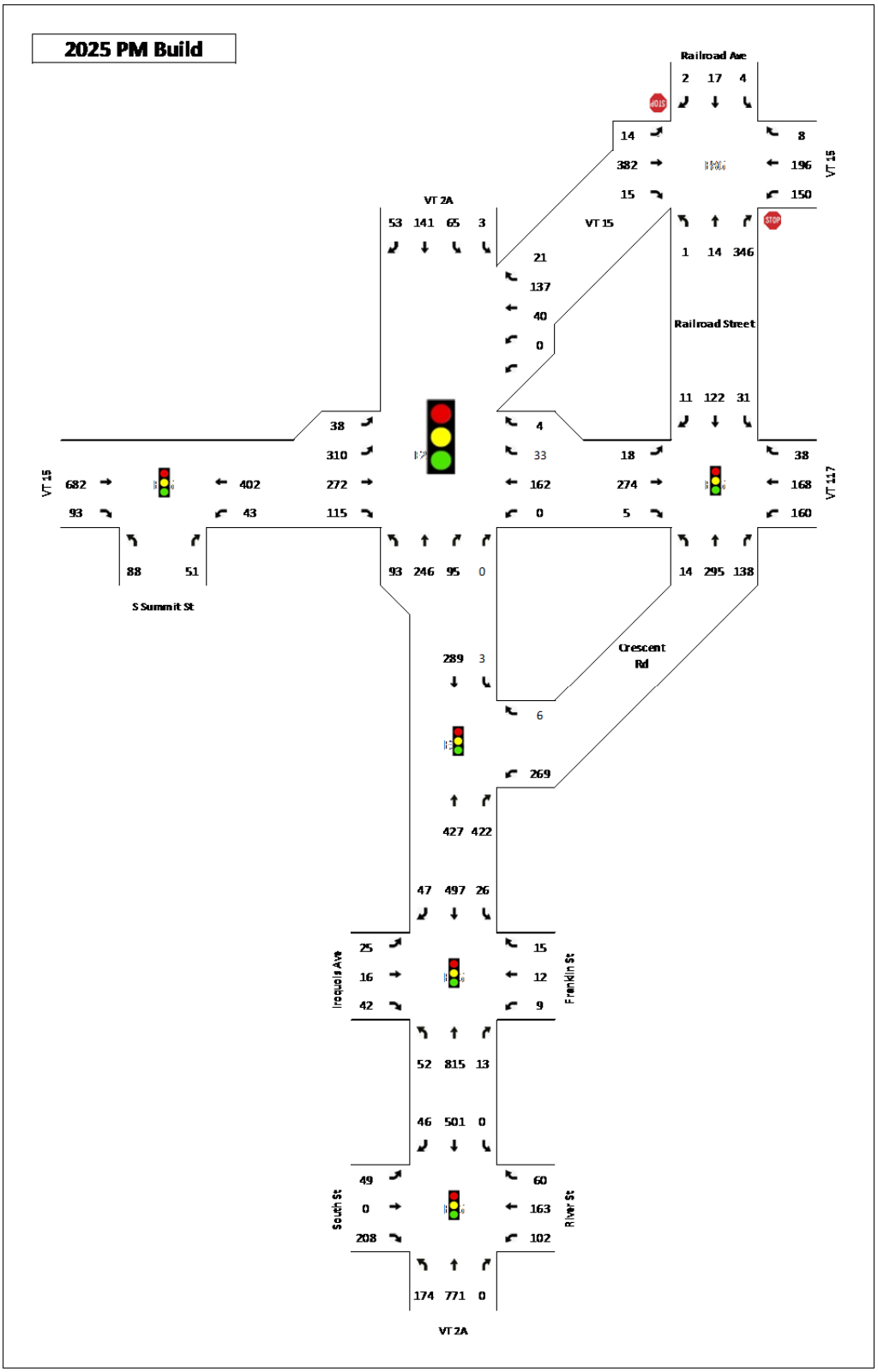


Figure 16: AM Peak Hour Build LOS Results

Signalized Intersections	AM Peak Hour					
	2015 Build			2025 Build		
	LOS	Delay	v/c	LOS	Delay	v/c
VT15/S Summit St						
Overall	B	13	0.58	B	13	0.59
EB, along VT 15	B	14	-	B	14	-
WB, along VT 15	A	7	-	A	7	-
NB, exiting S Summit St	C	29	-	C	30	-
Five Corners						
Overall	E	61	0.85	E	63	0.87
EB, from VT 15	E	59	-	E	62	-
WB, from VT 117	E	73	-	E	77	-
NB, along VT 2A	D	50	-	D	51	-
SB, along VT 2A	E	69	-	E	71	-
SWB, from VT 15	D	52	-	D	52	-
VT2A/Crescent						
Overall	B	16	0.59	B	16	0.60
WB, exiting Crescent Connector	D	41	-	D	41	-
NB, along VT 2A	A	4	-	A	4	-
SB, along VT 2A	A	10	-	A	10	-
VT2A/Iroquois/Franklin						
Overall	B	16	0.75	B	17	0.76
EB, from Iroquious Ave	C	31	-	C	32	-
WB, from Franklin St	C	32	-	C	32	-
NB, along VT 2A	B	16	-	B	17	-
SB, along VT 2A	B	12	-	B	13	-
VT2A/South St/River St						
Overall	D	46	0.91	D	48	0.93
EB, from South St	F	94	-	F	99	-
WB, from River St	D	40	-	D	40	-
NB, along VT 2A	C	32	-	C	32	-
SB, along VT 2A	C	31	-	C	32	-
VT117/RR St						
Overall	A	10	0.61	A	10	0.61
EB, along VT 117	A	9	-	A	9	-
WB, along VT 117	A	9	-	A	9	-
NB, along Crescent Connector	B	11	-	B	11	-
SB, along Crescent Connector	A	10	-	A	10	-

Unsignalized Intersections	AM Peak Hour					
	2015 Build			2025 Build		
	LOS	Delay	v/c	LOS	Delay	v/c
VT 15/Railroad St						
EB, from Ivy Lane	D	26	0.05	D	27	0.05
WB, from Railroad St	C	16	0.38	C	16	0.39
NB Left, from VT 15	A	8	0.01	A	8	0.01
NB Through/Right, along VT 15	A	<1	0.12	A	<1	0.12
SB Left, from VT 15	A	8	0.20	A	8	0.20
SB Through/Right, along VT 15	A	<1	0.19	A	<1	0.19

Figure 17: PM Peak Hour Build LOS Results

Signalized Intersections	PM Peak Hour 2015 Build LOS	Delay	v/c	2025 Build LOS	Delay	v/c
VT15/S Summit St						
Overall	B	16	0.74	B	16	0.76
EB, along VT 15	B	17	-	B	18	-
WB, along VT 15	A	5	-	A	5	-
NB, exiting S Summit St	D	42	-	D	42	-
Five Corners						
Overall	E	63	0.90	E	65	0.91
EB, from VT 15	E	59	-	E	61	-
WB, from VT 117	F	94	-	F	97	-
NB, along VT 2A	E	65	-	E	68	-
SB, along VT 2A	D	55	-	D	55	-
SWB, from VT 15	D	52	-	D	53	-
VT2A/Crescent						
Overall	B	13	0.52	B	13	0.53
WB, exiting Crescent Connector	D	39	-	D	40	-
NB, along VT 2A	A	7	-	A	7	-
SB, along VT 2A	A	6	-	A	7	-
VT2A/Iroquois/Franklin						
Overall	B	11	0.70	B	11	0.71
EB, from Iroquious Ave	E	71	-	E	71	-
WB, from Franklin St	E	66	-	E	67	-
NB, along VT 2A	A	6	-	A	6	-
SB, along VT 2A	A	7	-	A	7	-
VT2A/South St/River St						
Overall	D	47	0.75	D	48	0.77
EB, from South St	F	>100	-	F	>100	-
WB, from River St	F	90	-	F	88	-
NB, along VT 2A	C	23	-	C	23	-
SB, along VT 2A	B	17	-	B	17	-
VT117/RR St						
Overall	B	12	0.65	B	12	0.65
EB, along VT 117	B	12	-	B	12	-
WB, along VT 117	B	11	-	B	11	-
NB, along Crescent Connector	B	14	-	B	14	-
SB, along Crescent Connector	A	10	-	A	10	-

Unsignalized Intersections	PM Peak Hour 2015 Build LOS	Delay	v/c	2025 Build LOS	Delay	v/c
VT 15/Railroad St						
EB, from Ivy Lane	E	40	0.20	E	42	0.20
WB, from Railroad St	C	23	0.68	C	24	0.69
NB Left, from VT 15	A	8	0.01	A	8	0.01
NB Through/Right, along VT 15	A	<1	0.25	A	<1	0.25
SB Left, from VT 15	A	9	0.14	A	9	0.15
SB Through/Right, along VT 15	A	<1	0.13	A	<1	0.13

8.0 CONCLUSION

The Proposed Action, the Crescent Connector, is estimated to divert significant traffic from the Five Corners intersection, a severely congested intersection in the No Action case. The Crescent Connector reduces delay and improves Level of Service at the Five Corners intersection, as well as at other project study area intersections such as VT 15/Summit, VT2A/Iroquois, and VT2A/South/River for all time periods analyzed.



Village of Essex Junction, Vermont
Crescent Connector Project
Draft Environmental Assessment

Appendix C

Crescent Connector Air Quality Assessment

RSG INC.
RESOURCE SYSTEMS GROUP, INC.

Environmental
Permitting &
Management Practice



Crescent Connector
Air Quality Environmental Assessment
Essex Junction, VT

12 September 2013

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TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 PURPOSE AND NEED 2

3.0 REGULATORY APPLICABILITY 2

3.1 FHWA Qualitative MSAT Analysis 3

4.0 EXISTING ENVIRONMENT 4

5.0 IMPACT OF NO ACTION 7

6.0 PROPOSED ACTION 8

7.0 MITIGATION 8

8.0 CONCLUSION 8

LIST OF FIGURES

Figure 1: Approximate Alignment of the Crescent Connector 1

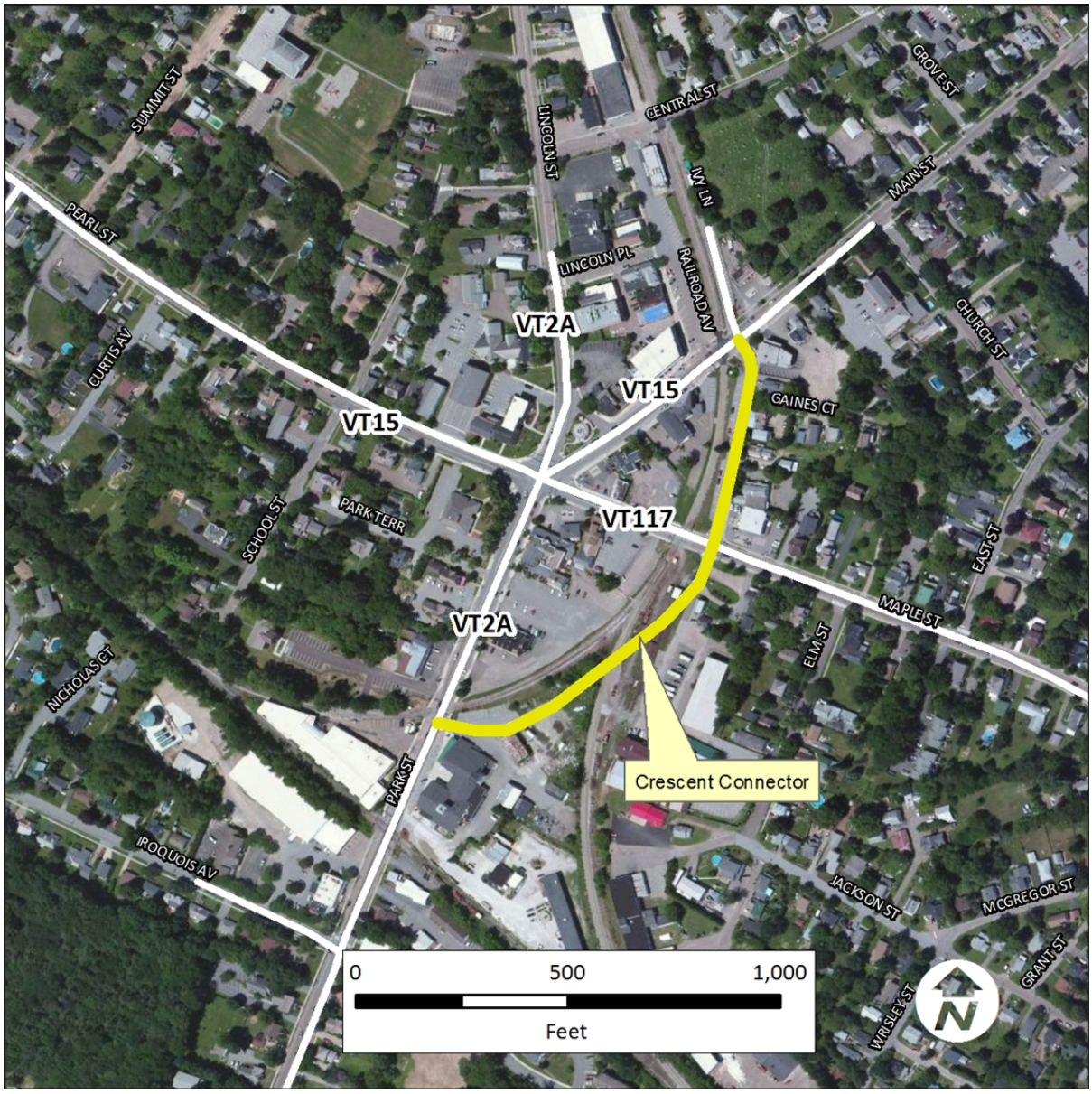
Figure 2: Maximum Vermont Background Concentrations Expressed as a Percent of the NAAQS 6

1.0 INTRODUCTION

RSG, Inc. was retained to conduct an Air Quality Environmental Assessment (EA) of the proposed Crescent Connector project, located in the Five Corners area in the Village of Essex Junction, Vermont. An EA must be performed because this project does not qualify for a Categorical Exclusion. As will be discussed in this report, the outcome of the study is a Finding of No Significant Impact (FONSI). RSG also conducted Environmental Assessments for Traffic and Noise which are described in separate reports.

Figure 1 shows the study area and the Crescent Connector Alignment.

Figure 1: Approximate Alignment of the Crescent Connector



This report is composed of the following sections:

1. Purpose and Need
2. Regulatory Applicability
3. Existing Environment
4. Impact of no Action
5. Proposed Action
6. Mitigation
7. Conclusion

2.0 PURPOSE AND NEED

The purpose of this project is to create an additional route connecting VT 2A with VT 117 and VT 15 in order to open up three large Village center properties to economic development and facilitate regional travel to destinations south, east and northeast of the Village as well as improve local circulation in the Village center. The additional route will improve operations at the congested Five Corners intersection by reducing vehicular travel through the intersection. The project will also support economic development and employment growth in the Village by providing access to under-developed parcels, and creating the potential for a multimodal transportation center.

Input from the Steering Committee and Local Concerns meeting as well as analyses of existing traffic conditions in the project area identified the following needs:

- **Improve regional mobility and local connectivity in the Village.** Currently there are no alternate routes linking VT 2A (south of Five Corners) with VT 117 and VT 15 (east and northeast of the Five Corners respectively) that would facilitate regional and local travel by allowing vehicles to bypass the congested Five Corners intersection.
- **Reduce traffic congestion and increase safety at the Five Corners intersection.** Excessive traffic congestion creates the following conditions:
  - Vehicle delays at the Five Corners intersection exceed the threshold for Level of Service (LOS) F on multiple approaches during peak hour travel (AM and PM). The overall intersection LOS is also F during PM peak hour;
  - Traffic volumes exceed approach capacities during peak hours of travel (AM and PM);
  - Long vehicle queues disrupt access to adjoining business; and
  - The segment of the VT2A roadway that includes Five Corners is designated as a High Crash Location by VTrans.
- **Increase development potential and promote economic growth in the Village center.** Certain prominent, brownfield parcels located in the commercial heart of the Village, particularly those adjacent to the rail lines, have a large amount of underutilized or vacant space that lacks suitable access. This situation hampers their attractiveness to new businesses, as well as their ability to obtain state and local permits for development.

3.0 REGULATORY APPLICABILITY

The National Environmental Policy Act (NEPA) was signed into law on January 1, 1970. NEPA requires federal agencies to examine environmental impacts of their actions. NEPA regulations are found in the Code of Federal Regulations (40 C.F.R. Parts 1500-1508). This project must satisfy NEPA requirements because it will receive federal funding.



The Vermont Agency of Natural Resources (ANR) regulates air pollution, but no longer regulates air pollution from mobile sources, such as cars, trucks, motorcycles, etc from transportation facilities. Therefore, an air pollution control permit is not required from the ANR.

The Federal Highway Administration (FHWA) regulates air toxics from mobile sources. In particular, FHWA regulates a category of pollutants called Mobile Source Air Toxics (MSATS), which includes the following priority pollutants: acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. The FHWA was contacted by phone to discuss the project and to identify what level of MSAT analysis is required for this project. According to FHWA, a "qualitative analysis" is required given the level of annual average daily traffic projected for this project. The qualitative analysis is provided below.[1] FHWA guidance for conducting MSAT studies can be found in a December 6, 2012 memorandum located at: http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/aqintguidmem.cfm.

3.1 FHWA Qualitative MSAT Analysis

For each alternative in this EA, the amount of MSAT emitted would be proportional to the vehicle miles traveled (VMT), as well as vehicle hours traveled (VHT), assuming other variables such as fleet mix are the same for each alternative. The proposed project will reduce congestion thereby reducing VHT. However VMT will increase, but not at a rate which will overcompensate for emissions reductions created by reductions in VHT and increases in vehicle fleet efficiency.

Emissions will likely be lower than present levels in the design year and beyond as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by 72 percent from 1999 to 2050. This is based on an FHWA analysis using EPA's MOVES 2010b model where emissions were estimated over time assuming a 102% increase in VMT.[2] Table 1 is a table from the FHWA study and shows how emissions decline from 2010 to 2050 with VMT increases.

Table 1: Table from FHWA Study Showing Emission Reductions despite VMT Increases

	Pollutant Emissions (tons) and Vehicle-Miles Traveled (VMT) by Calendar Year									Change
Pollutant / VMT	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2010 to 2050**
Acrolein	1,244	805	476	318	258	247	264	292	322	-74%
Benzene	18,995	10,195	6,765	5,669	5,386	5,696	6,216	6,840	7,525	-60%
Butadiene	3,157	1,783	1,163	951	890	934	1,017	1,119	1,231	-61%
Diesel PM	128,847	79,158	40,694	21,155	12,667	10,027	9,978	10,942	11,992	-91%
Formaldehyde	17,848	11,943	7,778	5,938	5,329	5,407	5,847	6,463	7,141	-60%
Naphthalene	2,366	1,502	939	693	607	611	659	727	802	-66%
Polycyclics	1,102	705	414	274	218	207	219	240	262	-76%
VMT	3	3	4	4	4	5	5	5	6	102%

Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so

[1] Personal communication with Victoria Martinez. October 31, 2012.

[2] More information about this study can be obtained at the following internet address: http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/aqintguidmem.cfm

great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future throughout the study area.

4.0 EXISTING ENVIRONMENT

For the purposes of this report, the existing environment is the air quality at the Five Corners area in Essex Junction. The term "air quality" refers to the concentrations of air pollutants in ambient air at Five Corners. The level of pollutant concentrations is a function of a number of factors, including long range transport of emissions from out-of-state pollution sources and local pollution sources, such as motor vehicles, building heating devices (boilers), and local commercial/industrial activities.

The air quality, or the healthiness of the air, can be assessed by comparing ambient pollutant concentrations with the National Ambient Air Quality Standards (NAAQS), which were promulgated by US EPA to protect human health and welfare.[1] Primary standards were set to protect human health including people with respiratory or cardiovascular illnesses and other sensitive human populations such as the elderly and children. Secondary standards were set to protect human welfare by preventing reduced atmospheric visibility, damage to vegetation and soils and damage to building exteriors. The pollutants covered by the NAAQS include carbon monoxide (CO), lead, nitrogen dioxide (NO_2), ozone (O_3), Particulate Matter (PM10), Particulate Matter (PM2.5), and sulfur dioxide (SO_2).

The following should be noted in light of the discussion about NAAQS pollutants:

1. While lead is officially a NAAQS pollutant, it is not emitted from vehicles given the implementation of unleaded gasoline. It is therefore not considered in surface transportation emission estimates. Consequently, lead emissions were not estimated for this study.
2. Ozone is a secondary pollutant. It is formed as nitrogen dioxide and volatile organic compounds react in the presence of sunlight. Therefore, ozone emissions were not estimated for this study. Nitrogen dioxide and volatile organic compound emissions were estimated.

All areas in the country are required to meet the NAAQS. More stringent analysis and pollution control requirements may apply to regions in "non-attainment" with the NAAQS. Vermont is currently in attainment with all NAAQS. Vermont pollutant concentrations are further described later in this section.

[1] http://www.epa.gov/air/criteria.html



Table 2 summarizes the current NAAQS. The table provides the primary and secondary standard, the time period or "averaging time" for each standard, the NAAQS level for each pollutant which may either not be exceeded or may be exceeded on a very limited basis, and a description of how each NAAQS is mathematically expressed.

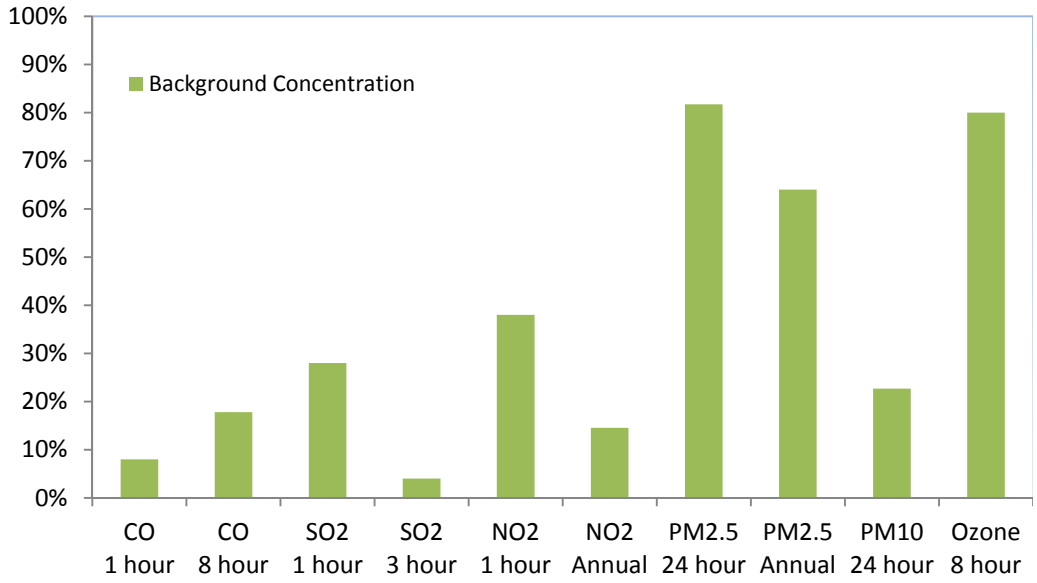
Table 2: Summary of National Ambient Air Quality Standards (NAAQS)

Pollutant		Primary/ Secondary	Averaging Time	NAAQS Level	Description
Carbon Monoxide (CO)		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3 month average	0.15 µg/m^3	Not to be exceeded
Nitrogen Dioxide (NO_2)		primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb	Annual Mean
Ozone (O_3)		primary and secondary	8-hour	0.075 ppm	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution	$PM_{2.5}$	primary	Annual	12 µg/m^3	annual mean, averaged over 3 years
		secondary	Annual	15 µg/m^3	annual mean, averaged over 3 years
		primary and secondary	24-hour	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year



The Vermont Agency of Natural Resources (ANR) measures ambient air pollutant concentrations at five permanent air monitoring stations in Burlington, Rutland, Bennington, Underhill, and West Dover to assess its compliance (attainment) with the NAAQS. The highest or "design concentration" for all of the stations for each pollutant is summarized below in Figure 2. The design concentration for a given pollutant is approximately the highest concentration measured over a multi-year period; therefore, concentrations of that pollutant are likely lower than the design concentration value on any given day. As shown below, all concentrations are less than 100% of their respective NAAQS signifying compliance with the NAAQS. Therefore, it can be concluded Vermont is in attainment with the NAAQS with a margin of safety.

Figure 2: Maximum Vermont Background Concentrations Expressed as a Percent of the NAAQS



Lead concentrations are not shown because Vermont is not required to monitor lead by the EPA. This is because Vermont does not exceed population thresholds for monitoring lead and because Vermont does not have any significant sources of lead such as lead smelters.

Air quality modeling (dispersion modeling) of vehicle emission is not required for this project because Vermont is in attainment with the NAAQS. This type of modeling is also referred to as a "hot spot analysis" and can be required for certain air pollutants for projects proposed in "non-attainment areas" having air pollutant concentrations exceeding the NAAQS.

5.0 IMPACT OF NO ACTION

With respect to air quality, the Impact of No Action can be estimated with the EPA MOVES 2010b model. MOVES was used to estimate emissions from motor vehicles and is a "guideline model" or a model which EPA requires for a given type of air quality study. The database on which MOVES is based contains emission factors for the current year and successive future years. A MOVES analysis was conducted to estimate vehicle emissions and energy use for the 2015 no-build, 2015 build, 2025 no-build, and 2025 build scenarios. The time period modeled was the PM peak hour of traffic, which is also called the evening rush hour. The preferred alternative was modeled for build scenarios. The Impact of No Action can be described by the change in motor vehicle emissions from the 2015 to 2025 no-build scenarios.

Table 3: Change in Vehicle Pollutant Emissions and Energy from 2015 to 2025 (PM Peak Hour of Traffic)

Category	2015 No Build	2025 No Build	Percent Change
CO (grams)	21,944	13,206	-40%
$CO2_e$ (grams)	3,591,389	3,278,804	-9%
MSATS (grams)	101	40	-60%
NOx (grams)	6,012	2,260	-62%
PM10 (grams)	568	441	-22%
PM2.5 (grams)	315	185	-41%
SO2 (grams)	49	44	-10%
VOC (grams)	1,181	433	-63%
Energy (kJ)	49,616,751	45,358,975	-9%

As shown above, there are decreases in vehicle emissions and energy use despite an increase in vehicle miles traveled. This is due to expected increases in vehicle fuel economy. These findings are consistent with those of the EPA, who, as previously discussed, used MOVES to estimate national MSAT emission trends using MOVES 2010b.



6.0 PROPOSED ACTION

The impacts of the Proposed Action (preferred alternative) were also estimated with MOVES for 2015 and 2015. As shown in the tables below, there are reductions in vehicle emissions and energy between the no-build and build scenarios. These reductions occur from reductions in vehicle hours traveled through the study area created by improved traffic flow.

Table 4: Change in Vehicle Pollutant Emissions, Energy from 2015 No-Build to Build Scenarios (PM Peak Hour of Traffic)

Category	No Build	Build	Percent Change
CO (grams)	21,944	19,593	-11%
CO2 (grams)	3,591,389	2,789,477	-22%
MSATS (grams)	101	73	-28%
NOx (grams)	6,012	5,072	-16%
PM10 (grams)	568	433	-24%
PM2.5 (grams)	315	247	-22%
SO2 (grams)	49	38	-22%
VOC (grams)	1,181	869	-26%
Energy (kJ)	49,616,751	38,572,334	-22%

Table 5: Change in Vehicle Pollutant Emissions, Energy from 2025 No-Build to Build Scenarios (PM Peak Hour of Traffic)

Category	No Build	Build	Percent Change
CO (grams)	13,206	12,558	-5%
CO2 (grams)	3,278,804	2,579,936	-21%
MSATS (grams)	40	30	-24%
NOx (grams)	2,260	1,905	-16%
PM10 (grams)	441	336	-24%
PM2.5 (grams)	185	144	-22%
SO2 (grams)	44	35	-21%
VOC (grams)	433	344	-21%
Energy (kJ)	45,358,975	35,708,797	-21%

7.0 MITIGATION

No mitigation is required for this project to meet the NAAQS. The preferred alternative has the potential to reduce emissions and therefore improve air quality in the study area.

8.0 CONCLUSION

An Air Quality Environmental Assessment was performed for the proposed Crescent Connector project. The assessment included a review of existing ambient air quality in Vermont, an estimate of vehicle emissions and energy use using the EPA MOVES 2010b model, and a qualitative MSAT analysis. No significant impacts were identified in this assessment.

Village of Essex Junction, Vermont
Crescent Connector Project
Draft Environmental Assessment

Appendix D

Crescent Connector EA Technical Noise Assessment

RSG INC.
RESOURCE SYSTEMS GROUP, INC.

Environment, Energy & Acoustics



Crescent Connector
EA Technical Noise Assessment
Essex Junction, VT

31 July 2013

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TABLE OF CONTENTS

1.0 INTRODUCTION 1
2.0 PURPOSE AND NEED 1
3.0 REGULATORY APPLICABILITY 2
3.1 Local 2
3.2 State 2
4.0 EXISTING ENVIRONMENT 4
4.1 Site Description 4
4.2 Determination of Study Area Peak Hour – Long Term Monitoring 6
4.3 Calibration of No Build Model – Short Term Monitoring 6
4.4 2013 Existing Noise Levels 8
5.0 PROJECT IMPACTS 8
6.0 NOISE ABATEMENT 9
7.0 CONSTRUCTION IMPACTS 9
8.0 SUMMARY AND CONCLUSIONS 10
APPENDIX A: SITE MAPS WITH RECEIVER LABELS 13
APPENDIX B: MODEL RESULT COMPARISONS BY YEAR AND RECEIVER 16

LIST OF TABLES

Table 1: VTrans Noise Policy — Noise Abatement Criteria 3
Table 2: TNM Model Calibration Results 7
Table 3: Sensitive Receptors Equaling and Approaching their Noise Abatement Criteria – 2013 Existing Conditions 8
Table 4:Worst Case Receptor, No-Build Scenarios 2015/2025 8
Table 5: Worst Case Receptors Comparison, Build/ No-Build Scenarios 2015 8
Table 6: Worst Case Receptors Build Scenarios 2015/2025 9
Table 7: Worst Case Receptors Comparison, Build/ No-Build Scenarios 2025 9
Table 8: Maximum Sound Levels from Various Construction Equipment 10

LIST OF FIGURES

Figure 1: Locations of Sensitive Receptors and Primary Activity Categories around the Project 5
Figure 2: Average Sound Levels at Railroad Street 6
Figure 3: Short Term Monitoring Map (July, 2013) 7
Figure 4: Overall Site Map with Receiver Labels (R Prefix– Category B or C, C Prefix – Category E) 13
Figure 5: Site Map East with Receiver Labels (R Prefix– Category B or C, C Prefix – Category E) 14
Figure 6: Site Map West with Receiver Labels (R Prefix– Category B or C, C Prefix – Category E) 15



1.0 INTRODUCTION

This noise analysis technical report describes the noise impacts and abatement of the proposed Crescent Connector project in the Village of Essex Junction, Vermont. This report has been prepared according to the FHWA regulation 23 CFR part 772, Procedures for Abatement of Highway Traffic and Construction Noise, as implemented in the July 2011 VTrans Noise Analysis and Abatement Policy.

The Crescent Connector project consists of the addition of a new roadway connecting Park Street (VT 2A) and Maple Street (VT 117), with right-of-way improvements along Railraod Street, in Essex Junction, Vermont. It is intended to improve mobility in the Village, reduce traffic congestion and improve safety at the adjacent "Five Corners" intersection, and promote economic growth in the Village.

This study will report on existing sound levels, modeled traffic noise levels during both 2015 and 2025 no-build and build scenarios, and it will assess the feasibility and reasonableness of noise abatement and discuss construction noise mitigation.

2.0 PURPOSE AND NEED

The purpose of the Crescent Connector project is to create an additional route connecting VT 2A with VT 117 and VT 15 in order to open up three large Village center properties to economic development and facilitate regional travel to destinations south, east and northeast of the Village as well as improve local circulation in the Village center. The additional route will improve operations at the congested Five Corners intersection by reducing vehicular travel through the intersection. The project will also support economic development and employment growth in the Village by providing access to under-developed parcels, and creating the potential for a multimodal transportation center.

Input from the Steering Committee and Local Concerns meeting as well as analyses of existing traffic conditions in the project area identified the following needs:

1. **Improve regional mobility and local connectivity in the Village.** Currently there are no alternate routes linking VT 2A (south of Five Corners) with VT 117 and VT 15 (east and northeast of the Five Corners respectively) that would facilitate regional and local travel by allowing vehicles to bypass the congested Five Corners intersection.
2. **Reduce traffic congestion and increase safety at the Five Corners intersection.** Excessive traffic congestion creates the following conditions:

- Vehicle delays at the Five Corners intersection exceed the threshold for Level of Service (LOS) F on multiple approaches during peak hour travel (AM and PM). The overall intersection LOS is also F during PM peak hour;
- Traffic volumes exceed approach capacities during peak hours of travel (AM and PM);
- Long vehicle queues disrupt access to adjoining business; and
- The segment of the VT2A roadway that includes Five Corners is designated as a High Crash Location by VTrans.

3. **Increase development potential and promote economic growth in the Village center.** Certain prominent, brownfield parcels located in the commercial heart of the Village, particularly those adjacent to the rail lines, have a large amount of underutilized or vacant space that lacks suitable access. This situation hampers their attractiveness to new businesses, as well as their ability to obtain state and local permits for development.

3.0 REGULATORY APPLICABILITY

3.1 Local

There are no quantitative noise standards pertaining to highway noise in the village of Essex Junction, VT.

3.2 State

In July 2011, VTrans established a "Noise Analysis and Abatement Policy" "for the purpose of "ensuring statewide uniformity in the analysis of transportation generated noise, the identification of potential impacts of transportation projects, and implementation of noise abatement measures that are determined to be reasonable and feasible…". The policy implements the requirements of FHWA 23 CFR Part 772, regulating the noise impacts of federally funded projects.

The Policy includes the following provisions:

1) Coordination with federal, state, and local governmental authorities during development of VTrans projects.
2) Public hearings and meetings to inform and solicit feedback from affected parties in reaching determinations regarding the feasibility and reasonableness of noise abatement measures.
3) Guidance on evaluating noise impacts, including
    a. Identifying locations to be evaluated for noise impacts
    b. Background sound monitoring
    c. Sound propagation modeling
4) Guidelines for when noise abatement needs to be considered. These include:
    a. Do the future project noise levels increase peak hour pre-construction noise levels "substantially"? A substantial increase is equal to or greater than a 15 dB increase in sound pressure level at any given sensitive receptor.
    b. Do the project noise levels approach or exceed the noise abatement criteria outlined in Table 1?
    c. Is the noise abatement feasible? This is based on engineering considerations such as:
        i. Can it be built given the topography of the area?
        ii. Will it provide at least 5 dB of noise attenuation?
        iii. Are there other technical constraints such as drainage, snow removal, maintenance, etc?
    d. Is the noise abatement reasonable? This is a more subjective criteria and is based on:
        i. Can a 5 dB noise reduction for at least the majority of sensitive receptors be attained?
        ii. How many receivers will benefit?
        iii. Is the cost reasonable? A reasonable cost is defined as not to exceed $40,000 based on a cost of $30 per square foot of barrier.
        iv. What is the opinion of the neighborhood to be impacted?
        v. Are there differences in the types of developments or level of impacts in different areas?



vi. Are there negative environmental impacts of the noise abatement?

Table 1: VTrans Noise Policy — Noise Abatement Criteria

Activity Category	Activity[1] Leq (h)	Criteria[2] L10 (h)	Evaluation Location	Activity Description
A	57	60	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[3]	67	70	Exterior	Residential.
C[3]	67	70	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	55	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[3]	72	75	Exterior	Hotels, motels, offices, restaurants/ bars, and other developed lands, properties, or activities not included in A–D or F.
F	None	None	---	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	None	None	---	Undeveloped lands that are not permitted.

[1]Either Leq (h) or L10 (h) (but not both) may be used on a project.

[2]The Leq (h) and L10 (h) Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.

[3]Includes undeveloped lands permitted for this activity category.

4.0 EXISTING ENVIRONMENT

4.1 Site Description

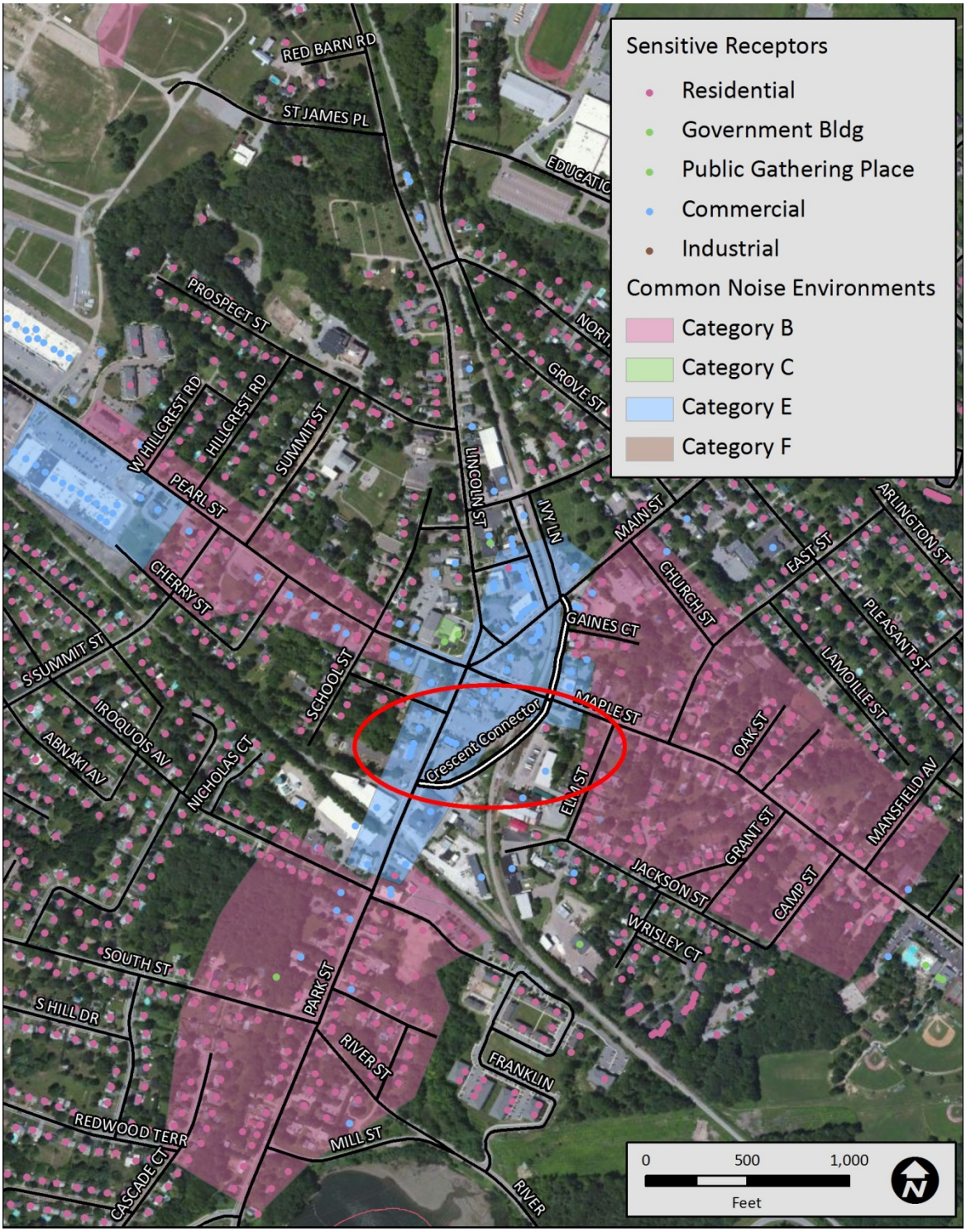
Five intersections and connecting roadways are incorporated into the noise analysis to account for sound emissions from the proposed Crescent Connector:

- Five Corners
- VT 15/Railroad Street
- VT 117/Railroad Street
- VT 2A/Crescent Connector
- VT 117/Crescent Connector

Sensitive receptors are representations of the land uses included in Table 1. For this project, these were identified by reviewing the Vermont E911 database, which geocodes all residential, commercial, industrial, government, and other land uses in the state. A site map with the sensitive receptors identified around this site and their Activity Categories can be found in Figure 1 below.



Figure 1: Locations of Sensitive Receptors and Primary Activity Categories around the Project



4.2 Determination of Study Area Peak Hour – Long Term Monitoring

Long term sound monitoring was conducted from November 29 to December 3, 2011 in order to determine the hour with the highest sound level within the project area. The highest sound levels consistently occurred between 8:30 am and 10:30 am. These measurements were taken with a Rion NL22 IEC/ANSI Type 2 sound level meter. The microphone was fitted with a three inch wind screen and mounted on a tripod approximately 1.5 meters (5 feet) above ground.

This time period does not correlate to the greatest traffic flow, which occurs during the PM peak hour. Traffic noise levels are higher in the morning given that lower congestion during this period leads to higher travel speeds.

For future build and no-build models, traffic volumes for the AM Peak while school is in session are used for the noise analysis. These volumes are the same as reported in the traffic impact study for this project.

4.3 Calibration of No Build Model – Short Term Monitoring

Short term sound monitoring was conducted June 25, 2013 between 8:30 am and 10:30 am. Larsen Davis LD831 ANSI/IEC Type 1 sound level meters with ACO Pacific 7" wind screens were used for monitoring. The meters were placed on tripods on sidewalks near sensitive receptors 1.5 m above the ground at each of seven locations.

The monitoring was conducted at sensitive receptors around the main instersection including receptors near the proposed project alignment, including railroad street. Each meter recorded 1-second A-weighted equivalent sound levels (Leq) for a period of 20 minutes. At the same time, RSG took traffic counts of all roads where sound levels were being measured. These sound levels were used to calibrate the TNM base model

The locations of the short-term sound level meters are in Figure 3 and the results of the calibration are summarized in Table 2 below.

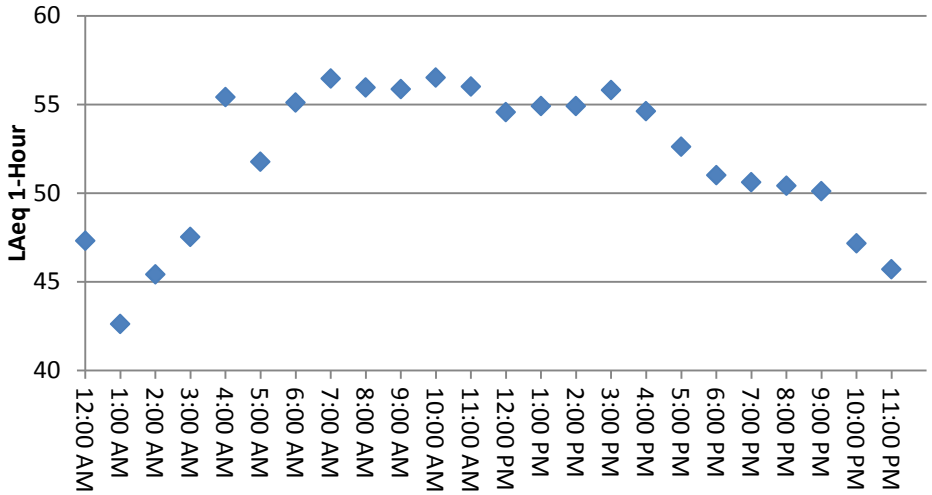


Figure 2: Average Sound Levels at Railroad Street



Figure 3: Short Term Monitoring Map (July, 2013)

Table 2: TNM Model Calibration Results

Location	NAD83		TNM v2.5 Leq-1hr (dBA)	TNM Adjustments	Measured Leq-1hr (dBA)	Difference (dB)
	x (m)	y (m)				
11 Main Street	-8,138,564.76	5,541,757.66	65	+3*	68	-3
Village Cemetery	-8,138,451.90	5,541,893.08	62	0	64	-2
8 Railroad Street	-8,138,491.50	5,541,758.55	61	0	62	-1
2 Elm Street	-8,138,393.08	5,541,536.98	65	0	67	-3
4 Park Street	-8,138,711.21	5,541,604.56	72	0	71	0
1 Pearl Street	-8,138,763.93	5,541,711.57	73	0	72	1
10 Lincoln Street	-8,138,700.17	5,541,812.68	66	0	69	-3

**Due to pressure doubling as the microphone was against the façade of a building.*

4.4 2013 Existing Noise Levels

Using the FHWA Traffic Noise Model, TNM Version 2.5, an analysis of the existing (2013) traffic noise levels at 408 sensitive receptors was conducted. This resulted in three sensitive receptors equaling or approaching their respective NAC. These receptors are located on Park Street, Lincoln Street and the corner of Lincoln Street and Pearl Street. A summary of these receptors can be found in Table 3 below. A map of receptor locations is shown in Appendix A.

Table 3: Sensitive Receptors Equaling and Approaching their Noise Abatement Criteria – 2013 Existing Conditions

Receptor	Leq - 1hr (dBA)	NAC Leq-1hr (dBA)	Difference (dB)
R137	66.3	67	-0.7
R235	66.5	67	-0.5
R315	67.0	67	0.0

5.0 PROJECT IMPACTS

Project impacts were determined by comparing no-build 2015 and 2025 with build 2015 and 2025 traffic noise levels. All traffic volumes are consistent with the project traffic impact study projections for their respective AM peak hours. The FHWA TNM 2.5 traffic noise model was utilized for each analysis to forecast one-hour A-weighted equivalent sound levels at each of the 408 receptors.

The results of the modeling are shown in Table 4, Table 5, Table 6, and Table 7.

Under the 2015 and 2025 no-build scenarios, one receptor approaches or exceeds its respective NAC. This was a government office located on the corner of Lincoln Street and Pearl Street. The predicted sound level is 67.0 dBA in 2015 and 68.1 dBA in 2025. This receptor is outside of the project area.

In both the 2015 and 2025 scenarios, the sound pressure level at this receptor declines to 66.1 dBA and 66.3 dBA, respectively. These still approach the Activity Category C NAC, but represent a decrease in traffic noise levels from the no-build scenario.

The maximum increase in sound pressure level between the 2013 and 2025 build scenario is 3.3 dB (Table 5 and 7). There is no substantial increase in sound pressure level as defined by the VTrans guidelines.

Table 4:Worst Case Receptor, No-Build Scenarios 2015/2025

Receptor	No-Build Year	Leq - 1hr (dBA)	NAC Leq-1hr (dBA)	Difference (dB)
R315	2015	67.0	67	0.0
	2025	67.1	67	0.1

Table 5: Worst Case Receptors Comparison, Build/ No-Build Scenarios 2015

Receptor	Leq-1hr (dBA)		Difference (dB)
	Build 2015	No Build 2015	
C063	57.8	57.2	0.6
C071	60.5	60.4	0.1
R278	60.4	60.1	0.3
R297	63.6	60.3	3.3

Table 6: Worst Case Receptors Build Scenarios 2015/2025

Receptor	Build Year	Leq - 1hr (dBA)	NAC Leq-1hr (dBA)	Difference (dB)
R315	2015	66.1	67	-0.9
	2025	66.3	67	-0.7

Table 7: Worst Case Receptors Comparison, Build/ No-Build Scenarios 2025

Receptor	Leq-1hr (dBA)		Difference (dB)
	Build 2015	No Build 2015	
C063	57.9	57.3	0.6
C071	60.6	60.4	0.2
C076	60.7	60.5	0.2
R278	60.5	60.1	0.4
R297	63.6	60.3	3.3

6.0 NOISE ABATEMENT

There is one government building on the northwest corner of Five Corners that approaches the Category C NAC in both the 2015 and 2025 build scenarios. The sound level at the receptor decreases as a result of the Crescent Connector project. In any event, this receptor is outside of the project area, 150 meters (500 feet) west of the project extent. Therefore, noise abatement feasibility and reasonableness are not considered for this receptor.

No other receptor approaches or exceeds their respective NAC. No receptor shows a significant increase in traffic noise levels.

7.0 CONSTRUCTION IMPACTS

There will be a temporary increase of sound emissions during the construction of the proposed Crescent Connector. Even though construction will occur during the daytime for only a brief period, there is a possibility that the noise emissions will negatively impact receptors in the vicinity of the new road.

The equipment used for the construction will be varied. Some of the louder pieces of equipment are shown in Table 8 below. Included are the approximate maximum sound pressure levels at 50 feet (15.2 m) and 100 feet (30.4 m). 100 feet is the approximate distance of the closest sensitive receptor from the construction area.

Blasting is not anticipated to be needed. Should blasting be required, it will occur intermittently and only for limited periods of time. Major construction work will occur primarily during the day; however, minor construction work may extend earlier or later.

The contractor is responsible for the protection of the public throughout construction of the connector. They are required to comply with OSHA standards and all equipment is to be properly muffled during operation. Whenever possible, the contractor should only run equipment during the daytime which is defined as 7:00am to 7:00pm in the state of Vermont.

Table 8: Maximum Sound Levels from Various Construction Equipment

Equipment	Sound Pressure Level at 50 feet (dBA)	Sound Pressure Level at 100 feet (dBA)*
Excavator	83	77
Dumptruck being loaded	86	80
Dumptruck at 25 mph accelerating	76	70
Tractor Trailer at 25 mph accelerating	80	74
Concrete Truck	81	75
Bulldozer	85	79
Rock drill	100	94
Loader	80	74
Backhoe	80	74
Generator	80	74
Diesel Truck	70	64
Impact Wrench	62	56
*Shortest approximate distance from construction site to any sensitive receptor.		

8.0 SUMMARY AND CONCLUSIONS

The Crescent Connector project consists of the addition of a new roadway connecting Park Street (VT 2A) and Maple Street (VT 117), with right-of-way improvements along Railroad Street, in Essex Junction, Vermont. It is intended to improve mobility in the Village, reduce traffic congestion and improve safety at the adjacent "Five Corners" intersection, and promote economic growth in the Village.

This study evaluated traffic noise impacts of the project according to the July 2011 VTrans "Noise Anlaysis and Abatement Policy".

Long term sound measurements were conducted in Fall 2011 which determine the highest background noise hour to be in the morning. With this knowledge, RSG conducted a short term sound study a seven locations in the study area. Using these sound levels and traffic counts, the FHWA Traffic Noise Model (TNM) was calibrated.

TNM was used to model the ambient (no-build) traffic noise levels during 2013, 2015 and 2025. Build scenarios were run for 2015 and 2025. A comparative analysis of the sound pressure levels at each of these receivers was conducted.

Our conclusions are as follows:

- Existing noise levels (2013) at each sensitive receptor show three sensitive receptors with sound pressure levels approaching their respective Noise Abatement Criteria (NAC).
- Future build and no-build scenarios (2015 and 2025) show one sensitive receptor (R315) outside the project area with sound pressure levels approaching or exceeding the Activity Category C NAC Leq-1hr (dBA). These levels are 67.0 dBA (No-Build 2013), 67.0 dBA (No-Build 2015), and 67.1 dBA (No-Build 2025). With the project, these decline to 66.1 dBA (Build 2015) and 66.3 dBA (Build 2025).
- Since this receiver is outside the project area, 150 meters to the west, it is not considered for an evaluation of noise abatement.



- A comparison of the No-Build and Build 2015 scenarios show increases in sound pressure levels at four of the 408 sensitive receptors. The maximum increase in sound pressure level is 3.3 dB which is not considered to be a substantial increase as defined by the VTrans "Noise Analysis and Abatement Policy."
- A comparison of the build and no-build 2025 scenarios show increases in sound pressure levels at five of 408 sensitive receptors. The maximum increase in sound pressure level is 3.3 dB.





APPENDIX A: SITE MAPS WITH RECEIVER LABELS

Figure 4: Overall Site Map with Receiver Labels (R Prefix– Category B or C, C Prefix – Category E)

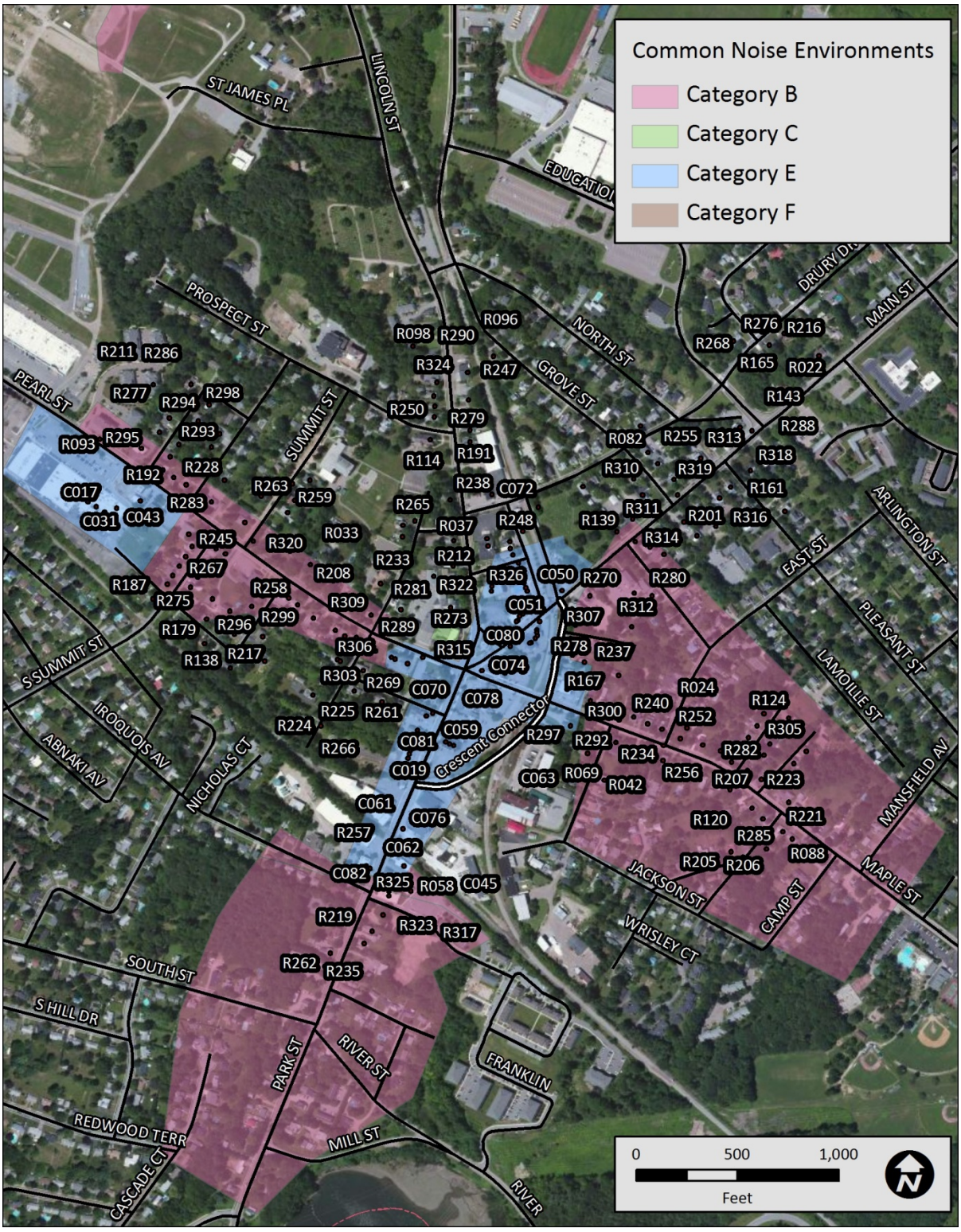


Figure 5: Site Map East with Receiver Labels (R Prefix– Category B or C, C Prefix – Category E)

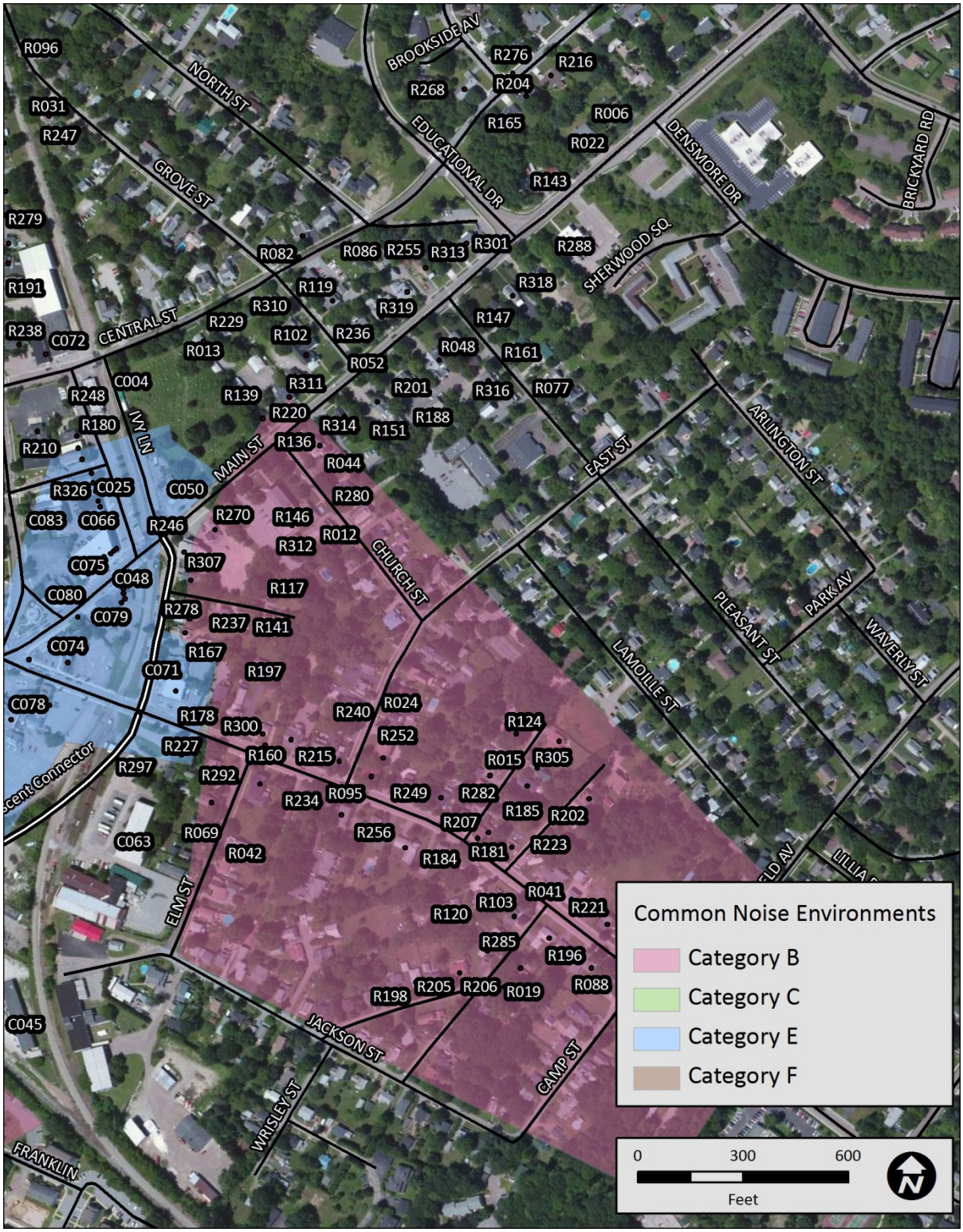
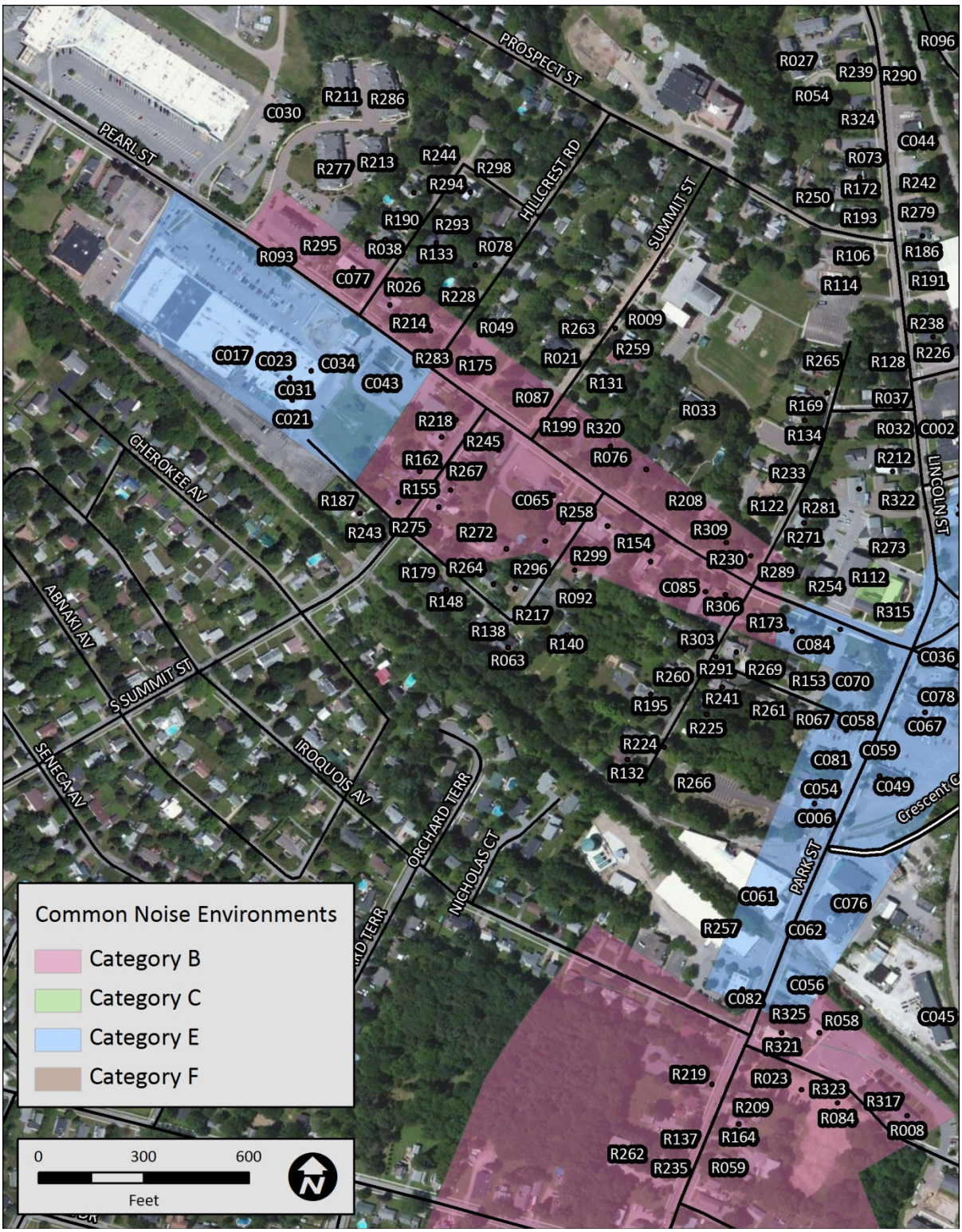


Figure 6: Site Map West with Receiver Labels (R Prefix– Category B or C, C Prefix – Category E)



APPENDIX B: MODEL RESULT COMPARISONS BY YEAR AND RECEIVER



Comparison Sound Pressure Levels Leq-1hr (dBA)					
Receptor ID	2013 Existing	2015 No-Build	2015 Build	2025 No-Build	2025 Build
C001	60.5	60.7	59.4	60.7	59.5
C002	59.9	59.1	58.5	59.1	58.6
C003	62.9	63.6	62.2	63.6	62.4
C004	56.1	55.9	54.8	55.9	54.9
C005	62.8	61.9	61.0	61.9	61.1
C006	64.7	63.4	61.8	63.4	61.9
C007	63.3	63.7	63.3	63.8	63.4
C008	59.8	59.5	58.4	59.5	58.6
C009	64.5	63.2	61.9	63.3	62.0
C010	64.1	65.0	63.4	65.0	63.5
C011	65.8	64.4	62.6	64.4	62.8
C012	63.3	63.9	62.5	64.0	62.6
C013	62.8	63.4	61.8	63.4	61.9
C014	62.6	63.3	61.6	63.3	61.8
C015	63.3	63.8	62.2	63.8	62.3
C016	54.6	55.5	55.4	55.7	55.6
C017	53.9	54.8	54.7	55.0	54.9
C018	53.8	54.7	54.6	54.9	54.8
C019	64.7	63.4	61.6	63.4	61.8
C020	62.7	63.3	61.7	63.4	61.8
C021	53.1	54.0	53.8	54.1	54.0
C022	59.5	59.4	58.2	59.4	58.4
C023	53.8	54.8	54.6	54.9	54.8
C024	53.1	54.0	53.9	54.2	54.0
C025	59.2	59.1	58.0	59.1	58.1
C026	53.8	54.7	54.6	54.8	54.7
C027	63.9	64.5	62.8	64.5	63.0
C028	59.6	59.3	58.3	59.4	58.4
C029	62.9	63.4	61.8	63.5	62.0
C030	53.0	54.0	53.9	54.1	54.1
C031	53.8	54.7	54.6	54.9	54.8
C032	60.3	60.8	60.4	60.9	60.6
C033	63.0	63.6	61.9	63.6	62.1
C034	56.9	57.9	57.9	58.1	58.0
C035	63.6	64.4	62.9	64.5	63.0
C036	70.3	70.9	68.9	70.9	69.0
C037	57.9	57.1	56.5	57.1	56.6
C038	58.7	58.4	57.5	58.5	57.6
C039	64.5	62.6	59.8	62.6	60.0
C040	58.6	58.2	57.3	58.2	57.4
C041	63.1	63.8	62.3	63.8	62.5
C042	63.5	63.9	63.4	64.0	63.5
C043	57.1	58.1	58.1	58.3	58.2

Comparison Sound Pressure Levels Leq-1hr (dBA)					
Receptor ID	2013 Existing	2015 No-Build	2015 Build	2025 No-Build	2025 Build
C044	58.6	57.3	57.1	57.3	57.2
C045	56.3	54.9	53.9	55.0	54.0
C046	65.9	66.6	64.8	66.6	64.9
C047	68.3	68.9	68.6	69.1	68.8
C048	67.8	69.1	67.1	69.1	67.3
C049	63.7	62.5	61.5	62.6	61.7
C050	60.0	60.7	58.9	60.7	59.1
C051	60.2	60.3	59.1	60.4	59.2
C052	64.5	63.3	61.5	63.3	61.7
C053	69.3	70.3	68.3	70.4	68.5
C054	64.5	63.3	61.5	63.3	61.7
C055	64.9	65.4	63.8	65.4	63.9
C056	62.2	60.1	57.8	60.2	58.0
C057	59.9	59.9	58.7	60.0	58.9
C058	68.2	67.3	64.8	67.3	65.0
C059	69.2	67.6	65.1	67.6	65.3
C060	58.3	57.9	57.0	57.9	57.1
C061	62.0	60.4	58.6	60.5	58.8
C062	67.4	65.4	62.8	65.4	63.0
C063	57.3	57.2	57.8	57.3	57.9
C064	66.1	65.2	63.0	65.2	63.2
C065	58.3	59.1	58.9	59.2	59.1
C066	59.8	59.7	58.5	59.8	58.7
C067	65.4	65.1	63.4	65.2	63.5
C068	60.9	61.5	61.4	61.5	61.5
C069	58.9	59.5	59.2	59.6	59.3
C070	65.8	65.5	64.0	65.6	64.1
C071	60.0	60.4	60.5	60.4	60.6
C072	56.9	56.2	55.6	56.3	55.7
C073	59.4	58.0	57.8	58.1	57.9
C074	65.7	66.3	64.6	66.3	64.7
C075	64.1	64.7	63.0	64.7	63.1
C076	62.1	60.5	60.5	60.5	60.7
C077	57.6	58.6	58.6	58.8	58.8
C078	66.0	66.3	64.5	66.3	64.6
C079	63.6	64.2	62.7	64.2	62.8
C080	66.7	67.3	65.4	67.3	65.6
C081	64.7	63.6	61.7	63.6	61.9
C082	66.6	64.7	61.8	64.7	62.0
C083	62.3	61.4	60.6	61.5	60.7
C084	64.3	64.5	63.9	64.6	64.0
C085	59.8	60.4	60.1	60.5	60.2
C086	59.0	58.8	57.7	58.8	57.8

Comparison Sound Pressure Levels Leq-1hr (dBA)					
Receptor ID	2013 Existing	2015 No-Build	2015 Build	2025 No-Build	2025 Build
C087	67.9	65.2	62.2	65.3	62.4
R001	53.8	54.5	52.6	54.6	52.8
R002	59.3	60.0	57.7	60.1	57.8
R003	54.7	55.5	55.4	55.7	55.6
R004	58.7	59.8	57.5	59.8	57.5
R005	53.9	54.2	53.7	54.3	53.8
R006	57.3	58.4	56.1	58.4	56.3
R007	60.3	58.1	56.0	58.2	56.1
R008	55.9	54.0	52.3	54.1	52.4
R009	54.0	54.2	53.8	54.3	53.9
R010	56.8	56.2	55.1	56.2	55.3
R011	62.5	61.6	61.0	61.6	61.1
R012	55.3	55.8	54.4	55.9	54.5
R013	54.8	55.0	53.6	55.0	53.8
R014	55.0	55.7	53.8	55.7	54.0
R015	53.9	54.5	52.6	54.5	52.7
R016	53.5	54.0	52.0	54.0	52.1
R017	57.5	57.9	57.3	57.9	57.4
R018	64.6	65.1	64.8	65.2	65.0
R019	53.8	54.4	52.3	54.4	52.4
R020	59.0	59.9	57.8	59.9	58.0
R021	55.0	55.5	55.3	55.6	55.4
R022	57.6	58.8	56.5	58.8	56.7
R023	63.6	60.8	58.0	60.8	58.2
R024	54.6	55.1	53.5	55.1	53.6
R025	59.2	60.0	58.3	60.0	58.4
R026	56.1	57.0	56.9	57.2	57.1
R027	55.9	55.1	54.9	55.1	55.0
R028	53.8	54.5	52.7	54.5	52.9
R029	56.4	57.2	57.1	57.4	57.3
R030	52.9	53.3	51.4	53.3	51.5
R031	55.1	54.2	53.9	54.2	53.9
R032	61.2	60.4	60.0	60.4	60.0
R033	55.7	55.8	55.3	55.9	55.5
R034	59.3	58.2	58.0	58.2	58.0
R035	56.3	57.3	55.1	57.3	55.3
R036	56.6	57.3	55.4	57.4	55.6
R037	61.2	60.3	60.0	60.3	60.0
R038	54.8	55.6	55.5	55.8	55.7
R039	56.5	57.4	55.3	57.4	55.5
R040	54.6	55.3	53.1	55.3	53.2
R041	59.8	60.5	58.2	60.5	58.2
R042	55.9	56.2	55.2	56.2	55.3

Comparison Sound Pressure Levels Leq-1hr (dBA)					
Receptor ID	2013 Existing	2015 No-Build	2015 Build	2025 No-Build	2025 Build
R043	59.5	59.8	59.6	59.9	59.7
R044	56.1	56.8	55.0	56.8	55.2
R045	54.4	54.6	54.1	54.8	54.3
R046	53.8	54.5	54.3	54.6	54.4
R047	57.6	58.7	56.3	58.7	56.4
R048	56.6	57.5	55.4	57.6	55.6
R049	55.2	55.9	55.7	56.0	55.9
R051	58.1	59.0	56.9	59.0	57.1
R052	64.7	65.8	63.4	65.9	63.7
R053	56.1	56.5	56.0	56.6	56.2
R054	56.8	55.8	55.7	55.9	55.7
R055	57.8	58.9	56.6	58.9	56.8
R056	52.4	52.9	52.7	53.0	52.8
R057	59.5	60.1	58.4	60.2	58.4
R058	59.4	57.4	55.6	57.5	55.7
R059	65.2	62.1	59.1	62.1	59.2
R060	58.3	58.9	58.7	59.0	58.8
R061	54.7	55.1	54.7	55.2	54.9
R062	57.1	57.5	56.6	57.5	56.7
R063	53.7	53.7	53.0	53.8	53.1
R064	53.2	53.7	51.9	53.7	52.0
R065	58.9	59.8	57.7	59.9	57.9
R066	53.3	53.8	52.2	53.8	52.3
R067	61.9	61.3	60.0	61.4	60.2
R068	54.5	55.2	54.9	55.3	55.0
R069	56.7	56.9	56.5	57.0	56.6
R070	54.7	55.0	54.7	55.1	54.8
R071	56.7	57.7	55.6	57.7	55.8
R072	53.2	53.7	51.8	53.8	51.8
R073	60.7	59.6	59.5	59.6	59.5
R074	62.5	63.1	62.9	63.3	63.0
R075	59.9	58.8	58.7	58.8	58.7
R076	58.0	58.7	58.5	58.8	58.7
R077	52.3	52.9	51.1	53.0	51.3
R078	53.2	53.7	53.5	53.8	53.6
R079	60.6	61.3	59.5	61.3	59.6
R080	53.0	53.3	51.8	53.4	51.9
R081	52.6	53.5	51.4	53.5	51.6
R082	53.1	53.4	51.9	53.4	52.1
R083	59.5	59.7	59.7	59.8	59.8
R084	58.5	56.2	54.0	56.2	54.2
R085	54.2	54.6	53.0	54.7	53.2
R086	54.1	54.8	52.9	54.8	53.1

Comparison Sound Pressure Levels Leq-1hr (dBA)					
Receptor ID	2013 Existing	2015 No-Build	2015 Build	2025 No-Build	2025 Build
R087	57.7	58.5	58.4	58.7	58.6
R088	58.6	59.7	57.3	59.7	57.4
R089	57.5	58.5	56.4	58.6	56.6
R090	55.9	56.4	56.1	56.6	56.2
R091	60.3	61.0	58.9	61.0	58.9
R092	55.4	55.7	55.2	55.8	55.3
R093	63.9	65.0	65.0	65.1	65.1
R094	59.6	60.4	58.3	60.4	58.4
R096	55.0	54.1	53.8	54.1	53.9
R097	57.3	58.2	56.2	58.2	56.3
R098	60.9	59.8	59.8	59.8	59.8
R099	54.1	54.4	54.0	54.5	54.2
R100	57.7	57.2	56.2	57.2	56.3
R101	60.9	61.4	60.8	61.4	60.9
R102	55.0	55.6	53.9	55.6	54.0
R103	58.2	59.3	56.9	59.3	57.0
R104	58.7	59.7	59.6	59.9	59.8
R105	54.3	54.8	54.5	54.9	54.6
R106	57.9	56.9	56.6	56.9	56.7
R107	59.8	59.9	59.2	60.0	59.3
R108	57.2	57.9	56.0	57.9	56.0
R109	58.2	59.3	56.9	59.3	57.0
R110	58.0	58.9	56.9	58.9	57.1
R111	53.2	53.7	53.3	53.8	53.5
R112	63.4	63.5	62.7	63.6	62.9
R113	54.3	54.9	52.9	54.9	53.0
R114	57.0	56.2	55.8	56.3	55.9
R115	52.9	53.6	53.4	53.8	53.6
R116	60.5	61.5	61.4	61.6	61.6
R117	55.9	56.3	55.2	56.4	55.3
R119	54.1	64.2	52.9	54.7	53.1
R120	55.3	54.6	53.9	56.1	54.0
R122	58.7	56.0	58.4	59.0	58.5
R123	59.6	64.2	58.7	60.3	58.9
R124	52.7	58.9	51.5	53.3	51.6
R125	57.2	60.2	56.1	56.8	56.2
R126	53.5	53.2	53.9	54.3	54.1
R127	57.0	56.7	55.6	57.8	55.6
R128	61.1	54.2	59.9	60.2	59.9
R129	54.7	57.8	53.3	55.5	53.3
R130	58.6	60.1	57.4	59.5	57.4
R131	55.3	55.5	55.4	55.8	55.5
R132	55.8	59.5	54.2	55.3	54.3

Comparison Sound Pressure Levels Leq-1hr (dBA)					
Receptor ID	2013 Existing	2015 No-Build	2015 Build	2025 No-Build	2025 Build
R133	53.8	55.7	54.4	54.7	54.5
R134	57.1	55.2	56.2	56.9	56.3
R135	53.7	54.5	54.0	54.5	54.2
R136	63.6	56.8	62.5	64.7	62.7
R137	66.3	54.3	60.6	63.6	60.7
R138	53.4	64.7	52.9	53.7	53.1
R139	56.4	63.6	55.2	56.9	55.4
R140	55.0	53.6	54.4	55.1	54.5
R141	56.4	56.9	55.8	56.8	55.9
R142	53.1	55.0	52.7	53.4	52.9
R143	58.4	56.8	57.2	59.6	57.5
R144	59.7	53.3	58.1	60.5	58.2
R145	52.9	59.5	53.2	53.7	53.4
R146	56.2	60.5	55.3	56.8	55.4
R147	56.4	53.6	55.2	57.4	55.4
R148	52.7	56.7	52.4	53.1	52.5
R149	61.9	57.4	62.4	62.8	62.6
R150	63.4	53.0	58.3	61.0	58.4
R151	55.2	62.6	54.0	55.9	54.2
R152	58.3	60.9	59.2	59.4	59.4
R153	61.9	55.9	60.7	61.8	60.8
R154	59.1	59.3	59.6	60.0	59.8
R155	54.2	61.7	54.7	55.1	54.9
R156	57.1	59.8	57.5	57.9	57.6
R157	52.6	55.0	51.5	53.5	51.7
R158	52.5	57.7	51.2	53.1	51.3
R159	51.4	53.5	50.2	52.1	50.4
R160	63.1	53.1	61.7	63.7	61.8
R161	53.7	52.1	52.6	54.6	52.7
R162	55.2	63.7	55.8	56.1	55.9
R163	57.4	54.5	56.1	58.3	56.2
R164	66.0	55.9	59.8	62.9	60.0
R165	52.8	58.3	51.6	53.7	51.8
R166	60.6	62.8	55.6	58.1	55.7
R167	58.6	53.6	58.5	59.0	58.6
R168	57.9	58.0	57.3	58.1	57.4
R169	56.8	58.9	55.9	56.5	56.0
R170	56.9	58.0	55.6	56.6	55.8
R171	63.0	56.5	61.3	63.7	61.4
R172	59.3	56.5	58.0	58.2	58.0
R173	62.5	63.7	62.5	63.0	62.6
R174	53.5	58.1	52.2	54.1	52.3
R175	58.1	62.9	59.0	59.2	59.1

Comparison Sound Pressure Levels Leq-1hr (dBA)					
Receptor ID	2013 Existing	2015 No-Build	2015 Build	2025 No-Build	2025 Build
R176	52.0	54.1	52.2	52.7	52.4
R177	60.3	59.0	58.7	61.1	58.8
R178	60.4	52.6	59.9	61.0	60.0
R179	52.4	61.1	52.3	52.9	52.4
R180	57.3	61.0	56.1	57.1	56.2
R181	59.9	52.8	58.3	60.6	58.4
R182	58.5	57.1	59.5	59.7	59.7
R183	59.1	60.6	59.8	60.1	59.9
R184	58.7	59.6	57.4	59.8	57.5
R185	55.4	60.0	54.0	56.1	54.1
R186	59.9	59.7	58.3	58.6	58.4
R187	51.9	56.1	52.2	52.7	52.4
R188	54.6	58.5	53.5	55.4	53.7
R189	54.9	52.6	53.5	55.6	53.6
R190	53.7	55.4	54.3	54.6	54.4
R191	59.3	55.5	57.8	58.1	57.8
R192	58.9	54.4	59.9	60.1	60.0
R193	58.9	58.0	57.7	57.9	57.7
R194	61.4	59.9	60.0	60.6	60.1
R195	56.6	57.9	55.4	56.4	55.6
R196	58.2	60.6	56.9	59.3	56.9
R197	57.0	56.3	56.5	57.5	56.6
R198	52.8	59.3	51.2	53.0	51.3
R199	57.8	57.4	58.3	58.6	58.5
R200	59.0	53.0	57.5	59.7	57.6
R201	56.6	58.5	55.4	57.5	55.6
R202	54.3	59.7	52.8	54.9	52.9
R203	61.6	57.5	62.0	62.4	62.1
R204	51.8	54.9	50.6	52.6	50.8
R205	53.1	62.3	51.5	53.5	51.6
R206	53.5	52.6	52.0	54.1	52.1
R207	60.5	53.5	59.0	61.3	59.1
R208	58.9	54.1	59.3	59.7	59.4
R209	64.9	61.3	58.9	61.8	59.0
R210	60.1	59.5	58.6	59.3	58.7
R211	51.8	61.8	52.5	52.7	52.6
R212	61.3	59.2	60.0	60.5	60.1
R213	52.6	52.6	53.3	53.5	53.4
R214	58.7	60.5	59.7	59.9	59.8
R215	59.8	53.4	58.5	60.5	58.6
R216	52.7	59.7	51.5	53.6	51.7
R217	54.5	60.5	54.1	54.8	54.2
R218	57.4	53.6	58.3	58.5	58.4

Comparison Sound Pressure Levels Leq-1hr (dBA)					
Receptor ID	2013 Existing	2015 No-Build	2015 Build	2025 No-Build	2025 Build
R219	63.1	54.7	57.6	60.4	57.7
R220	59.0	60.4	57.8	59.9	58.0
R221	58.5	59.9	56.9	59.3	57.0
R222	59.2	59.5	59.3	59.5	59.4
R223	55.7	56.5	54.3	56.5	54.4
R224	56.2	55.7	54.7	55.7	54.8
R225	58.1	57.6	56.7	57.7	56.8
R226	59.9	58.7	58.4	58.8	58.4
R227	60.3	61.0	60.8	61.0	60.8
R228	54.9	55.7	55.5	55.8	55.7
R229	54.3	54.6	53.1	54.6	53.3
R230	62.0	62.7	62.5	62.8	62.6
R231	60.0	59.6	58.9	59.7	59.0
R232	57.9	58.8	56.7	58.9	56.9
R233	57.9	57.9	57.3	58.0	57.4
R234	59.4	60.3	58.3	60.3	58.4
R235	66.5	63.7	60.7	63.7	60.8
R236	57.7	58.6	56.5	58.7	56.7
R237	57.7	58.0	57.3	58.0	57.4
R238	60.5	59.1	58.8	59.1	58.9
R240	55.8	56.3	54.8	56.3	54.9
R241	58.8	58.5	57.6	58.6	57.8
R242	59.0	57.6	57.4	57.7	57.5
R243	52.1	52.6	52.2	52.7	52.3
R244	52.1	52.6	52.4	52.7	52.5
R245	58.4	59.4	59.4	59.6	59.5
R246	63.6	64.5	62.6	64.6	62.8
R247	54.7	53.9	53.5	53.9	53.6
R248	57.0	56.6	55.8	56.7	55.9
R249	59.7	60.4	58.2	60.4	58.3
R250	55.7	54.9	54.6	55.0	54.7
R251	61.3	61.6	61.1	61.7	61.2
R252	55.5	56.1	54.3	56.1	54.4
R253	62.7	63.9	61.5	63.9	61.7
R254	64.3	64.7	64.2	64.8	64.4
R255	54.6	55.5	53.5	55.5	53.7
R256	58.3	59.2	57.1	59.3	57.1
R257	60.1	58.4	56.5	58.5	56.7
R258	58.8	59.6	59.5	59.8	59.6
R259	54.4	54.6	54.2	54.7	54.4
R260	57.4	57.3	56.5	57.3	56.6
R261	60.4	60.0	58.9	60.1	59.1
R262	61.2	58.6	55.8	58.6	55.9

Comparison Sound Pressure Levels Leq-1hr (dBA)					
Receptor ID	2013 Existing	2015 No-Build	2015 Build	2025 No-Build	2025 Build
R263	54.2	54.6	54.3	54.7	54.4
R264	53.4	53.8	53.3	53.9	53.5
R265	56.6	56.1	55.6	56.2	55.7
R266	57.7	56.8	55.7	56.9	55.8
R267	55.9	56.7	56.5	56.8	56.7
R268	50.9	51.5	49.7	51.5	49.9
R269	60.8	60.7	59.9	60.8	60.1
R270	59.7	60.4	58.7	60.5	58.8
R271	60.0	60.1	59.5	60.2	59.7
R272	54.2	54.8	54.4	54.9	54.5
R273	62.8	62.4	61.5	62.5	61.6
R274	58.5	58.6	58.0	58.7	58.2
R275	52.8	53.3	52.9	53.4	53.1
R276	51.3	52.0	50.2	52.1	50.3
R277	53.5	54.4	54.3	54.5	54.4
R278	59.9	60.1	60.4	60.1	60.5
R279	59.6	58.1	58.0	58.2	58.0
R280	55.1	55.6	54.0	55.7	54.2
R281	59.5	59.4	58.7	59.5	58.9
R282	55.9	56.6	54.5	56.6	54.6
R283	62.3	63.3	63.3	63.5	63.4
R284	57.2	58.3	56.1	58.3	56.3
R285	55.5	56.3	54.1	56.4	54.2
R286	51.4	52.1	51.9	52.2	52.0
R287	58.1	59.1	56.9	59.1	57.1
R288	56.2	57.2	55.0	57.3	55.2
R289	64.0	64.5	64.3	64.7	64.5
R290	60.5	58.9	58.8	59.0	58.9
R291	58.9	58.9	58.2	59.0	58.4
R292	59.4	60.2	59.0	60.2	59.1
R293	53.1	53.7	53.5	53.8	53.6
R294	52.4	52.9	52.7	53.1	52.8
R295	57.3	58.3	58.3	58.5	58.5
R296	55.1	55.5	55.0	55.6	55.2
R297	59.8	60.3	63.6	60.3	63.6
R298	51.9	52.3	52.0	52.4	52.1
R299	57.0	57.5	57.1	57.6	57.3
R300	60.1	60.7	59.3	60.7	59.4
R301	58.0	59.1	56.8	59.1	57.0
R302	58.4	59.3	57.2	59.3	57.4
R303	58.6	58.7	58.1	58.8	58.3
R304	59.8	60.3	59.5	60.3	59.6
R305	52.9	53.4	51.5	53.4	51.6

Comparison Sound Pressure Levels Leq-1hr (dBA)					
Receptor ID	2013 Existing	2015 No-Build	2015 Build	2025 No-Build	2025 Build
R306	60.9	61.4	61.0	61.5	61.2
R307	59.1	59.5	58.6	59.6	58.7
R308	56.0	57.0	54.8	57.0	55.0
R309	60.6	61.2	61.0	61.3	61.1
R310	54.1	54.5	52.9	54.5	53.1
R311	58.4	59.3	57.2	59.3	57.4
R312	55.9	56.4	55.0	56.4	55.1
R313	56.7	57.6	55.5	57.7	55.7
R314	58.8	59.7	57.7	59.8	57.9
R315	67.0	67.0	66.1	67.1	66.3
R316	53.6	54.3	52.4	54.3	52.6
R317	56.8	54.9	53.0	54.9	53.2
R318	56.1	57.1	54.9	57.1	55.1
R319	57.8	58.8	56.7	58.9	56.9
R320	56.9	57.5	57.3	57.7	57.5
R321	63.1	60.5	57.9	60.6	58.0
R322	62.4	61.5	60.9	61.5	61.0
R323	59.1	56.8	54.6	56.8	54.7
R324	60.1	58.9	58.8	59.0	58.9
R325	63.3	61.0	58.5	61.1	58.6
R326	60.0	59.6	58.6	59.6	58.7

Village of Essex Junction, Vermont
Crescent Connector Project
Draft Environmental Assessment

Appendix E

Phase II Environmental Site Assessment of the Crescent Connector

(Note: This Appendix was originally provided with a large number of technical Appendices. The Appendices of the Laboratory Results, Boring Logs, etc. are not provided herein, but can be viewed by contacting DuBois & King, Inc. in Randolph, Vermont – Phone 802-728-3376)

PHASE II ENVIRONMENTAL SITE ASSESSMENT OF THE CRESCENT CONNECTOR

SMS#: 2012-4263
ESSEX JUNCTION, VERMONT

Stone Project ID 12-152
July 26, 2013

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EXECUTIVE SUMMARY

Stone Environmental, Inc. (Stone), under contract with Dubois & King Engineers, Inc. (D&K), performed a Phase II Environmental Site Assessment (Phase II ESA) of the planned route for the proposed Crescent Connector in Essex Junction, Vermont (Figure 1). The Crescent Connector (the Project Area) is a proposed road, approximately 1,400 feet in length, intended to bypass the Essex Junction Five Corners Area. This Phase II ESA sought to identify whether hazardous materials have been released to soils within the Project area that, if present, would pose an unacceptable risk of exposure to construction workers and future users.

Prior environmental assessment of the proposed Project Area included an Area Wide Assessment (AWA) of the Village Center in June, 2012. This AWA identified that past and current land use included industries that may have used hazardous substances that may have been released to the environment including over 150 years of railroad operations and five gasoline service stations, among others. In addition, the AWA revealed that the Project Area is located downgradient or immediately adjacent to three Vermont Hazardous Waste Sites. Gasoline contamination released from at least one of these sites has been determined by others to be present within the Project Area, via groundwater migration.

This Phase II ESA identified polycyclic aromatic hydrocarbons (PAHs) and the metals arsenic, antimony, lead, and mercury in shallow soils at concentrations in excess of relevant regulatory criteria and that require mitigation and/or management prior to or during the construction of the Crescent Connector roadway. Gasoline volatile organic compounds from either a known hazardous waste site or a historically-documented underground storage tank were not detected in Project Area soil samples and do not appear to present a risk to future construction workers or users.

Past use of the Project Area includes over 150 years of railway conveyance. Coal ash waste and unburned coal debris containing high concentrations of PAHs is widespread across the Project Area as a result. In addition, metals contamination identified at the Project Area may be associated with former maintenance activities, such as application or use of wood preservatives and insecticides along the rail corridor.

Excavation of existing soils to allow installation of engineered sub-base materials as part of the construction of the Crescent Connector roadway will produce soils that will require proper management. It is recommended that a Soil Management Plan, including calculation of volumes for disposal, transportation options, and associated costs, be developed such that construction activities are not delayed. Further assessment to allow for additional segregation of unimpacted soils to minimize the amount that requires management is recommended.

Table of Contents

EXECUTIVE SUMMARY II

1. INTRODUCTION 1
   1.1. Project Area Description 1
   1.2. Prior Environmental Assessment 1

2. METHODS AND RESULTS 1
   2.1. Soil Boring Investigation Methods 1
   2.2. Soil Boring Investigation Results 2
   2.3. Quality Control Summary 3

3. CONCEPTUAL SITE MODEL 3
   3.1. Project Area Geology and Hydrogeology 3
   3.2. Contaminant Distribution 3
      3.2.1. PAHs 4
      3.2.2. Volatile Organic Compounds 4
      3.2.3. Pesticides and PCBs 5

4. CONCLUSIONS AND RECOMMENDATIONS 6
   PAH Contamination 6
   Metals Contamination 6
   Other COCs 7

5. REFERENCES 8

APPENDICES 9

APPENDIX A : FIGURES 10

APPENDIX B : TABLES 11

APPENDIX C : LABORATORY REPORTS 12

APPENDIX D : FIELD NOTES 13

APPENDIX E : STANDARD PENETRATION TESTING 14

List of Tables

Table 1: Toxicity Equivalency Factors Used for Normalizing Carcinogenic PAHs to Benzo(a)pyrene: 2

Table 2: Soil Concentration Results, Compounds in Exceedance, Crescent Connector Phase II ESA 1

1. INTRODUCTION

Stone Environmental, Inc. (Stone), under contract with Dubois & King Engineers, Inc. (D&K), performed a Phase II Environmental Site Assessment (Phase II ESA) of the planned alignment for the proposed Crescent Connector in Essex Junction, Vermont (Figure 1). The Crescent Connector (the Project Area) is a proposed road, approximately 1,400 feet in length, intended to bypass the Essex Junction Five Corners Area. The Crescent Connector will link Vermont Route 2A (Park Street) and Vermont Route 117 (Maple Street) and facilitate traffic flow from Vermont Route 117 (Maple Street) to Route 15 east (Main Street). Collectively, these areas encompass the Project Area (Figure 2).

1.1. Project Area Description

The proposed alignment of the Crescent Connector is presented on Figure 2. The general topographic setting of the Project Area is flat at an elevation of 340 feet above mean sea level (ft AMSL). The nearest surface water body is the Winooski River, located 2,500 feet south of the Project Area. The center of the Village of Essex Junction, is defined by the intersections of Vermont Routes 2A (Lincoln Street – north, and Park Street – south), Vermont Route 15 (Pearl Street – west, and Main Street – northeast), and Vermont Route 117 (Maple Street – southeast); the intersection of these roadways is locally known as the Five Corners.

According to the Vermont Agency of Natural Resources (ANR) Environmental Interest Locator, there are 11 State of Vermont Hazardous Waste Sites, one State-listed hazardous waste generator, and seven facilities with registered underground storage tanks (USTs) within one-quarter mile of the Five Corners intersection.

Utilities traversing the Project Area include sanitary sewer and stormwater pipes, and buried and overhead electrical and communications cables. Water and sanitary sewer services within the Project Area are supplied by municipal utilities. According to the Agency of Natural Resources Well Locator, the nearest water supply well to the Project Area is located approximately 840 feet to the east-southeast of the Project Area and is owned by David Adams (Well ID 8-263). The use of this well is for domestic use.

From the south, the proposed road first traverses a parcel currently under commercial use (34 Park Street). Businesses operating at this address include: Centrodyne Corporation of America (designer and manufacturer of automotive digital electronic products), Karen's Kloset (used clothing store), Paizlee's (consignment shop), Vermont Aquatics (fish, coral, and aquarium supplies), and West Meadow Farm Gluten Free Bakery (bakery). The second parcel traversed is a railway corridor owned by the State of Vermont and operated by New England Central Railroad, Inc. The proposed road then crosses Maple Street (VT Route 117). The remaining proposed road lies along Railroad Street and terminates at Main Street (VT Route 15).

1.2. Prior Environmental Assessment

Prior assessment of the Project Area includes the Essex Junction Area Wide Assessment performed by Stone in July, 2012 for the Village of Essex Junction and Chittenden County Regional Planning Commission under a US EPA Brownfield Assessment Grant. During the course of the Area Wide Assessment, Stone reviewed pertinent historical documents, published geologic literature, Federal and State environmental databases, and Vermont Department of Environmental Conservation (VT DEC) Sites Management Section (SMS) files for known hazardous waste sites within and immediately upgradient of the Village Center zoning district, which includes the Project Area. From this assessment, Stone developed the following findings that are germane to the Project Area:

- Past use of portions of the Project Area includes over 150 years of rail operations within Project Area. Due to the nature of past use, specifically the rail operations, potential contaminants of concern (COCs) within soils in the Project Area include volatile organic compounds (VOCs) associated with petroleum fuels and solvents and chlorinated solvents, pesticides, polycyclic aromatic hydrocarbons (PAHs) associated with coal and coal ash, polychlorinated biphenyls (PCBs), metals, and asbestos.
- Operation of several historically-documented gasoline underground storage tanks (USTs) immediately upgradient of the Project Area, including the following locations:
  - Former Robbinson's Service Station at 1 Park Street from 1929 through 1967,
  - Former Graff's Garage at 12 Park Street from 1929 through 1944,
  - Former service station operated under the names R.L. Baker and Raymond Huntley at 9 Main Street from 1922 to 1962,
  - Former Standard Oil Company at Main and Maple (currently Road Res-Q) from 1928 to present, and
  - Simons Store at 2 Park Street from 1954 to present.
- Documented gasoline contamination in groundwater from at least one State-listed hazardous waste site (Simon's Store, SMS #96-1961) has migrated onto the Project Area. The Project Area is also located downgradient of the Road Res-Q hazardous waste site (SMS# 96-1993) and is adjacent to a third (Bushey's Sunoco; SMS#98-2430).

Stone recommended that pre-construction planning for the proposed Crescent Connector should consider the possibility of surface soil contamination related to past industrial use of the proposed parcels targeted for redevelopment. In addition, further assessment was recommended to determine whether the known occurrence of petroleum contamination from nearby hazardous waste site(s) in groundwater below the Project Area presents a potential unacceptable risk through direct contact or inhalation exposure to construction workers during the construction of the Crescent Connector. This Phase II ESA was performed with the objectives of evaluating the risk of exposure to construction workers during the construction of the Crescent Connector, and, in the event of discovering contamination, evaluating the possible remedial/disposal options for contaminated materials.

2. METHODS AND RESULTS

The overall objective of this Phase II ESA was to address select recognized environmental conditions (RECs) identified at the Project Area. Specifically, the Phase II ESA was conducted to determine if past land use within the Project Area has resulted in a release of COCs to shallow soil within the Project Area and, if present, to evaluate whether the contaminants are present at concentrations that would present an unacceptable risk to construction workers and future Project Area users. An additional objective was to evaluate whether special handling and management of soils will be required during construction phase of the Crescent Connector project.

To facilitate roadway and related stormwater infrastructure design, Stone also performed geotechnical assessment of soil competency using Standard Penetration Test (SPT) methods at selected locations in the Project Area. Methods and results of the SPT assessment are provided in a memorandum attached to this report in Appendix E.

Phase II ESA activities were performed in accordance with the Work Plan Memorandum dated June 10, 2013. Soil concentration results were compared to the VT DEC Soil Screening Values (SSV) for residential and industrial soils which are equivalent to U.S. Environmental Protection Agency (US EPA) Region III Regional Screening Levels (RSLs, updated in May 2013) for residential soils, last updated in May 2013.

2.1. Soil Boring Investigation Methods

To assess risk of construction worker exposure to COCs by direct contact within the approximately 1,400-linear-foot Project Area, Stone performed 30 soil borings on June 27 and 28, 2013. Soil borings were advanced to the maximum depth anticipated for the construction of the Crescent Connector (10 feet below ground surface (ft bgs)). Soil cores were collected into disposable polyvinyl chloride (PVC) liners using a MacroCore®-5 discrete soil sampler advanced via a track-mounted Geoprobe® 7822DT drill rig. Borings were spaced approximately every 50 linear feet along the proposed Crescent Connector corridor, except in the areas of the known gasoline release from Simon's Store, where the spacing was reduced to approximately 25 feet (Figure 3).

Soil cores were logged for texture, color, moisture content, and presence of VOCs using a handheld photoionization detector (PID). The PID was equipped with an 11.7 electron Volt (eV) lamp and was calibrated on the day of the investigation using 100 ppm isobutylene calibration gas. Soil headspace samples were collected from every 1.0 foot depth interval and placed into a Ziploc polyethylene bag, leaving sufficient headspace in the bag. Soil headspace samples were allowed to equilibrate with the headspace for at least 5 minutes while the core was logged prior to being measured for VOCs by the PID. In the event that PID readings were found to be in excess of 10.0 parts per million volume/volume (ppm v/v), a discrete soil sample was to be collected for fixed-based laboratory VOC analysis via US EPA Method 8260. No soil depth intervals were found to contain elevated soil headspace during the investigation and as a result, no soil samples were collected for fixed laboratory VOC analysis. PID field screening results for each boring are presented in the soil boring logs in Appendix D.

To assess risk of exposure to COCs related to railroad operations, discrete grab soil samples were collected from the uppermost 2 foot depth interval of each soil boring location along the length of the Project Area; sections of the Project Area that were subject to a 25-foot soil boring spacing were sampled for railroad COCs collected at every other soil boring location. Grab soil samples were collected from the 0.5-foot depth interval for odd-numbered soil boring locations and from the 2.0 foot depth interval for even-numbered soil boring

locations. Samples were transported under chain of custody to National Environmental Laboratory Accreditation Program (NELAP) -accredited AMRO Environmental Laboratories Corporation (AMRO) in Merrimack, NH for PAH, PCB, Priority Pollutant Metals, and Pesticides analyses by US EPA Methods 8270 with selective ion monitoring (SIM), 8082, 6010b, and 8081, respectively.

To assess the possible presence of asbestos-containing wastes within railway fill, four (4) composite soil samples were collected from surface soils, from the 0.5-foot bgs depth interval (Figure 2). Samples were transported under chain of custody of to EMSL Analytical, Inc. in Cinnaminson, New Jersey for asbestos analysis by Polarized Light Microscopy (PLM) via California Air Resources Board (CARB) Method 435.

2.2. Soil Boring Investigation Results

Soils were found to be generally 1 to 2 feet of fill, overlying fine-grained sands and silt to approximately 6 feet, which in turn overlaid medium and coarse sand. The uppermost portion of the fill contained gravelly sand "sub-base" material, while coal ash and coal debris-containing fill was found in a layer overlying the sand and silt unit. The thickness of the coal debris layer varied from 0.3 to 1.4 feet across the Project Area and was found to be nearly ubiquitous; this layer was not observed only in soil borings SB-17 and SB-24.

Soil PAH concentrations, presented in full in Appendix D and in summary in Table 1, below, were compared to US EPA RSLs for both residential and industrial soils. Full laboratory reports are provided in Appendix C. Toxicity equivalence concentrations were calculated for the seven carcinogenic PAHs. According to US EPA RSL User's Guide:

> "Toxicity equivalency factor (TEF) be used to convert concentrations of carcinogenic PAHs to an equivalent concentration of benzo(a)pyrene when assessing the cancer risks posed by these substances from oral exposures. These TEFs are based on the potency of each compound relative to that of benzo(a)pyrene."

Table 1: Toxicity Equivalency Factors Used for Normalizing Carcinogenic PAHs to Benzo(a)pyrene:

Compound	Toxicity Equivalency Factor
Benzo(a)pyrene	1.0
Benz(a)anthracene	0.1
Benzo(b)fluoranthene	0.1
Benzo(k)fluoranthene	0.01
Chrysene	0.001
Dibenz(a,h)anthracene	1.0
Indeno(1,2,3-c,d)pyrene	0.1

Figure 3 includes a summary of analytes detected in excess of the respective US EPA RSL for residential soils. Concentration results, summarized in Table 2, below, indicate variable distribution of metals and PAH contaminants across the Project Area. Concentrations of PAHs in excess of the US EPA RSL for residential soils were present in 15 of the 25 soil samples collected and analyzed and in excess of the industrial RSL in 10

of the 25 samples collected and analyzed. The highest concentrations of PAHs generally occurred within the surface soil 0.5 ft bgs sample interval and correspond to the coal ash debris layer.

Metals found in excess of the RSL for residential soils include antimony (7 samples), arsenic (23 samples), lead (1 sample), and mercury (1 sample). Mercury, arsenic and antimony were also found in excess of the industrial RSL.

Composite samples for asbestos analyses did not contain asbestos fibers at concentrations greater than the laboratory reporting limit.

2.3. Quality Control Summary

Two field duplicate samples were collected during the Phase II ESA. These samples, indicated by the suffix "–FD" were collected from samples SB-21-0.5 and SB-31.05. Relative percent difference (RPD) values were calculated for each field duplicate sample using the following formula:

$$RPD = 100 * (((ABSOLUTE(X1 - X2)/(X1 + X2))/2))$$

Where: X1 = Concentration of Original, X2 = Concentration of Field Duplicate.

Table B1 in Appendix B presents calculated RPDs for both field duplicates. RPD values for SB-21 were outside acceptable range of 50 to 150% for the soil matrix for nearly every compound detected. This indicates that the soil in this part of the Project Area is very heterogeneous. RPDs calculated for sample SB-31 were each within the acceptable limits.

Table 2: Soil Concentration Results, Compounds in Exceedance, Crescent Connector Phase II ESA

Analyte	Units	US EPA Region III Regional Screening Levels		SB-1-0.5	SB-2-2.0	SB-3	SB-4	SB-5	SB-6	SB-7	SB-8	SB-9
		Residential	Industrial	(0.5 ft bgs)	(2.0 ft bgs)	(0.5 ft bgs)	(2.0 ft bgs)	(0.5 ft bgs)	(2.0 ft bgs)	(0.5 ft bgs)	(0.5 ft bgs)	(0.5 ft bgs)
Total TEC of cPAHs as B(a)P[1]	µg/Kg	15	210	**106.76**	***857.07***	***5,154.6***	ND	***732.81***	ND	***478.99***	ND	153.769
Antimony	mg/Kg	3.1	41	1.9	1.1	1.5	ND	**6.5**	ND	**11.5**	ND	**1.4**
Arsenic	mg/Kg	0.61	2.4	***4.93***	***4.85***	***7.91***	***3.89***	***8.61***	***3.72***	***7.22***	***4.75***	***6.27***
Lead	mg/Kg	400	800	**28.7**	**21.9**	**38.9**	ND	**93.8**	**5.4**	**248**	ND	**155**
Mercury	mg/Kg	1	4.3	ND	ND	ND	ND	ND	ND	ND	ND	***5.57***

Analyte	Units	US EPA Region III Regional Screening Levels		SB-10	SB-11	SB-12	SB-15	SB-17	SB-21	SB-24	SB-25	SB-26
		Residential	Industrial	(0.5 ft bgs)	(2.0 ft bgs)	(0.5 ft bgs)	(2.0 ft bgs)	(0.5 ft bgs)	(2.0 ft bgs)	(0.5 ft bgs)	(0.5 ft bgs)	(0.5 ft bgs)
Total TEC of cPAHs as B(a)P[1]	µg/Kg	15	210	ND	***3,593.3***	ND	ND	***1,729.2***	***16,837.6***	***5,847.4***	**33.425**	ND
Antimony	mg/Kg	3.1	41	**1.3**	***47***	0.85	0.8	**7**	**7.3**	ND	ND	ND
Arsenic	mg/Kg	0.61	2.4	***9.36***	***264***	5.45	***4.92***	***14.3***	***22.5***	***7.71***	ND	***4.45***
Lead	mg/Kg	400	800	**47.3**	**735**	5.45	**5.33**	**129**	**216**	**82.8**	**7.96**	ND
Mercury	mg/Kg	1	4.3	0.0525	**0.356**	0.0543	0.0515	**0.123**	**0.088**	ND	ND	ND

		US EPA Region III Regional Screening Levels		SB-27	SB-28	SB-29	SB-30	SB-31	SB-32	SB-33
Analyte	**Units**	**Residential**	**Industrial**	**(0.5 ft bgs)**	**(2.0 ft bgs)**	**(0.5 ft bgs)**	**(2.0 ft bgs)**	**(0.5 ft bgs)**	**(2.0 ft bgs)**	**(0.5 ft bgs)**
Total TEC of cPAHs as B(a)P[1]	µg/Kg	15	210	**19.32**	***1,995.8***	***35.743***	***5,585.5***	ND	***935.95***	ND
Antimony	mg/Kg	3.1	41	ND	**19.9**	ND	**9.8**	ND	ND	ND
Arsenic	mg/Kg	0.61	2.4	***6.19***	***13.4***	***4.52***	***10.8***	***5.89***	***4.22***	***5.97***
Lead	mg/Kg	400	800	**8.67**	**251**	**8.43**	**170**	**8.76**	**8.95**	**8.45**
Mercury	mg/Kg	1	4.3	ND	**0.0863**	ND	**0.0614**	ND	ND	ND

Values in Bold indicate analyte was detected at a concentration greater than the laboratory reporting limit.

Values with grey highlight indicate analyte was detected at a concentration in excess of the US EPA Regional Screening Level for Residential Soils.

Values with grey highlight and italicized text indicate analyte was detected at a concentration in excess of the US EPA Region III Regional Screening Level for Industrial Soils.

cPAH: Carcinogenic polycyclic aromatic hydrocarbons

mg/Kg: Milligrams per kilogram

µg/Kg: Micrograms per kilogram

ND: Not detected

[1] Total TEC of cPAHs as B(a)P: Total Toxicity Equivalent Concentration of carcinogenic polycyclic aromatic hydrocarbons as benzo(a)pyrene.

3. CONCEPTUAL SITE MODEL

A Conceptual Site Model (CSM) is a set of working hypotheses which describe key aspects of the problem at a site. As with any hypothesis, the CSM is not conclusive and may require testing to arrive at desired levels of certainty. A CSM includes discussions of how chemicals were released at a site, their transport pathways and fate mechanisms, as well as exposure routes for both ecological and human receptors. The CSM is based on all available information related to the Project Area. In general terms, a CSM provides the context for the Site Investigation, to ensure that investigation phases are developed to efficiently provide the information needed for making sound site management decisions.

The following is a CSM for the Project Area based on review of historic documentation of prior uses within the downtown area, existing data sets of identified hazardous waste sites within or near the Project Area, and various other sources for the physical description of the area.

3.1. Project Area Geology and Hydrogeology

According to the Surficial Geologic Map of Vermont (Doll, 1970) and other published literature native unconsolidated soils in the Project Area are pebbly marine sand derived from a proto-delta of the Winooski River as it emptied into the marine water intrusion from the Saint Lawrence Seaway called the "Champlain Sea" following the last ice age. Deeper sediments within the Project Area, based on soil borings performed during hazardous site investigations within the Project Area, are finer silts and clays associated with a series broad freshwater glacial lakes that preceded the marine water intrusion. Lake Vermont, as it is commonly referred to, stretched as far inland as Montpelier, Roxbury, and Williamstown. As a result of these paleo water bodies, unconsolidated materials within the Project Area consist of as much as 20 feet of sand and gravel underlain by an unknown and likely highly variable thickness of silt and clay. Native soils collected from soil borings performed during this Phase II ESA corroborate the shallower sandy deposits recorded in published literature. Non-native fill is also present at the Project Area and includes both engineered sub-base material consisting of crushed stone and gravel, as well as PAH- and metals-contaminated debris from long running deposition of coal ash from the adjacent rail lines.

Bedrock in the vicinity of the Project Area has been mapped as the Skeels Corners Slate, a laminated, black slate with thin orange dolostone beds (Doll, 1961; Ratcliffe et al., 2011). Structural geologic mapping of the area documents folding of the bedrock with axial planes dipping moderately to the north.

Surface water bodies in proximity to the Project Area include the Winooski River, located approximately 2,400 feet to the south of the Project Area, and Indian Brook located approximately 3,400 feet to the north of the Project Area.

Surface water within paved areas at the Project Area is captured by the municipal stormwater system, which discharges to local surface water bodies, including Sunderland Brook, Indian Brook, the Winooski River, and unnamed tributaries.

Based on environmental investigation of nearby hazardous waste sites, groundwater within the Project Area likely flows from the northwest to southeast at a slight gradient. Based on soil saturation within the soil borings performed for this Phase II ESA, groundwater within the Project Area is approximately 6 and 7 ft bgs.

3.2. Contaminant Distribution

This Phase II ESA identified widespread contamination of Project Area soils with metals and PAHs. Groundwater contamination with VOCs was identified downgradient of sites adjacent to the Project Area, but

not within soil samples above the water table. Polychlorinated biphenyls and asbestos were not detected in soil samples collected and analyzed from the Project Area.

3.2.1. PAHs

PAHs are a group of chemical compounds that consist of fused aromatic rings. Some PAHs have been identified as carcinogenic, teratogenic and mutagenic. PAHs are constituents of and byproducts resulting from the combustion of fossil fuels and are present in fuel oil, coal and tar. PAHs are persistent and widespread in the environment, and do not readily partition to water without help from a co-solvent.

PAH contamination was detected within shallow soils across the Project Area. PAH-contaminated soils are likely the result of both the former fueling of train engines with coal and storage of coal fuel in open areas along the rail corridor, as shown by review of historical resources during the Essex Junction Area Wide Assessment. Concentrations of total carcinogenic PAHs in coal ash-containing soils are generally greater than 42 µg/Kg (MassDEP, 2002).

3.2.2. Volatile Organic Compounds

Gasoline contamination, documented by environmental investigation of the Simons Store property, is present in groundwater below the Project Area south of Maple Street and north of the Bailey's Spring and Chassis building. Field screening of soil cores performed during this Phase II ESA indicates that gasoline-related VOC contamination is not present in shallow soils at concentrations that would pose unacceptable risk of exposure to future construction workers or populace through direct contact or inhalation pathways.

Other potential VOC COCs, such as chlorinated solvents, Freons, or ketones, were not identified during this Phase II ESA.

3.2.2.1. Arsenic

Arsenic is a naturally occurring metal in Vermont and has a low US EPA Region III RSL (0.39 milligrams per kilogram (mg/Kg)) for residential soils; background arsenic concentrations within the Project Area likely exceed the appropriate regulatory criteria for this compound, as typical arsenic concentrations in Vermont native soils range between 2 and 10 mg/Kg. Higher concentrations of arsenic than what can be attributed to natural occurrence were observed in several samples, including one sample that contained 264 mg/Kg of arsenic (SB-11) at 0.5 ft bgs. This sample also contained concentrations of antimony, lead and PAHs above regulatory criteria (industrial US EPA Region III RSLs for PAHs and antimony, residential US EPA Region III RSL for lead). The source of these contaminants is likely related to coal ash present in the sample. Naturally-occurring metals present in wood and coal are often found concentrated in ash residue, and concentrations of arsenic in coal ash-containing soils are generally greater than 11 to 16.7 mg/Kg (MassDEP, 2002). In addition, arsenic was commonly used as a fortifying agent for creosote to assist in wood preservation, and arseno-based pesticides may have either been shipped to/from the railroad or used during maintenance activities of the rail bed itself. Based on historic documentation, creosote-treated railroad ties have been stockpiled in this area in the past.

3.2.2.2. Antimony

The source of antimony in shallow soils is likely related to coal ash present in the sample. Naturally-occurring metals present in wood and coal are often found concentrated in ash residue, and concentrations of antimony in coal ash-containing soils are generally greater than 1.4 to 7 mg/Kg (MassDEP, 2002). Antimony is alloyed

with other metals such as lead to increase its hardness and strength; its primary use is in antimonial lead, which is used in grid metal for lead acid storage batteries. Other uses of antimony alloys are for solder, sheet and pipe, bearing metals, castings, and type metal. Antimony oxides (primarily antimony trioxide) are used as fire retardants for plastics, textiles, rubber, adhesives, pigments, and paper. The occurrence of antimony in shallow soils within the Project Area may be related to one of these uses, however, the most likely source of antimony is coal ash..

Lead and Mercury

The source of both lead and mercury contamination in shallow soils are likely attributable to coal ash, as described above for antimony. Other anthropogenic sources of lead include lead-based paint, batteries, and solder while mercury is found within fluorescent light bulbs, thermometers.

3.2.3. Pesticides and PCBs

The organo-chlorine insecticide 4,4-DDT was detected in five samples at concentrations less than the US EPA Region III RSL for residential soils. Other, less prominent insecticides detected within Project Area soils included Dieldrin, 4,4-DDE, and 4,4-DDD. This class of chemicals was prominently used as insecticides in agricultural regions between 1939 and the 1970s. Insecticides generally are relatively insoluble, persistent (depending on the specific compound) and have a low vapor pressure. As the mobility of these chemicals through natural processes (e.g., groundwater migration or within the vapor phase) is very low, Stone expects that, in the absence of run-off, their occurrence would be limited to where they may have been applied, stored or transferred.

Arsenic-based insecticides were widely used up to the early 1940s when they were replaced by DDT. A release of arsenic-based insecticide at the Project Area may explain high concentrations of arsenic.

Polychlorinated biphenyls were detected as Aroclor 1260 in one sample within the Project Area (SB-5) at a concentration that is less than the US EPA Region III RSL for residential soils. Based on their limited occurrence and low concentration, PCBs do not appear to be pervasive in the Project Area.

4. CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this Phase II ESA and prior environmental investigations of nearby sites, Stone has drawn the following conclusions:

PAH Contamination

- Coal ash- and coal-containing soil was found in nearly every boring performed as part of this Phase II ESA and has resulted in PAH contamination in shallow soils.
  - Higher concentrations of PAHs were generally observed in the uppermost 0.5 ft in each boring, correlating to the depth intervals where coal ash and coal layers were observed.
- Polycyclic aromatic hydrocarbons are present in shallow soils at concentrations greater than the US EPA Region III RSL in most areas, including:
  - Fifteen locations where Total PAH TEC was greater than the residential US EPA Region III RSL;
  - Ten locations where Total PAH TEC was greater than the industrial US EPA Region III RSL; and
  - The highest Total PAH TEC concentration of 16,800 mg/Kg, was detected in shallow soil collected from railroad property adjacent Maple Street.

Metals Contamination

- Four metals were detected in Project Area soils at concentrations in excess of their respective US EPA Region III Regional Screening Levels, including arsenic, antimony, lead and mercury.
  - Arsenic was detected in 23 of 25 soil samples collected, is likely in part due to natural occurrence.
    - Four samples contained arsenic at concentrations that cannot be confidently attributed to natural occurrence. One such sample, collected from SB-11 a location within the railroad right of way, contained 268 mg/Kg. The most likely source of this contamination is from coal ash- and coal-containing soils, arsenic fortified creosote, or arsenic-based insecticides, for the railroad.
  - Antimony was detected in thirteen of 25 samples, including:
    - Seven samples contained antimony at concentrations greater than the residential US EPA Region III RSL.
    - Sample SB-11, a location within the railroad right of way, contained antimony at concentration greater than the industrial US EPA Region III RSL, 47 mg/Kg antimony. The most likely source of this contamination is from coal ash- and coal-containing soils.
  - Lead was detected in 22 of 25 samples.
    - Sample SB-11 contained lead at a concentration greater than the residential US EPA Region III RSL (735 mg/Kg); no samples contained lead greater than the industrial US

EPA Region III RSL. The most likely source of this contamination is from coal ash- and coal-containing soils.

- Mercury was detected in 6 of 25 samples.
  - Sample SB-9 contained mercury at a concentration greater than both the residential and industrial US EPA Region III RSL (5.57 mg/Kg); no other samples contained lead greater than the residential US EPA Region III RSL. The most likely source of this contamination is from coal ash- and coal-containing soils.

Other COCs

No other Project Area COCs were detected at concentrations greater than residential US EPA Region III RSLs.

Based on the findings of this Phase II ESA and the proposed construction of the Crescent Connector, Stone recommends the following:

1) As a function of this Phase II ESA, evidence of past release of contaminants to the environment was identified. In accordance with Vermont Statute 10 V.S.A. Chapter 159 Section 6617, "Any person who has knowledge of a release or a suspected release and who may be subject to liability for a release, as detailed in section 6615 (e.g. owners or operators of a facility), shall immediately notify the Agency."
2) In accordance with 29 CFR 1910.120, construction workers engaged in activities where they are exposed or potentially exposed to hazardous substances are required to have Hazardous Waste Operations and Emergency Response (HAZWOPER) training.
3) Construction of the roadway will require removal of up to two feet of existing soil to enable installation of more competent engineered sub base fill. Any soils that are required to be removed during this process will need to be managed according to their waste profile.
    a. Based on our current understanding of the distribution of metals contamination within the area of the proposed alignment, select areas, specifically in the area of SB-11 (Arsenic = 264 mg/Kg, Antimony = 47 mg/Kg, Lead = 735 mg/Kg), SB-9 (Mercury = 5.57 mg/Kg), will require disposal as Resource Conservation Recovery Act (RCRA)-regulated waste. To limit the amount of material requiring this disposal pathway, further delineation is required.
    b. Stone recommends that a Soil Management Plan be developed in advance of construction activities to reduce costly delays that may be encountered during construction.
4) To date, impacts to groundwater from COCs identified during this Phase II ESA have not been assessed.

5. REFERENCES

Dole, Charles G., 1960, *Centennial Geologic Map of Vermont,* Vermont State Geological Survey

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Stewart, David P. and MacClintock, Pail, 1969, *The Surficial Geology and Pleistocene History of Vermont.*

Massachusetts Department of Environmental Protection, 2002. *Technical Update, Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil*, Office of Research and Standards. May.

APPENDICES

APPENDIX A: FIGURES



Village Center

0 0.25 0.5 1 Miles

N

Sources: ESRI: US Topo Map

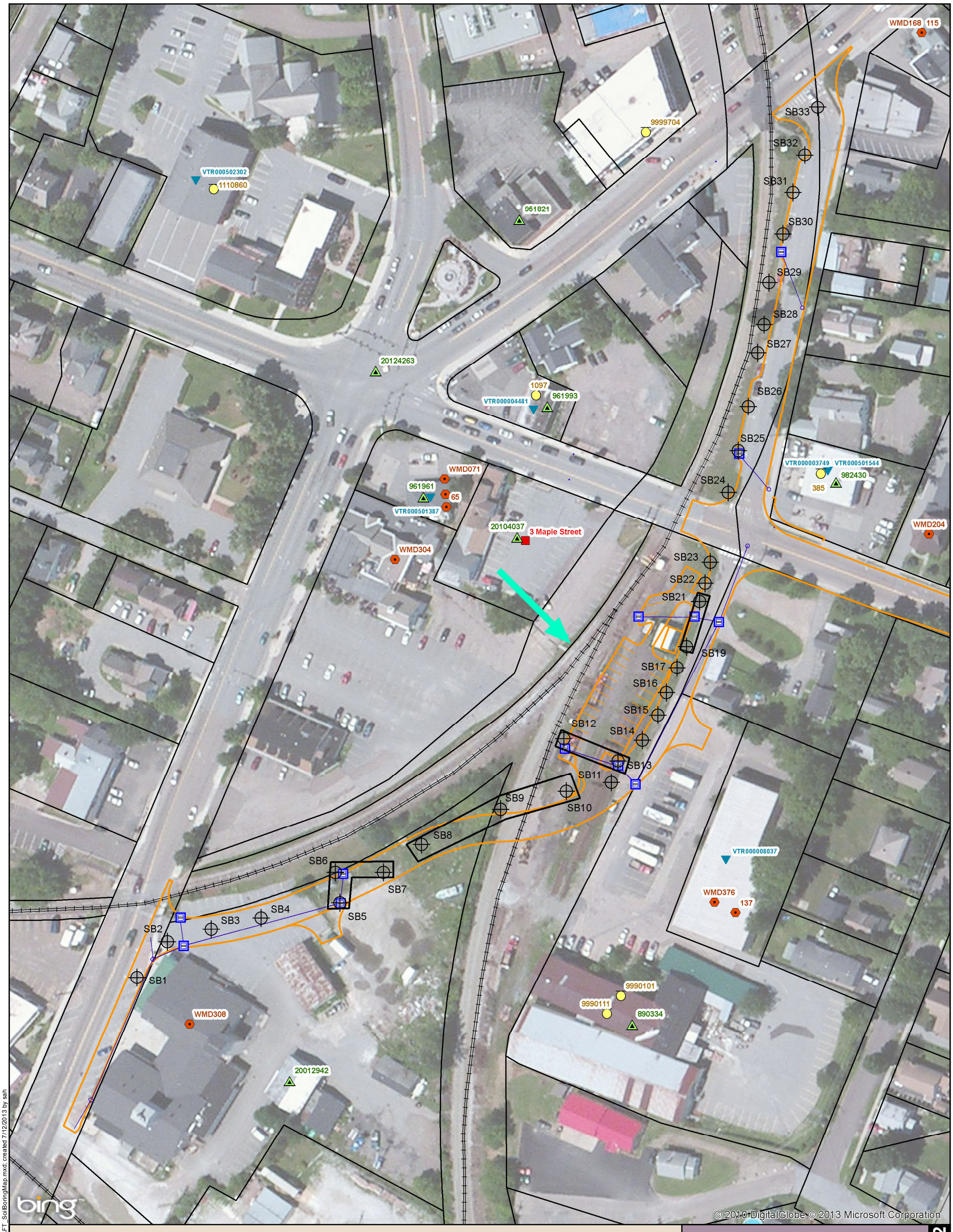
Location Map

Figure 1

Crescent Connector
Phase II ESA
Essex Junction, Vermont
Prepared for Dubois & King, Inc.

STONE ENVIRONMENTAL INC

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Soil Boring Advanced June 2013
Composite Asbestos Sample
Proposed Catch Basins
Proposed Drain Lines
Presumed Groundwater Flow Direction
Proposed Crescent Connector Corridor
Existing Railroad
Assessor's Parcel Boundaries (2011)

VT DEC Listed UST Facility
VT Hazardous Waste Site
VT Brownfields
VT Hazardous Waste Generators
VT DEC Registered Spills

N

0 50 100 200 Feet

Sources. Stone Environmental: Proposed Soil Borings (2013); ANR: UST Facilities (2012), Hazardous Waste Sites (2012), Brownfields (2012), Hazardous Waste Generators (2012), Spills (2012); CCMPO: Crescent Connector (2011); CCRPC: Village Center (2011); VCGI: Railroads (2003); ESRI: Bing Imagery (2010)

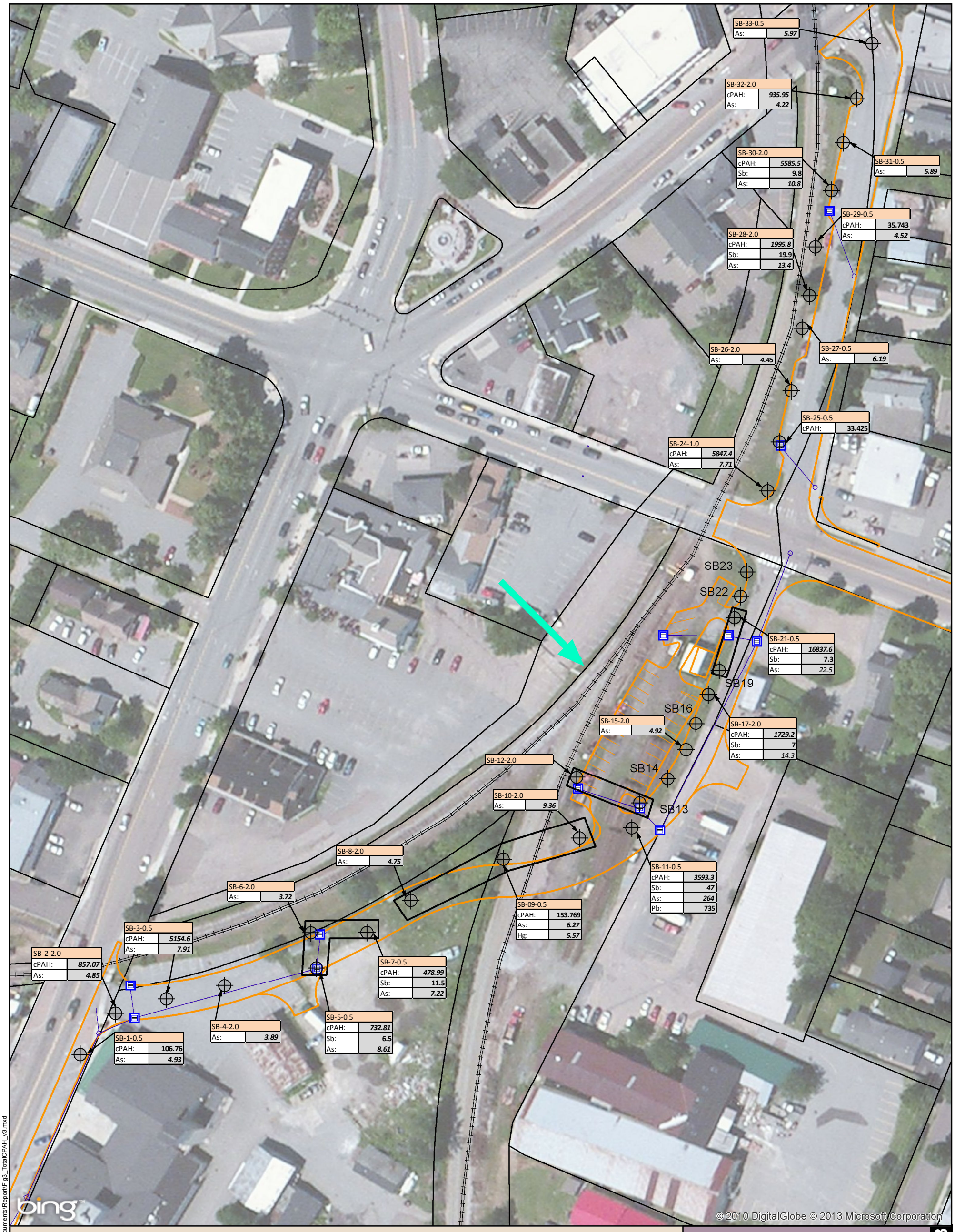
Soil Boring Locations

FIGURE 2

Crescent Connector
Phase II ESA
Essex Junction, Vermont
Prepared for Dubois & King, Inc.

STONE ENVIRONMENTAL INC

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N

0 37.5 75 150 Feet

- Soil Boring Location, June 2013
- Composite Asbestos Sample
- Proposed Catch Basins
- Proposed Drain Lines
- Presumed Groundwater Flow Direction
- Proposed Crescent Connector Corridor
- Existing Railroad
- Assessor's Parcel Boundaries (2011)

1) Concentration units for cPAHs are in ug/Kg; Metals are reported in mg/Kg.

2) Only concentrations greater than the US EPA Regional Screening Level for Residential Soils are shown. Values in italicized text are also greater than the RSL for industrial soils.

3) cPAH: Total carcinogenic polycyclic aromatic hydrocarbon toxicity equivalence concentration relative to benzo(a)pyrene.

Sources. Stone Environmental: Soil Borings (2013); AMRO soil analytical data (2013) ANR: UST Facilities (2012), Hazardous Waste Sites (2012), Brownfields (2012), Hazardous Waste Generators (2012), Spills (2012); CCMPO: Crescent Connector (2011); CCRPC: Village Center (2011); VCGI: Railroads (2003); ESRI: Bing Imagery (2010)

Compounds Detected in Exceedance in Soil

FIGURE 3

Crescent Connector
Phase II ESA
Essex Junction, Vermont
Prepared for Dubois & King, Inc.

STONE ENVIRONMENTAL INC

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APPENDIX B: TABLES

Table B1: Soil Concnetrations, Crescent Connect, Essex Junction, Vermont

Analyte	Units	USEPA Screening Levels Residential Soil	Industrial Soil	AMR-SB-1-0.5 Value	Q	AMR-SB-2-2.0 Value	Q	AMR-SB-3-0.5 Value	Q	AMR-SB-4-2.0 Value	Q	AMR-SB-5-0.5 Value	Q	AMR-SB-6-2.0 Value	Q
Polycyclic Aromatic Hydrocarbons															
2-Methylnaphthalene	µg/Kg	23000	220000	**470**		**230**		**1300**		10	U	**420**		11	U
Acenaphthene	µg/Kg	340000	3300000	11	U	**19**		**54**		10	U	11	U	11	U
Acenaphthylene	µg/Kg	NS	NS	**12**		**210**		**760**		10	U	**61**		11	U
Anthracene	µg/Kg	1700000	17000000	**20**		**150**		**670**		10	U	**67**		11	U
Benz(a)anthracene	µg/Kg	150	2100	**76**		**520**		***2800***		10	U	**370**		11	U
Benzo(a)pyrene	µg/Kg	15	210	**65**		***530***		***3300***		10	U	***460***		11	U
Benzo(b)fluoranthene	µg/Kg	150	2100	**71**		**610**		***3600***		10	U	**510**		11	U
Benzo(g,h,i)perylene	µg/Kg	NS	NS	**47**		**410**		**2400**		10	U	**340**		11	U
Benzo(k)fluoranthene	µg/Kg	1500	21000	**45**		**540**		**3100**		10	U	**330**		11	U
Chrysene	µg/Kg	15000	210000	**110**		**670**		**3600**		10	U	**510**		11	U
Dibenz(a,h)anthracene	µg/Kg	15	210	**23**		**170**		***950***		10	U	**150**		11	U
Fluoranthene	µg/Kg	230000	2200000	**100**		**880**		**5100**		10	U	**340**		11	U
Fluorene	µg/Kg	230000	2200000	11	U	**16**		**81**		10	U	**12**		11	U
Indeno(1,2,3-cd)pyrene	µg/Kg	150	2100	**35**		**380**		***2300***		10	U	**310**		11	U
Naphthalene	µg/Kg	3600	18000	**290**		**200**		**980**		10	U	**340**		11	U
Phenanthrene	µg/Kg	NS	NS	**280**		**390**		**1900**		10	U	**350**		11	U
Pyrene	µg/Kg	170000	1700000	**110**		**900**		**4900**		10	U	**420**		11	U
Total CPAH Equivalent Toxicity as Benzo(a)pyrene	µg/Kg			107		857		5155		23		733		25	
Herbicides															
4,4'-DDD	µg/Kg	2000	7200	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U	1.8	U
4,4'-DDE	µg/Kg	1400	5100	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U	1.8	U
4,4'-DDT	µg/Kg	1700	7000	1.7	U	**3.6**		1.8	U	1.7	U	**7.6**		1.8	U
Aldrin	µg/Kg	29	100	0.85	U	0.84	U	0.92	U	0.85	U	0.87	U	0.89	U
alpha-BHC	µg/Kg	77	270	0.85	U	0.84	U	0.92	U	0.85	U	0.87	U	0.89	U
alpha-Chlordane	µg/Kg	NS	NS	0.85	U	0.84	U	0.92	U	0.85	U	0.87	U	0.89	U
beta-BHC	µg/Kg	270	960	0.85	U	0.84	U	0.92	U	0.85	U	0.87	U	0.89	U
delta-BHC	µg/Kg	NS	NS	0.85	U	0.84	U	0.92	U	0.85	U	0.87	U	0.89	U
Dieldrin	µg/Kg	30	110	1.7	U	1.7	U	**15**		1.7	U	1.7	U	1.8	U
Endosulfan I	µg/Kg	NS	NS	0.85	U	0.84	U	0.92	U	0.85	U	0.87	U	0.89	U
Endosulfan II	µg/Kg	NS	NS	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U	1.8	U
Endosulfan sulfate	µg/Kg	NS	NS	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U	1.8	U
Endrin	µg/Kg	1800	18000	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U	1.8	U
Endrin aldehyde	µg/Kg	NS	NS	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U	1.8	U
Endrin ketone	µg/Kg	NS	NS	1.7	U	1.7	U	1.8	U	1.7	U	1.7	U	1.8	U
gamma-BHC	µg/Kg	520	2100	0.85	U	0.84	U	0.92	U	0.85	U	0.87	U	0.89	U
gamma-Chlordane	µg/Kg	NS	NS	0.85	U	0.84	U	0.92	U	0.85	U	0.87	U	0.89	U
Heptachlor	µg/Kg	110	380	0.85	U	0.84	U	0.92	U	0.85	U	0.87	U	0.89	U
Heptachlor epoxide	µg/Kg	53	190	0.85	U	0.84	U	0.92	U	0.85	U	0.87	U	0.89	U
Methoxychlor	µg/Kg	31000	310000	8.5	U	8.4	U	9.2	U	8.5	U	8.7	U	8.9	U
Technical Chlordane	µg/Kg	NS	NS	26	U	26	U	29	U	27	U	27	U	28	U
Toxaphene	µg/Kg	440	1600	26	U	26	U	29	U	27	U	27	U	28	U

Table B1: Soil Concnetrations, Crescent Connect, Essex Junction, Vermont

Analyte	Units	USEPA Screening Levels Residential Soil	Industrial Soil	AMR-SB-1-0.5 Value	Q	AMR-SB-2-2.0 Value	Q	AMR-SB-3-0.5 Value	Q	AMR-SB-4-2.0 Value	Q	AMR-SB-5-0.5 Value	Q	AMR-SB-6-2.0 Value	Q
Polychlorinated Biphenyls (as Aroclors)															
Aroclor 1016	µg/Kg	390	3700	26	U	26	U	29	U	27	U	27	U	28	U
Aroclor 1221	µg/Kg	140	540	26	U	26	U	29	U	27	U	27	U	28	U
Aroclor 1232	µg/Kg	140	540	26	U	26	U	29	U	27	U	27	U	28	U
Aroclor 1242	µg/Kg	220	740	26	U	26	U	29	U	27	U	27	U	28	U
Aroclor 1248	µg/Kg	220	740	26	U	26	U	29	U	27	U	27	U	28	U
Aroclor 1254	µg/Kg	110	740	26	U	26	U	29	U	27	U	27	U	28	U
Aroclor 1260	µg/Kg	220	740	26	U	26	U	29	U	27	U	**38**		28	U
Aroclor 1262	µg/Kg	NE	NE	26	U	26	U	29	U	27	U	27	U	28	U
Aroclor 1268	µg/Kg	NE	NE	26	U	26	U	29	U	27	U	27	U	28	U
Metals															
Antimony	mg/Kg	3.1	41	**1.9**		**1.1**		**1.5**		0.79	U	**6.5**		0.84	U
Arsenic	mg/Kg	0.61	2.4	***4.93***		***4.85***		***7.91***		***3.89***		***8.61***		***3.72***	
Beryllium	mg/Kg	16	200	0.326	U	0.322	U	**0.356**		0.317	U	0.416		0.338	U
Cadmium	mg/Kg	7	80	0.652	U	0.644	U	0.694	U	0.635	U	0.67	U	0.676	U
Chromium	mg/Kg	NS	NS	**10.8**		**13.8**		**9.33**		**10.4**		**11.5**		**12.9**	
Copper	mg/Kg	310	4100	**15.3**		**43**		**22.4**		**6.72**		**27.5**		**8.37**	
Lead	mg/Kg	400	800	**28.7**		**21.9**		**38.9**		5.07	U	**93.8**		5.4	U
Mercury	mg/Kg	1	4.3	0.0522	U	0.0518	U	0.0547	U	0.0494	U	0.0547	U	0.0538	U
Nickel	mg/Kg	150	2000	**15.9**		**23.3**		**13.5**		**13.4**		**11**		**13.9**	
Selenium	mg/Kg	39	510	1.3	U	1.3	U	1.4	U	1.3	U	1.3	U	1.4	U
Silver	mg/Kg	39	510	1.83	U	1.8	U	1.95	U	1.77	U	1.87	U	1.89	U
Thallium	mg/Kg	0.078	1	1.3	U, PS	1.3	U, PS	1.4	U, PS	1.3	U, PS	1.3	U, PS	1.4	U, PS
Zinc	mg/Kg	2300	31000	**38.2**		**54.3**		**37.9**		**30.1**		**35**		**32.9**	

Values in bold indicate compound was detected at a concentration greater than the laboratory reporting limit.

Values in grey highlight indicate concentration is greater than the US EPA RSL for Residential Soils.

Values in italicized text indicates concentrations are greater than the US EPA RSL for industrial soils.

Table B1: Soil Concnetrations, Crescent Connect, Essex Junction, Vermont

Analyte	Units	USEPA Screening Levels Residential Soil	Industrial Soil	AMR-SB-7-0.5 Value	Q	AMR-SB-8-2.0 Value	Q	AMR-SB-09-0.5 Value	Q	AMR-SB-10-2.0 Value	Q	AMR-SB-11-0.5 Value	Q	AMR-SB-12-2.0 Value	Q
Polycyclic Aromatic Hydrocarbons															
2-Methylnaphthalene	µg/Kg	23000	220000	**1400**		11	U	**16**		11	U	**970**		**18**	
Acenaphthene	µg/Kg	340000	3300000	11	U	11	U	11	U	11	U	**53**		11	U
Acenaphthylene	µg/Kg	NS	NS	**77**		11	U	11	U	11	U	**1400**		11	U
Anthracene	µg/Kg	1700000	17000000	**88**		11	U	**17**		11	U	**800**		11	U
Benz(a)anthracene	µg/Kg	150	2100	**270**		11	U	**86**		11	U	**1700**		11	U
Benzo(a)pyrene	µg/Kg	15	210	***280***		11	U	**100**		11	U	***1600***		11	U
Benzo(b)fluoranthene	µg/Kg	150	2100	**390**		11	U	**100**		11	U	***4200***		11	U
Benzo(g,h,i)perylene	µg/Kg	NS	NS	**230**		11	U	**76**		11	U	**2700**		11	U
Benzo(k)fluoranthene	µg/Kg	1500	21000	**250**		11	U	**87**		11	U	**3000**		11	U
Chrysene	µg/Kg	15000	210000	**490**		11	U	**99**		11	U	**3300**		11	U
Dibenz(a,h)anthracene	µg/Kg	15	210	**110**		11	U	**27**		11	U	**1100**		11	U
Fluoranthene	µg/Kg	230000	2200000	**490**		11	U	**170**		11	U	**2300**		11	U
Fluorene	µg/Kg	230000	2200000	**21**		11	U	11	U	11	U	**47**		11	U
Indeno(1,2,3-cd)pyrene	µg/Kg	150	2100	**200**		11	U	**72**		11	U	***2700***		11	U
Naphthalene	µg/Kg	3600	18000	**1200**		11	U	**14**		11	U	**1000**		**16**	
Phenanthrene	µg/Kg	NS	NS	**930**		11	U	**75**		11	U	**900**		11	U
Pyrene	µg/Kg	170000	1700000	**480**		11	U	**170**		11	U	**2000**		11	U
Total CPAH Equivalent Toxicity as Benzo(a)pyrene	µg/Kg			479		25		154		25		3593		25	
Herbicides															
4,4'-DDD	µg/Kg	2000	7200	1.8	U	1.7	U	1.7	U	1.7	U	2	U	1.8	U
4,4'-DDE	µg/Kg	1400	5100	1.8	U	1.7	U	1.7	U	1.7	U	2	U	1.8	U
4,4'-DDT	µg/Kg	1700	7000	**11**		1.7	U	1.7	U	1.7	U	**7.1**		1.8	U
Aldrin	µg/Kg	29	100	0.92	U	0.86	U	0.86	U	0.87	U	0.98	U	0.92	U
alpha-BHC	µg/Kg	77	270	0.92	U	0.86	U	0.86	U	0.87	U	0.98	U	0.92	U
alpha-Chlordane	µg/Kg	NS	NS	0.92	U	0.86	U	0.86	U	0.87	U	0.98	U	0.92	U
beta-BHC	µg/Kg	270	960	0.92	U	0.86	U	0.86	U	0.87	U	0.98	U	0.92	U
delta-BHC	µg/Kg	NS	NS	0.92	U	0.86	U	0.86	U	0.87	U	0.98	U	0.92	U
Dieldrin	µg/Kg	30	110	1.8	U	1.7	U	1.7	U	1.7	U	**11**		1.8	U
Endosulfan I	µg/Kg	NS	NS	0.92	U	0.86	U	0.86	U	0.87	U	0.98	U	0.92	U
Endosulfan II	µg/Kg	NS	NS	1.8	U	1.7	U	1.7	U	1.7	U	2	U	1.8	U
Endosulfan sulfate	µg/Kg	NS	NS	1.8	U	1.7	U	1.7	U	1.7	U	2	U	1.8	U
Endrin	µg/Kg	1800	18000	1.8	U	1.7	U	1.7	U	1.7	U	2	U	1.8	U
Endrin aldehyde	µg/Kg	NS	NS	1.8	U	1.7	U	1.7	U	1.7	U	2	U	1.8	U
Endrin ketone	µg/Kg	NS	NS	1.8	U	1.7	U	1.7	U	1.7	U	2	U	1.8	U
gamma-BHC	µg/Kg	520	2100	0.92	U	0.86	U	0.86	U	0.87	U	0.98	U	0.92	U
gamma-Chlordane	µg/Kg	NS	NS	0.92	U	0.86	U	0.86	U	0.87	U	0.98	U	0.92	U
Heptachlor	µg/Kg	110	380	0.92	U	0.86	U	0.86	U	0.87	U	0.98	U	0.92	U
Heptachlor epoxide	µg/Kg	53	190	0.92	U	0.86	U	0.86	U	0.87	U	0.98	U	0.92	U
Methoxychlor	µg/Kg	31000	310000	9.2	U	8.6	U	8.6	U	8.7	U	9.8	U	9.2	U
Technical Chlordane	µg/Kg	NS	NS	29	U	27	U	27	U	27	U	31	U	29	U
Toxaphene	µg/Kg	440	1600	29	U	27	U	27	U	27	U	31	U	29	U

Table B1: Soil Concnetrations, Crescent Connect, Essex Junction, Vermont

Analyte	Units	USEPA Screening Levels Residential Soil	Industrial Soil	AMR-SB-7-0.5 Value	Q	AMR-SB-8-2.0 Value	Q	AMR-SB-09-0.5 Value	Q	AMR-SB-10-2.0 Value	Q	AMR-SB-11-0.5 Value	Q	AMR-SB-12-2.0 Value	Q
Polychlorinated Biphenyls (as Aroclors)															
Aroclor 1016	µg/Kg	390	3700	29	U	27	U	27	U	27	U	31	U	29	U
Aroclor 1221	µg/Kg	140	540	29	U	27	U	27	U	27	U	31	U	29	U
Aroclor 1232	µg/Kg	140	540	29	U	27	U	27	U	27	U	31	U	29	U
Aroclor 1242	µg/Kg	220	740	29	U	27	U	27	U	27	U	31	U	29	U
Aroclor 1248	µg/Kg	220	740	29	U	27	U	27	U	27	U	31	U	29	U
Aroclor 1254	µg/Kg	110	740	29	U	27	U	27	U	27	U	31	U	29	U
Aroclor 1260	µg/Kg	220	740	29	U	27	U	27	U	27	U	31	U	29	U
Aroclor 1262	µg/Kg	NE	NE	29	U	27	U	27	U	27	U	31	U	29	U
Aroclor 1268	µg/Kg	NE	NE	29	U	27	U	27	U	27	U	31	U	29	U
Metals															
Antimony	mg/Kg	3.1	41	**11.5**		0.84	U	**1.4**		**1.3**		***47***		0.85	U
Arsenic	mg/Kg	0.61	2.4	***7.22***		***4.75***		***6.27***		***9.36***		***264***		5.45	U
Beryllium	mg/Kg	16	200	0.421		0.336	U	0.311	U	0.336	U	**0.585**		0.341	U
Cadmium	mg/Kg	7	80	0.698	U	0.672	U	0.622	U	0.672	U	0.768	U	**0.88**	
Chromium	mg/Kg	NS	NS	**12.3**		**11.4**		**11**		**13.6**		**18.1**		**15.4**	
Copper	mg/Kg	310	4100	**59.6**		**8.54**		**42**		**51.7**		**157**		**10.6**	
Lead	mg/Kg	400	800	**248**		5.38	U	**155**		**47.3**		**735**		5.45	U
Mercury	mg/Kg	1	4.3	0.0542	U	0.0533	U	***5.57***		0.0525	U	**0.356**		0.0543	U
Nickel	mg/Kg	150	2000	**10.8**		**16.8**		**12.7**		**14.3**		**17.5**		**21**	
Selenium	mg/Kg	39	510	5.6	U	1.3	U	1.2	U	1.3	U	**2.6**		1.4	U
Silver	mg/Kg	39	510	1.95	U	1.88	U	1.74	U	1.88	U	2.15	U	1.91	U
Thallium	mg/Kg	0.078	1	1.4	U, PS	1.3	U, PS	1.2	U, PS	1.3	U, PS	1.5	U, PS	1.4	U, PS
Zinc	mg/Kg	2300	31000	**33.7**		**23.9**		**98.2**		**31.3**		**38**		**101**	

Values in bold indicate compound was detected at a concentration greater than the laboratory reporting limit.

Values in grey highlight indicate concentration is greater than the US EPA RSL for Residential Soils.

Values in italicized text indicates concentrations are greater than the US EPA RSL for industrial soils.

Table B1: Soil Concnetrations, Crescent Connect, Essex Junction, Vermont

Analyte	Units	USEPA Screening Levels Residential Soil	Industrial Soil	AMR-SB-15-2.0 Value	Q	AMR-SB-17-2.0 Value	Q	AMR-SB-21-0.5 Value	Q	AMR-SB-21-0.5 FD Value	Q	RPD	AMR-SB-24-1.0 Value	Q	AMR-SB-25-0.5 Value	Q
Polycyclic Aromatic Hydrocarbons																
2-Methylnaphthalene	µg/Kg	23000	220000	11	U	**130**		**320**		**61**		136.0	**52**		10	U
Acenaphthene	µg/Kg	340000	3300000	11	U	**38**		**170**		54	U	NA	**54**		10	U
Acenaphthylene	µg/Kg	NS	NS	11	U	**390**		**5000**		**580**		158.4	**900**		10	U
Anthracene	µg/Kg	1700000	17000000	11	U	**350**		**2100**		**340**		144.3	**590**		10	U
Benz(a)anthracene	µg/Kg	150	2100	11	U	**810**		***6400***		**660**		162.6	***3100***		**26**	
Benzo(a)pyrene	µg/Kg	15	210	11	U	***1100***		***11000***		***1000***		166.7	***3900***		**22**	
Benzo(b)fluoranthene	µg/Kg	150	2100	11	U	**1300**		***11000***		**1100**		163.6	***3500***		**22**	
Benzo(g,h,i)perylene	µg/Kg	NS	NS	11	U	**840**		**9500**		**1100**		158.5	**2700**		**14**	
Benzo(k)fluoranthene	µg/Kg	1500	21000	11	U	**910**		**7900**		**770**		164.5	**3400**		**20**	
Chrysene	µg/Kg	15000	210000	11	U	**1100**		**8600**		**950**		160.2	**3400**		**25**	
Dibenz(a,h)anthracene	µg/Kg	15	210	11	U	***330***		***3200***		***370***		158.5	***1000***		10	U
Fluoranthene	µg/Kg	230000	2200000	11	U	**1700**		**14000**		**1300**		166.0	**6200**		**39**	
Fluorene	µg/Kg	230000	2200000	11	U	**46**		**190**		54	U	NA	**100**		10	U
Indeno(1,2,3-cd)pyrene	µg/Kg	150	2100	11	U	**780**		***8100***		**860**		161.6	***2500***		**14**	
Naphthalene	µg/Kg	3600	18000	11	U	**110**		**520**		**67**		154.3	**140**		10	U
Phenanthrene	µg/Kg	NS	NS	11	U	**830**		**4700**		**460**		164.3	**1700**		10	U
Pyrene	µg/Kg	170000	1700000	11	U	**1600**		**14000**		**1500**		161.3	**5700**		**35**	
Total CPAH Equivalent Toxicity as Benzo(a)pyrene	µg/Kg			25		1729		16838		1641		164.5	5847		33	
Herbicides																
4,4'-DDD	µg/Kg	2000	7200	1.8	U	**3.4**		**12**		17	U	NA	**3**		1.7	U
4,4'-DDE	µg/Kg	1400	5100	1.8	U	**6.5**		1.8	U	17	U	NA	2.2	U	1.7	U
4,4'-DDT	µg/Kg	1700	7000	**3.3**		**28**		**15**		**30**		66.7	**9.9**		1.7	U
Aldrin	µg/Kg	29	100	0.88	U	0.95	U	0.91	U	8.7	U	NA	1.1	U	0.84	U
alpha-BHC	µg/Kg	77	270	0.88	U	0.95	U	0.91	U	8.7	U	NA	1.1	U	0.84	U
alpha-Chlordane	µg/Kg	NS	NS	0.88	U	0.95	U	0.91	U	8.7	U	NA	1.1	U	0.84	U
beta-BHC	µg/Kg	270	960	0.88	U	0.95	U	0.91	U	8.7	U	NA	1.1	U	0.84	U
delta-BHC	µg/Kg	NS	NS	0.88	U	0.95	U	0.91	U	8.7	U	NA	1.1	U	0.84	U
Dieldrin	µg/Kg	30	110	1.8	U	1.9	U	17		17	U	NA	**5.6**		1.7	U
Endosulfan I	µg/Kg	NS	NS	0.88	U	0.95	U	0.91	U	8.7	U	NA	1.1	U	0.84	U
Endosulfan II	µg/Kg	NS	NS	1.8	U	1.9	U	1.8	U	17	U	NA	2.2	U	1.7	U
Endosulfan sulfate	µg/Kg	NS	NS	1.8	U	1.9	U	1.8	U	17	U	NA	2.2	U	1.7	U
Endrin	µg/Kg	1800	18000	1.8	U	1.9	U	1.8	U	17	U	NA	2.2	U	1.7	U
Endrin aldehyde	µg/Kg	NS	NS	1.8	U	1.9	U	1.8	U	17	U	NA	2.2	U	1.7	U
Endrin ketone	µg/Kg	NS	NS	1.8	U	1.9	U	1.8	U	17	U	NA	2.2	U	1.7	U
gamma-BHC	µg/Kg	520	2100	0.88	U	0.95	U	0.91	U	8.7	U	NA	1.1	U	0.84	U
gamma-Chlordane	µg/Kg	NS	NS	0.88	U	0.95	U	0.91	U	8.7	U	NA	1.1	U	0.84	U
Heptachlor	µg/Kg	110	380	0.88	U	0.95	U	0.91	U	8.7	U	NA	1.1	U	0.84	U
Heptachlor epoxide	µg/Kg	53	190	0.88	U	0.95	U	0.91	U	8.7	U	NA	1.1	U	0.84	U
Methoxychlor	µg/Kg	31000	310000	8.8	U	9.5	U	9.1	U	87	U	NA	11	U	8.4	U
Technical Chlordane	µg/Kg	NS	NS	28	U	30	U	29	U	270	U	NA	35	U	26	U
Toxaphene	µg/Kg	440	1600	28	U	30	U	29	U	270	U	NA	35	U	26	U

Table B1: Soil Concnetrations, Crescent Connect, Essex Junction, Vermont

Analyte	Units	USEPA Screening Levels Residential Soil	Industrial Soil	AMR-SB-15-2.0 Value	Q	AMR-SB-17-2.0 Value	Q	AMR-SB-21-0.5 Value	Q	AMR-SB-21-0.5 FD Value	Q	RPD	AMR-SB-24-1.0 Value	Q	AMR-SB-25-0.5 Value	Q
Polychlorinated Biphenyls (as Aroclors)																
Aroclor 1016	µg/Kg	390	3700	28	U	30	U	29	U	270	U	NA	35	U	26	U
Aroclor 1221	µg/Kg	140	540	28	U	30	U	29	U	270	U	NA	35	U	26	U
Aroclor 1232	µg/Kg	140	540	28	U	30	U	29	U	270	U	NA	35	U	26	U
Aroclor 1242	µg/Kg	220	740	28	U	30	U	29	U	270	U	NA	35	U	26	U
Aroclor 1248	µg/Kg	220	740	28	U	30	U	29	U	270	U	NA	35	U	26	U
Aroclor 1254	µg/Kg	110	740	28	U	30	U	29	U	270	U	NA	35	U	26	U
Aroclor 1260	µg/Kg	220	740	28	U	30	U	29	U	270	U	NA	35	U	26	U
Aroclor 1262	µg/Kg	NE	NE	28	U	30	U	29	U	270	U	NA	35	U	26	U
Aroclor 1268	µg/Kg	NE	NE	28	U	30	U	29	U	270	U	NA	35	U	26	U
Metals																
Antimony	mg/Kg	3.1	41	0.8	U	**7**		**7.3**		**11**		40.4	1.1	U	0.79	U
Arsenic	mg/Kg	0.61	2.4	***4.92***		*14.3*	MSA	*22.5*	MSA	***4.02***		139.4	***7.71***		5.03	U
Beryllium	mg/Kg	16	200	0.32	U	**0.411**		**0.542**		0.337	U	NA	0.429	U	0.314	U
Cadmium	mg/Kg	7	80	0.642	U	0.761	U	**0.799**		0.673	U	NA	0.858	U	0.629	U
Chromium	mg/Kg	NS	NS	**14.8**		**24.6**		**19.1**		**12.4**		42.5	**19.3**		**8.5**	
Copper	mg/Kg	310	4100	**11**		**50.7**		**82.1**		**30.9**		90.6	**29.6**		**21.2**	
Lead	mg/Kg	400	800	**5.33**		**129**		**216**		**117**		59.5	**82.8**		**7.96**	
Mercury	mg/Kg	1	4.3	0.0515	U	**0.123**		**0.088**		**0.066**		28.6	0.0665	U	0.0498	U
Nickel	mg/Kg	150	2000	**14.7**		**21.2**		**24.1**		**9.73**		85.0	**24.2**		**14.2**	
Selenium	mg/Kg	39	510	1.3	U	1.5	U, MS,	**1.4**		1.3	U	7.4	1.7	U	1.3	U
Silver	mg/Kg	39	510	1.8	U	2.13	U	1.9	U	1.89	U	NA	2.41	U	1.76	U
Thallium	mg/Kg	0.078	1	1.3	U, PS	1.5	U, PS	1.4	U, PS	1.3	U, PS	NA	1.7	U, PS	1.3	U, PS
Zinc	mg/Kg	2300	31000	**28.4**		**113**		**120**		**47.9**		85.9	**68**		**44.9**	

Values in bold indicate compound was detected at a concentration greater than the laboratory reporting limit.
Values in grey highlight indicate concentration is greater than the US EPA RSL for Residential Soils.
Values in italicized text indicates concentrations are greater than the US EPA RSL for industrial soils.

Table B1: Soil Concnetrations, Crescent Connect, Essex Junction, Vermont

Analyte	Units	USEPA Screening Levels Residential Soil	Industrial Soil	AMR-SB-26-2.0 Value	Q	AMR-SB-27-0.5 Value	Q	AMR-SB-28-2.0 Value	Q	AMR-SB-29-0.5 Value	Q	AMR-SB-30-2.0 Value	Q	AMR-SB-31-0.5 Value	Q
Polycyclic Aromatic Hydrocarbons															
2-Methylnaphthalene	µg/Kg	23000	220000	10	U	10	U	**740**		12	U	**52**		10	U
Acenaphthene	µg/Kg	340000	3300000	10	U	10	U	**49**		12	U	**51**		10	U
Acenaphthylene	µg/Kg	NS	NS	10	U	10	U	**770**		12	U	**940**		**11**	
Anthracene	µg/Kg	1700000	17000000	10	U	10	U	**510**		12	U	**520**		10	U
Benz(a)anthracene	µg/Kg	150	2100	10	U	10	U	**1100**		**17**		***3200***		**11**	
Benzo(a)pyrene	µg/Kg	15	210	10	U	**12**		***1100***		**23**		***3700***		**14**	
Benzo(b)fluoranthene	µg/Kg	150	2100	10	U	**12**		**1900**		**28**		***3400***		**15**	
Benzo(g,h,i)perylene	µg/Kg	NS	NS	10	U	10	U	**950**		**23**		**2500**		**13**	
Benzo(k)fluoranthene	µg/Kg	1500	21000	10	U	**11**		**1400**		**22**		**3200**		10	U
Chrysene	µg/Kg	15000	210000	10	U	**10**		**1800**		**23**		**3500**		**21**	
Dibenz(a,h)anthracene	µg/Kg	15	210	10	U	10	U	***470***		12	U	***960***		10	U
Fluoranthene	µg/Kg	230000	2200000	10	U	**14**		**2000**		**35**		**5500**		**15**	
Fluorene	µg/Kg	230000	2200000	10	U	10	U	**55**		12	U	**60**		10	U
Indeno(1,2,3-cd)pyrene	µg/Kg	150	2100	10	U	10	U	**1100**		**20**		***2300***		10	U
Naphthalene	µg/Kg	3600	18000	10	U	10	U	**710**		12	U	**81**		10	U
Phenanthrene	µg/Kg	NS	NS	10	U	10	U	**1400**		12	U	**1300**		10	U
Pyrene	µg/Kg	170000	1700000	10	U	**14**		**1700**		**31**		**5200**		**17**	
Total CPAH Equivalent Toxicity as Benzo(a)pyrene	µg/Kg			23	U	19		1996		36		5586		22	
Herbicides															
4,4'-DDD	µg/Kg	2000	7200	1.7	U	1.7	U	1.8	U	1.9	U	**12**		1.7	U
4,4'-DDE	µg/Kg	1400	5100	1.7	U	1.7	U	1.8	U	1.9	U	1.8	U	1.7	U
4,4'-DDT	µg/Kg	1700	7000	1.7	U	1.7	U	1.8	U	1.9	U	**41**		1.7	U
Aldrin	µg/Kg	29	100	0.83	U	0.86	U	0.92	U	0.94	U	0.89	U	0.84	U
alpha-BHC	µg/Kg	77	270	0.83	U	0.86	U	0.92	U	0.94	U	0.89	U	0.84	U
alpha-Chlordane	µg/Kg	NS	NS	0.83	U	0.86	U	0.92	U	0.94	U	0.89	U	0.84	U
beta-BHC	µg/Kg	270	960	0.83	U	0.86	U	0.92	U	0.94	U	0.89	U	0.84	U
delta-BHC	µg/Kg	NS	NS	0.83	U	0.86	U	0.92	U	0.94	U	0.89	U	0.84	U
Dieldrin	µg/Kg	30	110	1.7	U	1.7	U	1.8	U	1.9	U	**13**		1.7	U
Endosulfan I	µg/Kg	NS	NS	0.83	U	0.86	U	0.92	U	0.94	U	0.89	U	0.84	U
Endosulfan II	µg/Kg	NS	NS	1.7	U	1.7	U	1.8	U	1.9	U	1.8	U	1.7	U
Endosulfan sulfate	µg/Kg	NS	NS	1.7	U	1.7	U	1.8	U	1.9	U	1.8	U	1.7	U
Endrin	µg/Kg	1800	18000	1.7	U	1.7	U	1.8	U	1.9	U	1.8	U	1.7	U
Endrin aldehyde	µg/Kg	NS	NS	1.7	U	1.7	U	1.8	U	1.9	U	1.8	U	1.7	U
Endrin ketone	µg/Kg	NS	NS	1.7	U	1.7	U	1.8	U	1.9	U	1.8	U	1.7	U
gamma-BHC	µg/Kg	520	2100	0.83	U	0.86	U	0.92	U	0.94	U	0.89	U	0.84	U
gamma-Chlordane	µg/Kg	NS	NS	0.83	U	0.86	U	0.92	U	0.94	U	0.89	U	0.84	U
Heptachlor	µg/Kg	110	380	0.83	U	0.86	U	0.92	U	0.94	U	0.89	U	0.84	U
Heptachlor epoxide	µg/Kg	53	190	0.83	U	0.86	U	0.92	U	0.94	U	0.89	U	0.84	U
Methoxychlor	µg/Kg	31000	310000	8.3	U	8.6	U	9.2	U	9.4	U	8.9	U	8.4	U
Technical Chlordane	µg/Kg	NS	NS	26	U	27	U	29	U	29	U	28	U	26	U
Toxaphene	µg/Kg	440	1600	26	U	27	U	29	U	29	U	28	U	26	U

Table B1: Soil Concnetrations, Crescent Connect, Essex Junction, Vermont

Analyte	Units	USEPA Screening Levels Residential Soil	Industrial Soil	AMR-SB-26-2.0 Value	Q	AMR-SB-27-0.5 Value	Q	AMR-SB-28-2.0 Value	Q	AMR-SB-29-0.5 Value	Q	AMR-SB-30-2.0 Value	Q	AMR-SB-31-0.5 Value	Q
Polychlorinated Biphenyls (as Aroclors)															
Aroclor 1016	µg/Kg	390	3700	26	U	27	U	29	U	29	U	28	U	26	U
Aroclor 1221	µg/Kg	140	540	26	U	27	U	29	U	29	U	28	U	26	U
Aroclor 1232	µg/Kg	140	540	26	U	27	U	29	U	29	U	28	U	26	U
Aroclor 1242	µg/Kg	220	740	26	U	27	U	29	U	29	U	28	U	26	U
Aroclor 1248	µg/Kg	220	740	26	U	27	U	29	U	29	U	28	U	26	U
Aroclor 1254	µg/Kg	110	740	26	U	27	U	29	U	29	U	28	U	26	U
Aroclor 1260	µg/Kg	220	740	26	U	27	U	29	U	29	U	28	U	26	U
Aroclor 1262	µg/Kg	NE	NE	26	U	27	U	29	U	29	U	28	U	26	U
Aroclor 1268	µg/Kg	NE	NE	26	U	27	U	29	U	29	U	28	U	26	U
Metals															
Antimony	mg/Kg	3.1	41	0.77	U	0.8	U	**19.9**		0.9	U	**9.8**		0.83	U
Arsenic	mg/Kg	0.61	2.4	***4.45***		***6.19***		***13.4***		***4.52***		***10.8***		***5.89***	
Beryllium	mg/Kg	16	200	0.307	U	0.321	U	**0.606**		0.358	U	0.349	U	0.332	U
Cadmium	mg/Kg	7	80	0.612	U	0.642	U	**0.926**		0.717	U	0.697	U	0.663	U
Chromium	mg/Kg	NS	NS	**9.56**		**11.2**		**18**		**11.8**		**14.7**		**10.2**	
Copper	mg/Kg	310	4100	**10.6**		**24.4**		**159**		**8.84**		**110**		**26.7**	
Lead	mg/Kg	400	800	4.9	U	**8.67**		**251**		**8.43**		**170**		**8.76**	
Mercury	mg/Kg	1	4.3	0.0507	U	0.0508	U	**0.0863**		0.0576	U	**0.0614**		0.051	U
Nickel	mg/Kg	150	2000	**16.3**		**15.8**		**20**		**9.26**		**19.8**		**18.3**	
Selenium	mg/Kg	39	510	1.2	U	1.3	U	2.9	U	1.4	U	1.4	U	1.3	U
Silver	mg/Kg	39	510	1.72	U	1.79	U	2	U	2	U	1.96	U	1.86	U
Thallium	mg/Kg	0.078	1	1.2	U, PS	1.3	U, PS	1.4	U, PS	1.4	U, PS	1.4	U, PS	1.3	U, PS
Zinc	mg/Kg	2300	31000	**27.4**		**49.7**		**35.8**		**27.9**		**48.2**		**43.5**	

Values in bold indicate compound was detected at a concentration greater than the laboratory reporting limit.
Values in grey highlight indicate concentration is greater than the US EPA RSL for Residential Soils.
Values in italicized text indicates concentrations are greater than the US EPA RSL for industrial soils.

Table B1: Soil Concnetrations, Crescent Connect, Essex Junction, Vermont

Analyte	Units	USEPA Screening Levels Residential Soil	Industrial Soil	AMR-SB-31-FD-0.5 Value	Q	RPD	AMR-SB-32-2.0 Value	Q	AMR-SB-33-0.5 Value	Q
Polycyclic Aromatic Hydrocarbons										
2-Methylnaphthalene	µg/Kg	23000	220000	10	U	NC	10	U	10	U
Acenaphthene	µg/Kg	340000	3300000	10	U	NC	10	U	10	U
Acenaphthylene	µg/Kg	NS	NS	10	U	NC	**160**		10	U
Anthracene	µg/Kg	1700000	17000000	10	U	NC	**130**		10	U
Benz(a)anthracene	µg/Kg	150	2100	10	U	NC	**530**		10	U
Benzo(a)pyrene	µg/Kg	15	210	10	U	NC	***600***		10	U
Benzo(b)fluoranthene	µg/Kg	150	2100	10	U	NC	**560**		10	U
Benzo(g,h,i)perylene	µg/Kg	NS	NS	10	U	NC	**440**		10	U
Benzo(k)fluoranthene	µg/Kg	1500	21000	10	U	NC	**540**		10	U
Chrysene	µg/Kg	15000	210000	**13**		47.1	**550**		10	U
Dibenz(a,h)anthracene	µg/Kg	15	210	10	U	NC	**180**		10	U
Fluoranthene	µg/Kg	230000	2200000	10	U	NC	**1000**		10	U
Fluorene	µg/Kg	230000	2200000	10	U	NC	**11**		10	U
Indeno(1,2,3-cd)pyrene	µg/Kg	150	2100	10	U	NC	**410**		10	U
Naphthalene	µg/Kg	3600	18000	10	U	NC	**12**		10	U
Phenanthrene	µg/Kg	NS	NS	10	U	NC	**270**		10	U
Pyrene	µg/Kg	170000	1700000	10	U	NC	**890**		10	U
Total CPAH Equivalent Toxicity as Benzo(a)pyrene	µg/Kg			12			936		23	
Herbicides										
4,4'-DDD	µg/Kg	2000	7200	1.7	U	NC	1.7	U	1.7	U
4,4'-DDE	µg/Kg	1400	5100	1.7	U	NC	1.7	U	1.7	U
4,4'-DDT	µg/Kg	1700	7000	1.7	U	NC	1.7	U	1.7	U
Aldrin	µg/Kg	29	100	0.85	U	NC	0.83	U	0.83	U
alpha-BHC	µg/Kg	77	270	0.85	U	NC	0.83	U	0.83	U
alpha-Chlordane	µg/Kg	NS	NS	0.85	U	NC	0.83	U	0.83	U
beta-BHC	µg/Kg	270	960	0.85	U	NC	0.83	U	0.83	U
delta-BHC	µg/Kg	NS	NS	0.85	U	NC	0.83	U	0.83	U
Dieldrin	µg/Kg	30	110	1.7	U	NC	**2.4**		1.7	U
Endosulfan I	µg/Kg	NS	NS	0.85	U	NC	0.83	U	0.83	U
Endosulfan II	µg/Kg	NS	NS	1.7	U	NC	1.7	U	1.7	U
Endosulfan sulfate	µg/Kg	NS	NS	1.7	U	NC	1.7	U	1.7	U
Endrin	µg/Kg	1800	18000	1.7	U	NC	1.7	U	1.7	U
Endrin aldehyde	µg/Kg	NS	NS	1.7	U	NC	1.7	U	1.7	U
Endrin ketone	µg/Kg	NS	NS	1.7	U	NC	1.7	U	1.7	U
gamma-BHC	µg/Kg	520	2100	0.85	U	NC	0.83	U	0.83	U
gamma-Chlordane	µg/Kg	NS	NS	0.85	U	NC	0.83	U	0.83	U
Heptachlor	µg/Kg	110	380	0.85	U	NC	0.83	U	0.83	U
Heptachlor epoxide	µg/Kg	53	190	0.85	U	NC	0.83	U	0.83	U
Methoxychlor	µg/Kg	31000	310000	8.5	U	NC	8.3	U	8.3	U
Technical Chlordane	µg/Kg	NS	NS	26	U	NC	26	U	26	U
Toxaphene	µg/Kg	440	1600	26	U	NC	26	U	26	U

Table B1: Soil Concnetrations, Crescent Connect, Essex Junction, Vermont

Analyte	Units	USEPA Screening Levels Residential Soil	Industrial Soil	AMR-SB-31-FD-0.5 Value	Q	RPD	AMR-SB-32-2.0 Value	Q	AMR-SB-33-0.5 Value	Q
Polychlorinated Biphenyls (as Aroclors)										
Aroclor 1016	µg/Kg	390	3700	26	U	NC	26	U	26	U
Aroclor 1221	µg/Kg	140	540	26	U	NC	26	U	26	U
Aroclor 1232	µg/Kg	140	540	26	U	NC	26	U	26	U
Aroclor 1242	µg/Kg	220	740	26	U	NC	26	U	26	U
Aroclor 1248	µg/Kg	220	740	26	U	NC	26	U	26	U
Aroclor 1254	µg/Kg	110	740	26	U	NC	26	U	26	U
Aroclor 1260	µg/Kg	220	740	26	U	NC	26	U	26	U
Aroclor 1262	µg/Kg	NE	NE	26	U	NC	26	U	26	U
Aroclor 1268	µg/Kg	NE	NE	26	U	NC	26	U	26	U
Metals										
Antimony	mg/Kg	3.1	41	0.82	U	NC	0.81	U	0.82	U
Arsenic	mg/Kg	0.61	2.4	***6.05***		2.7	***4.22***		***5.97***	
Beryllium	mg/Kg	16	200	0.328	U	NC	0.324	U	0.327	U
Cadmium	mg/Kg	7	80	0.657	U	NC	0.648	U	0.653	U
Chromium	mg/Kg	NS	NS	**9.95**		2.5	**9.15**		**11.4**	
Copper	mg/Kg	310	4100	**28.6**		6.9	**10.7**		**20.3**	
Lead	mg/Kg	400	800	**9.02**		2.9	**8.95**		**8.45**	
Mercury	mg/Kg	1	4.3	0.0498	U	NC	0.0494	U	0.0503	U
Nickel	mg/Kg	150	2000	**17.5**		4.5	**13.8**		**16.2**	
Selenium	mg/Kg	39	510	1.3	U	NC	1.3	U	1.3	U
Silver	mg/Kg	39	510	1.84	U	NC	1.81	U	1.83	U
Thallium	mg/Kg	0.078	1	1.3	U, PS	NC	1.3	U, PS	1.3	U, PS
Zinc	mg/Kg	2300	31000	**48.2**		10.3	**25.7**		**41.7**	

Values in bold indicate compound was detected at a concentration greater than the laboratory reporting limit.
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Village of Essex Junction, Vermont

Crescent Connector Project

Draft Environmental Assessment

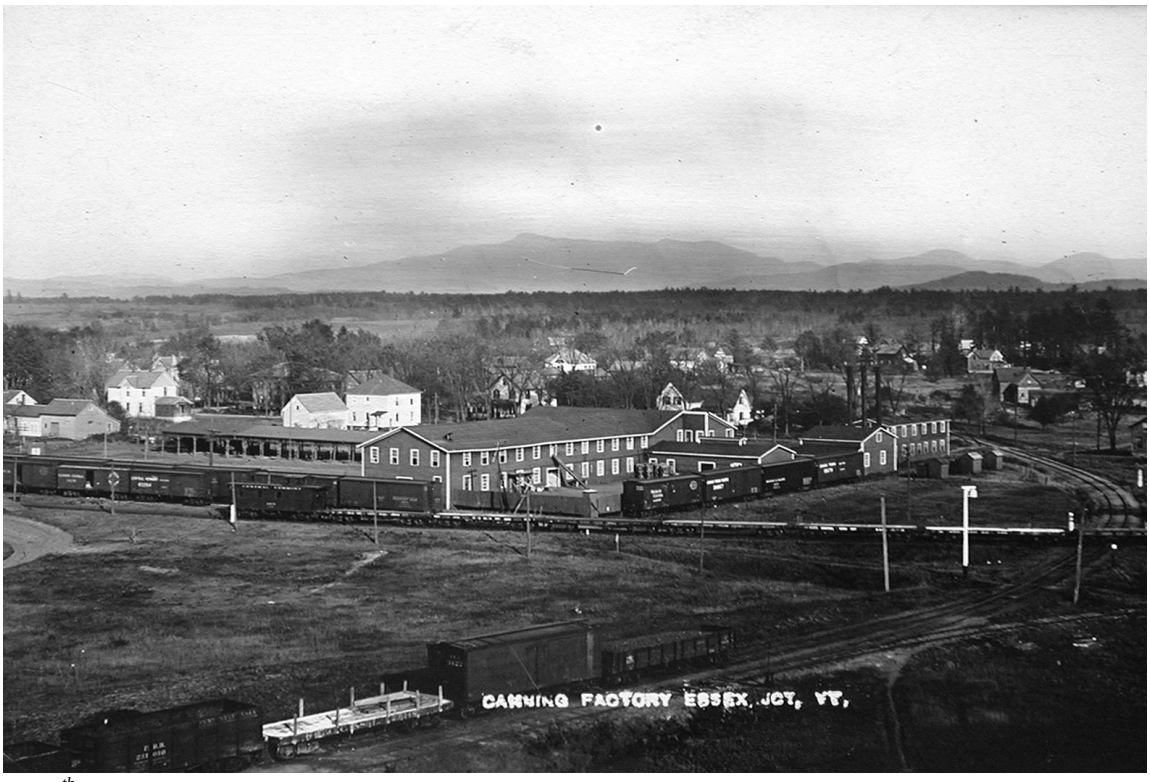
Appendix F

Archaeological Resources Assessment and

Historic Resources Review of the Proposed Village of Essex Junction

Crescent Connector STP 5300(13) Project

ARCHAEOLOGICAL RESOURCES ASSESSMENT AND HISTORIC RESOURCES REVIEW OF THE VILLAGE OF ESSEX JUNCTION CRESCENT CONNECTOR STP 5300(13) PROJECT, ESSEX JUNCTION, CHITTENDEN COUNTY, VERMONT



Early 20th century view of the Essex Junction Canning Factory (Mason Bros. Warehouse), looking east northeast (Postcard Collection, Special Collections, Bailey-Howe Library, University of Vermont)

Submitted by
Kate Kenny
Catherine Quinn
Consulting Archaeology Program
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111 Delehanty Hall
Burlington, Vermont 05405

November 2013
(Revised)

UVM CAP Report No. 736

Archaeological Resources Assessment and Historic Resources Review of the Village of Essex Junction Crescent Connector STP 5300(13) Project, Essex Junction, Chittenden County, Vermont

Submitted to
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Randolph, VT 05060

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TABLE OF CONTENTS

LIST OF FIGURES AND TABLES ii
INTRODUCTION 1
Archaeological Resources Assessment 1
Historic Resources Review 1
PROJECT DESCRIPTION 4
PRECONTACT NATIVE AMERICAN RESOURCES 5
Determination of Effect and Recommendations 5
STANDING HISTORIC RESOURCES 8
Statement of Significance and Eligibility 8
Determination of Effect and Recommendations 13
SUMMARY 14
Archaeological Resources Assessment 14
Historic Resources Review 14
REFERENCES 15
APPENDIX I: 2010 SCOPING STUDY 16

LIST OF FIGURES AND TABLES

Figure 1. Map showing the location of the Village of Essex Junction Crescent Connector STP 5300(13) project, located in the Village of Essex Junction, Chittenden County, Vermont (Source:VCGI). Project area is outlined in orange dashes. 2

Figure 2. Conceptual graphic showing the Crescent Connector STP 5300(13) project in the Village of Essex Junction, Chittenden County, Vermont (sheet 1 of 2 and sheet 2 of 2 overlapped) (DuBois & King 2013). 3

Figure 3. Example of street lighting to be installed as part of project work (DuBois & King 2012). 4

Figure 4. Image showing known archaeological sites within approximately 1 km (0.62 mi) of the Village of Essex Junction Crescent Connector STP 5300(13) project area..... 6

Figure 5. Map detail showing the location and street address of historic buildings within or adjacent to the Village of Essex Junction Crescent Connector STP 5300(13) project area; buildings that are listed on the Vermont State Register are indicated by VDHP survey number. 9

Figure 6. Detail from the Vermont Historic Sites & Structures Survey map of the Maple Street Historic District with contributing buildings in the project area along Maple Street indicated by address street number in red; 17 Maple Street, which is not currently included in the District, is located just northwest of 19 Maple Street (VDHP 1984)..... 12

Table 1. Description of known archaeological sites. 7

Table 2. Summary of standing historic resources identified within the project area, with determination of effect and recommendations. 10

INTRODUCTION

The University of Vermont Consulting Archaeology Program (UVM CAP) conducted an Archaeological Resources Assessment and Historic Resources Review of the Village of Essex Junction Crescent Connector STP 5300(13) project, located in the Village of Essex Junction, Chittenden County, Vermont (Figures 1 and 2) (DuBois & King 2012 and 2013). This review assists with compliance under Section 106 of the 1966 National Historic Preservation Act and its amendments. The project was reviewed according to standards set forth in 36 CFR 800, the regulations established by the Advisory Council on Historic Preservation to implement Section 106. Kate Kenny, Archaeological Research Field Technician, conducted the Archaeological Resources Assessment (ARA). The Historic Resources Review was conducted by 36 CFR 61 qualified Historic Preservation Specialist Catherine A. Quinn, with research assistance from Kate Kenny, who is also an Historian with the UVM CAP.

Archaeological Resources Assessment

The goal of an ARA is to 1) identify portions of a specific project's Area of Potential Effects (APE) that have the potential to contain significant preContact and/or historic sites, and 2) determine whether further archaeological studies will be required as the project proceeds. To accomplish the ARA, an historic properties and preContact Native American archaeological sensitivity desk review and field inspection were conducted. For this study, reference materials were reviewed following guidelines by the Vermont Division for Historic Preservation. Resources examined included the National Register of Historic Places files; the Vermont Historic Sites and Structures Surveys; and the USGS master archaeological maps that accompany the Vermont Archaeological Inventory (VAI). Relevant town histories, aerial photographs, land records and historic maps were also consulted. Based on the background research, general contexts were derived for preContact resources in the study area. A visual inspection of the project area was conducted in the fall of 2010, and again in July 2013.

Historic Resources Review

Historic Resources Review consists of identifying and evaluating standing historic resources on or eligible for listing on the National Register of Historic Places that have the potential to be impacted by project work. Both direct and indirect impacts are considered as part of the study. Research for this review included a search of the National Register of Historic Places files; the Vermont Historic Sites and Structures Surveys, historic maps, aerial photographs, newspapers, historic postcards, vital records, federal census records, land records, and published local histories. A visual inspection of the project area was conducted in the fall of 2010, and again in July 2013.

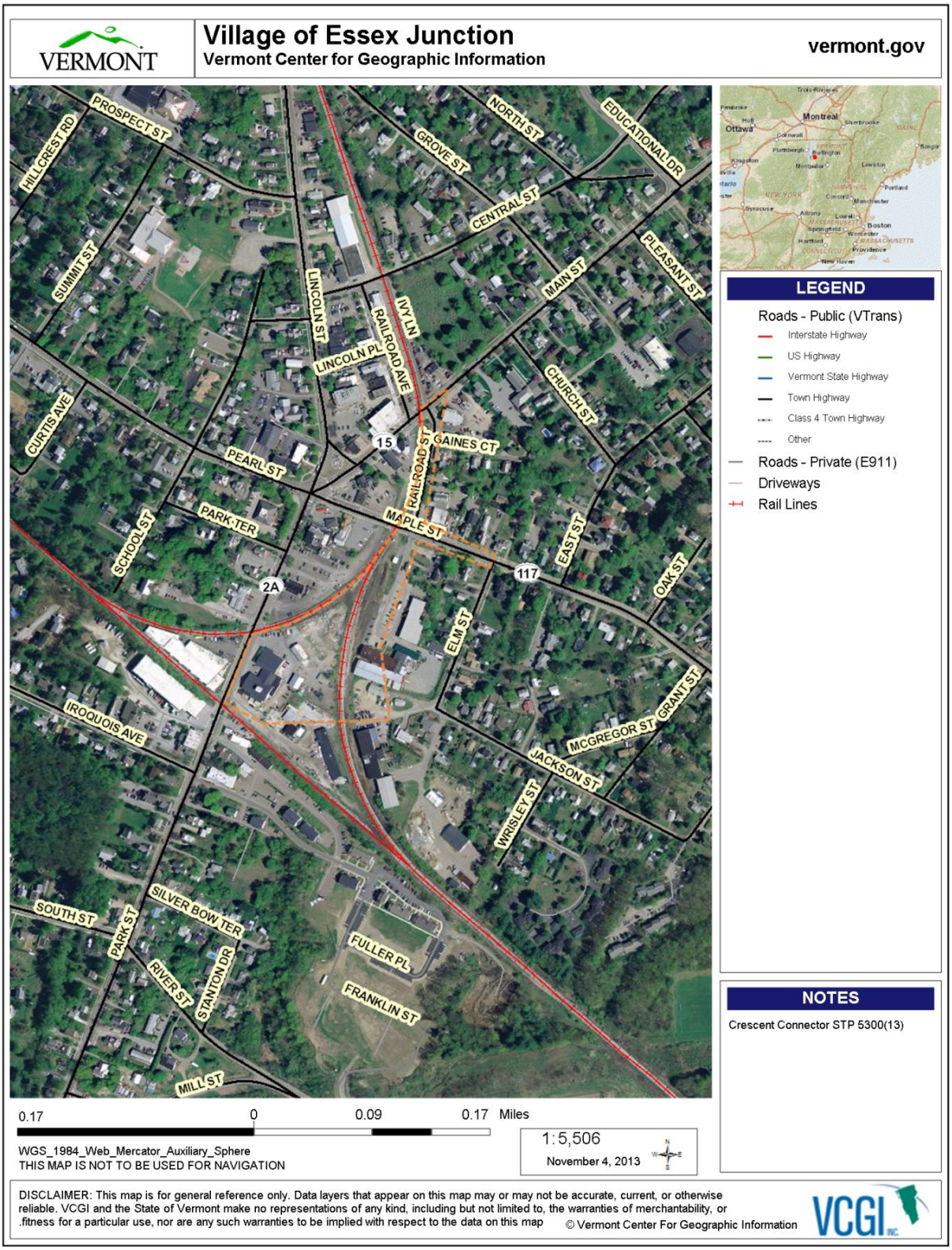


Figure 1. Map showing the location of the Village of Essex Junction Crescent Connector STP 5300(13) project, located in the Village of Essex Junction, Chittenden County, Vermont (Source:VCGI). Project area is outlined in orange dashes.

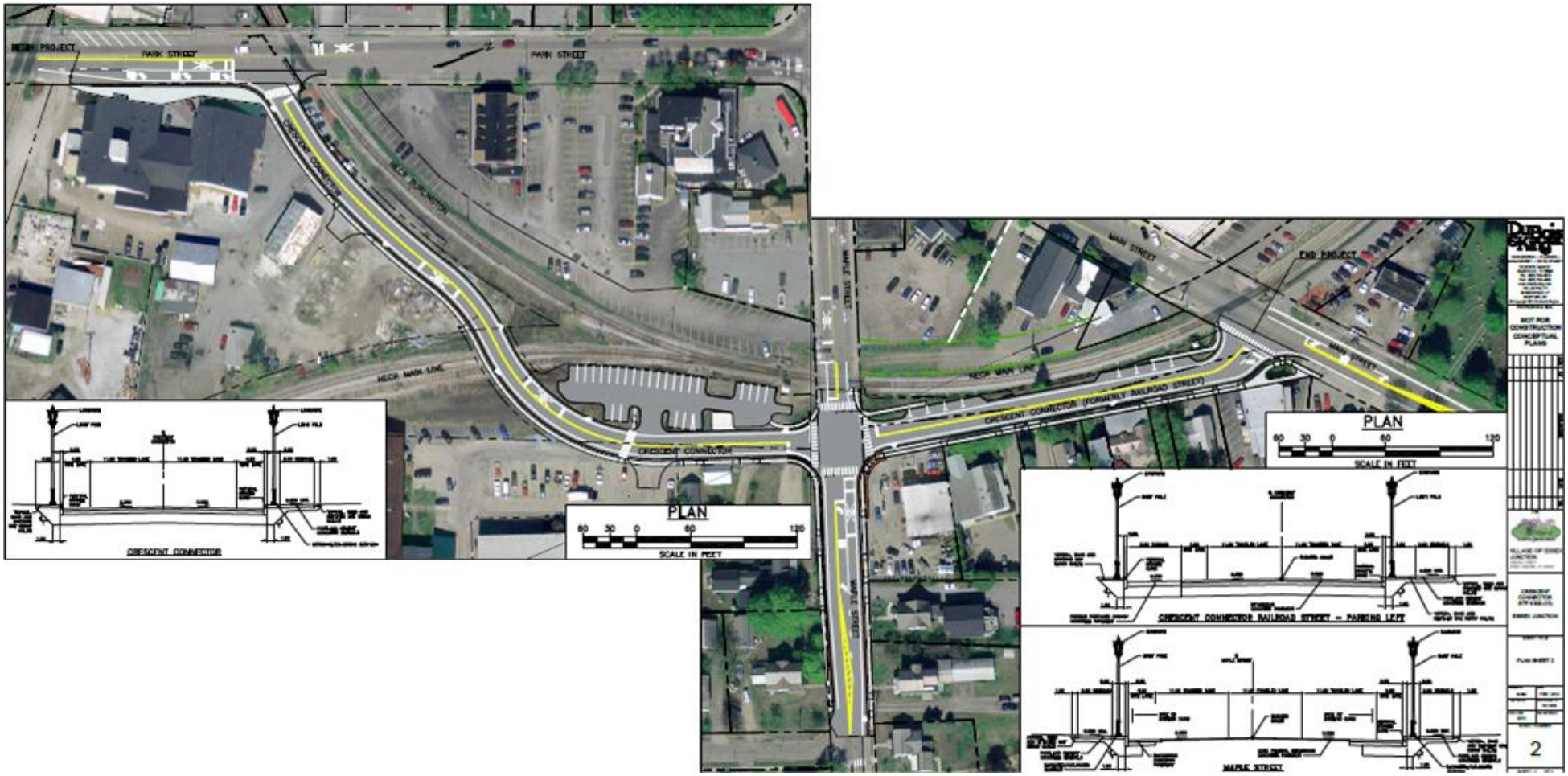


Figure 2. Conceptual graphic showing the Crescent Connector STP 5300(13) project in the Village of Essex Junction, Chittenden County, Vermont (sheet 1 of 2 and sheet 2 of 2 overlapped) (DuBois & King 2013).

PROJECT DESCRIPTION

The Crescent Connector is a proposed roadway that would connect Vermont Route 2A (Park Street), Vermont Route 117 (Maple Street), and Vermont Route 15 (Main Street) within the Village of Essex Junction. This project was initially reviewed in December 2010 for Resources Systems Group, Inc., during a Scoping Study of the project area (Kenny and Quinn 2010). In depth research for the project was conducted as part of the Scoping Study review and that report is presented in Appendix I. There were no project plans available for review at the time of the Scoping Study; a map outlining the study area was provided (Appendix I, p. 2).

Conceptual Plans (December 2012) provided by DuBois & King , Inc., indicate that the project begins at a point on Park Street (VT Route 2A) approximately 875 feet south of the "5 Corners" intersection, then extends north along Park Street to the New England Central Railroad (NECR) Burlington Branch. It then follows the east side of NECR's Burlington Branch and crosses NECR's main line, continuing north across Maple Street (VT Route 117), and then along the existing alignment of Railroad Street, terminating at the intersection of Main Street (VT Route 15). The project area presented in the December 2012 plans differs slightly from that outlined for the Scoping Study in that a section of Maple Street, for a distance of approximately 325 ft (99 m) to the east of Railroad Street, is identified in the 2012 plans. This additional area was reviewed for both archaeological and standing historic resources as part of this report.

Specific project work listed on the Conceptual Plans includes: the construction of a new roadway on a new alignment; the addition of turning lanes on Park and Maple streets; the reconstruction of Railroad Street; the installation of traffic and railroad signals; the installation of concrete sidewalks, granite curbs and street lights (Figure 3); and landscaping, drainage improvements, pavement markings, and signs.

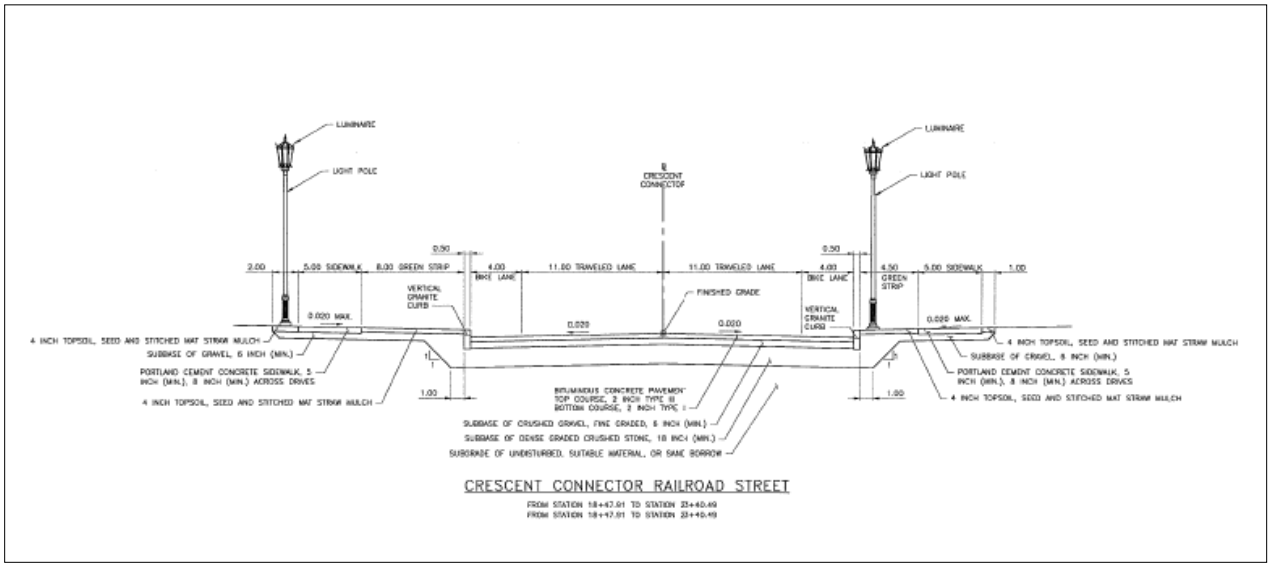


Figure 3. Example of street lighting to be installed as part of project work (DuBois & King 2012).

PRECONTACT NATIVE AMERICAN RESOURCES

A review of the Vermont Archaeological Inventory (VAI), which is maintained by the Vermont Division for Historic Preservation (VDHP) indicates that there are eight previously recorded precontact Native American sites within an approximately 1 km (0.62 mi) radius of the current project area (Figure 4; Table 1). In applying the VDHP's Environmental Predictive Model for Locating Precontact Archaeological Sites to this project area, a score of 28 is generated, based on its location on a delta complex, its proximity to a relic drainage/intermittent stream, and its proximity to the relic head of draw of the same drainage. Not only does the project area not reach the threshold score (32) to be considered archaeologically sensitive based on the predictive model, historic and modern ground disturbance have altered the project area significantly.

Determination of Effect and Recommendations

While it is expected that some buried, physical evidence of earlier historic structures within the current project area remains, it is unlikely that any significant historic archaeological resources would be encountered, or additional significant information on the buildings would be determined, given,

1. the type of buildings that previously existed within the current project area (e.g. light commercial or railroad storage structures, such as sheds, warehouses, and open factory structures);
2. the time period of those structures (from the mid-to-late 19th century through the 20th century);
3. the available documentary resources detailing most of these structures; and
4. the significant land modification to the project area within the historic period (e.g. construction and demolition of numerous buildings, landscaping, and railroad track activities, such as adding ballast, repairing/replacing track).

Using Vermont's predictive model, and considering the disturbance outlined above, the project area is also unlikely to yield significant precontact Native American archaeological material and information. Therefore, a determination of *No Effect* on archaeological resources is recommended for the project. No additional archaeological work is recommended within the project area.

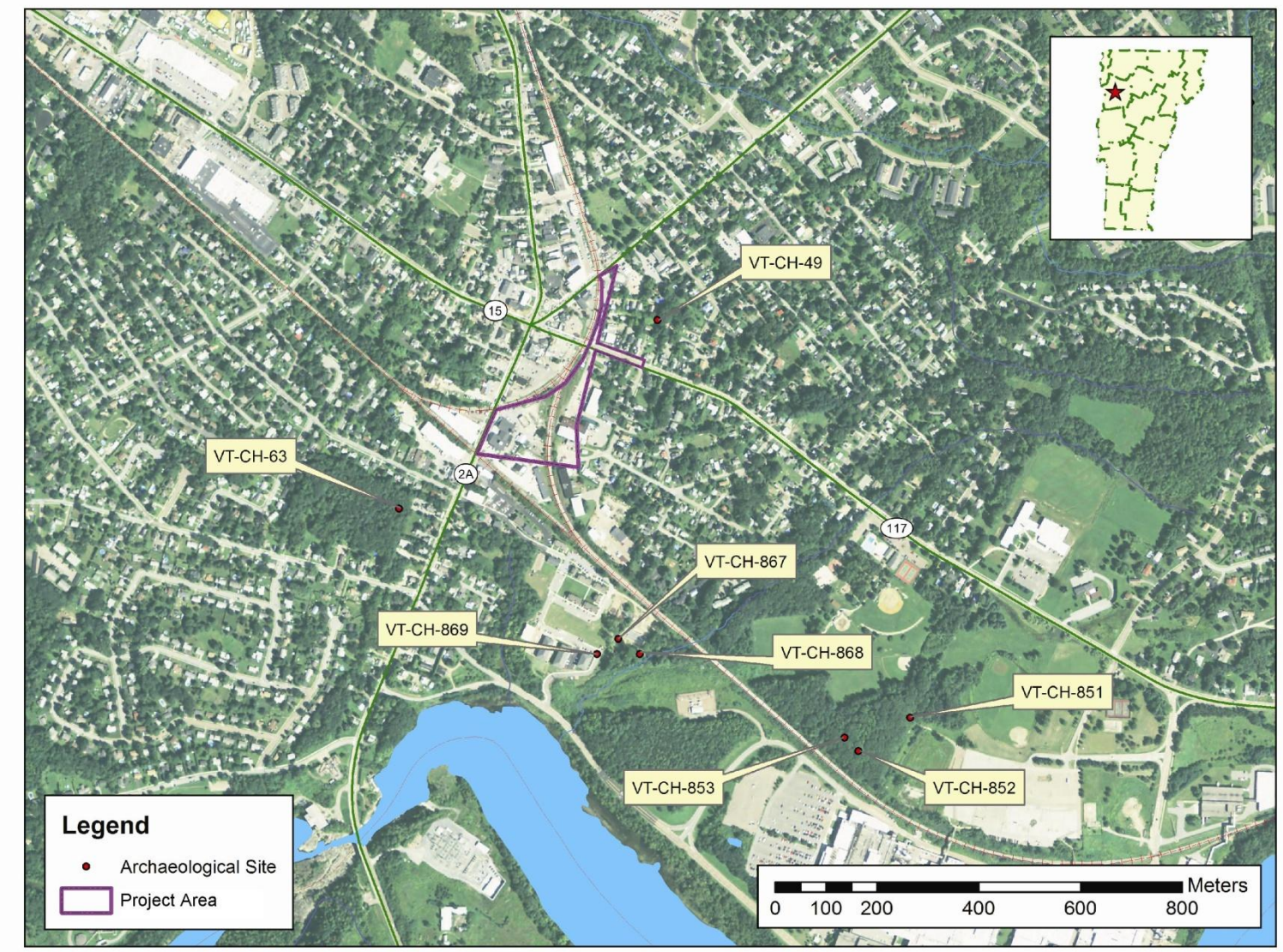


Figure 4. Image showing known archaeological sites within approximately 1 km (0.62 mi) of the Village of Essex Junction Crescent Connector STP 5300(13) project area.

Table 1. Description of known archaeological sites.

Site#	Type	Sub-Type	Time Period	Key Artifacts
VT-CH-49	Precontact Native American	Isolated Find	Archaic	Slate projectile point.
VT-CH-63	Precontact Native American	Undetermined	Archaic-Woodland	Slate, chert, and quartzite bifaces, Levanna and side notched projectile points.
VT-CH-851	Precontact Native American	Undetermined	Unknown	Lithic debitage.
VT-CH-852	Precontact Native American	Undetermined	Unknown	Lithic debitage, utilized flakes, fire cracked rock, features.
VT-CH-853	Precontact Native American	Undetermined	Unknown	Lithic debitage, preform, utilized flake, fire cracked rock.
VT-CH-867	Precontact Native American	Single Occupation	Terminal Late Archaic ca. 1800-1500 BC	Susquehanna (or Normanskill) projectile point, slate gorget, lithic debitage, bifaces, scrapers, core, drill, knife, preform, hammerstone, utilized flakes.
VT-CH-868	Precontact Native American	Temporary Camp	Middle to Late Woodland ca. 750-1500 AD	Levanna projectile point, scraper, lithic debitage.
VT-CH-869	Precontact Native American	Undetermined	Unknown Possible Late Archaic ca.2500-1000 BC	Brewerton-like projectile point, lithic debitage, fire cracked rock, knife, hammerstone.

STANDING HISTORIC RESOURCES

Documentary evidence indicates that the project area was developed beginning in the mid-1800s and that much of the initial development within the project area occurred as a direct result of the arrival of the railroad in Essex Junction (Appendix I, pp. 8 – 14). Once the industrial/commercial trend for development was established, continued development occurred through the 20th century; within the last two decades, there appears to have been little additional development within the project area (Appendix I, pp. 8 – 14).

Statement of Significance and Eligibility

UVM CAP previously identified six historic buildings within the project area that have the potential to be affected by project work (Appendix I, pp. 15 – 38). All six buildings are individually listed on the Vermont State Register of Historic Places (Figure 5; Table 2). One of these buildings, the Fletcher Block (2 Railroad Street; VDHP Survey No. 0405-85) was added to the National Register of Historic Places as part of the Downtown Essex Junction Commercial Historic District in 2004 (NPS 2004). A second building listed on the state register, the Baxter Bros. Cannery/Mason Bros. Warehouse (11 Maple Street; VDHP Survey No. 0405-105) is also considered eligible for inclusion on the National Register of Historic Places, under Criterion C: properties that embody the distinctive characteristics of a type, period or method of construction, under the architecture and industry categories. Both of these buildings are significant historic resources: they retain their historic integrity, distinctive architectural characteristics, and their qualities of location, design, setting, materials, workmanship, feeling and association. Although significant at the state level for their relationship to the development of Essex Junction beginning in the mid-1800s with the arrival of the railroad, alterations to the other four state-listed buildings make them not individually eligible for inclusion on the National Register.

Based on the current Conceptual Plans for the Crescent Connector STP 5300(13) project, an additional five historic buildings, all located along Maple Street, also have the potential to be affected by project work (see Figure 5; see Table 2). Four of the buildings are currently included as contributing resources to the State Register-listed Maple Street Historic District (Figure 6); the fifth building (17 Maple Street) is also considered eligible as part of the District based on its period of construction, architectural style and location along the linear streetscape. The Maple Street Historic District is a well-established, linear streetscape of residential buildings that was spurred by the economic boost of the railroad. Houses along the street reflect various styles dating from the mid-1800s through the early 20th century, including vernacular examples of Italianate, Queen Anne, and Shingle styles. A visual inspection of these five buildings was conducted on July 17, 2013. The Maple Street Historic District is historically significant: it retains its historic integrity, distinctive architectural characteristics, and qualities of location, design, setting, materials, workmanship, feeling and association and is considered eligible for inclusion on the National Register of Historic Places.

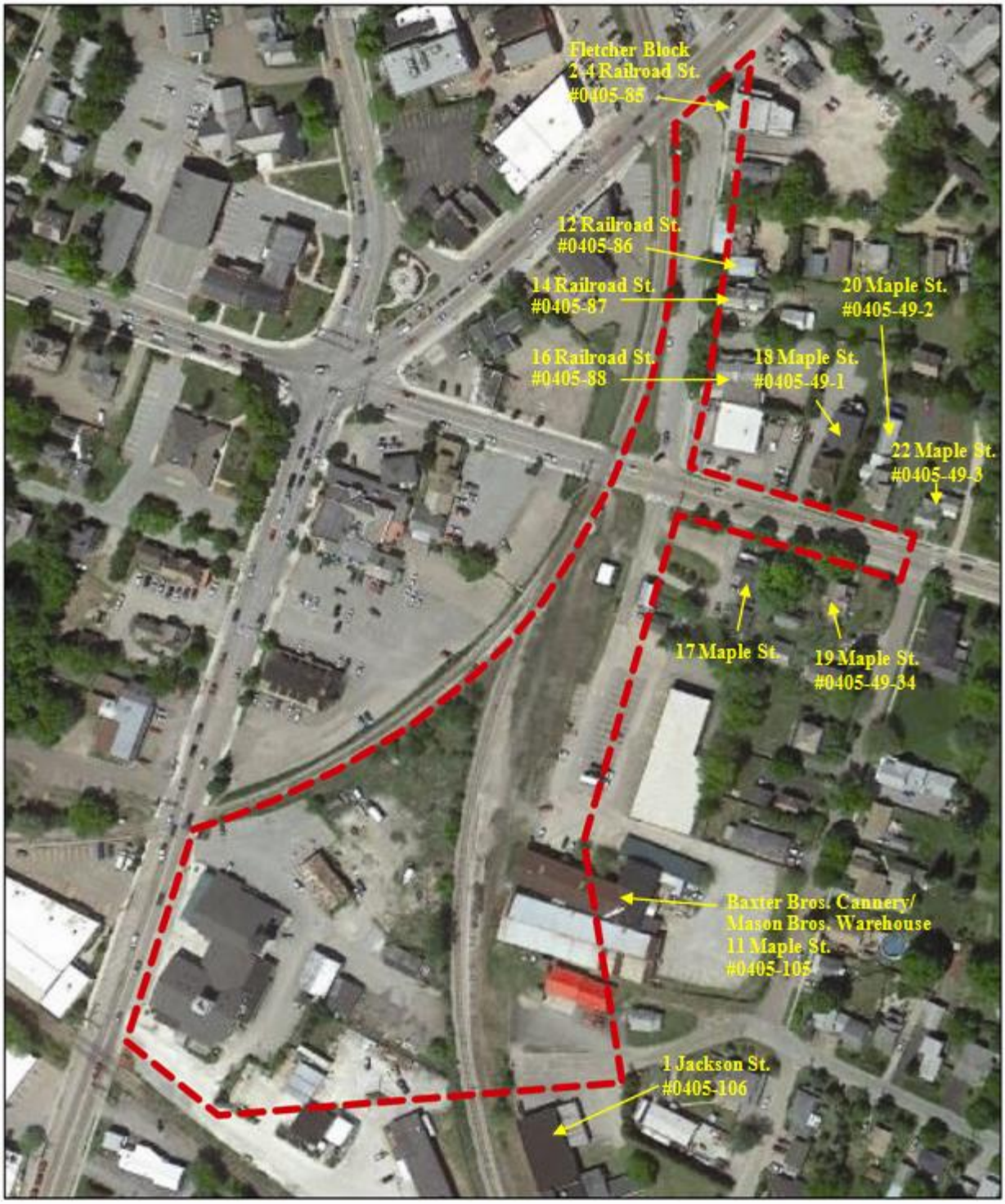


Figure 5. Map detail showing the location and street address of historic buildings within or adjacent to the Village of Essex Junction Crescent Connector STP 5300(13) project area; buildings that are listed on the Vermont State Register are indicated by VDHP survey number.

Table 2. Summary of standing historic resources identified within the project area, with determination of effect and recommendations.

RESOURCE PHOTO	ADDRESS / VDHP SURVEY NO.	DATE	HISTORIC USE	CURRENT USE	DETERMINATION OF EFFECT / RECOMMENDATIONS
	1 Jackson Street #0405-106	ca. 1890	Maple Syrup Factory / Storage Facility	Flex-A-Seal, Inc.	No Adverse Effect / Review of final plans recommended
	11 Maple Street #0405-105	1902	Baxter Bros. Cannery	Mason Bros. Warehouse / Architectural Salvage / Antiques	No Adverse Effect / Review of final plans recommended
	2 Railroad Street #0405-85 NR Ref. # 04001216	1899	Fletcher Block / Meat Market & Grocery Store	Essex Agency, Inc.	No Adverse Effect / Review of final plans recommended
	12 Railroad Street #0405-86	ca. 1880	Grocery / Restaurant / Stone Cutting Shop / Jewelry Store	Residence	No Adverse Effect / Review of final plans recommended
	14 Railroad Street #0405-87	ca. 1870	Residence	Residence	No Adverse Effect / Review of final plans recommended
	16 Railroad Street #0405-88	Mid-1800s	Residence	Essex Eye Assoc.	No Adverse Effect / Review of final plans recommended
	17 Maple Street No Survey Number	ca. 1864	M. L. Snyder Residence	Residence	No Adverse Effect / Review of final plans recommended

RESOURCE PHOTO	ADDRESS / VDHP SURVEY NO.	DATE	HISTORIC USE	CURRENT USE	DETERMINATION OF EFFECT / RECOMMENDATIONS
	18 Maple Street #0405-49-1	ca. 1910	Residence	All State Insurance	No Adverse Effect / Review of final plans recommended
	19 Maple Street #0405-49-34	ca. 1890	Residence	Residence	No Adverse Effect / Review of final plans recommended
	20 Maple Street #0405-49-2	ca. 1890	Residence	Residence	No Adverse Effect / Review of final plans recommended
	22 Maple Street #0405-49-3	ca. 1850	Residence	Residence	No Adverse Effect / Review of final plans recommended

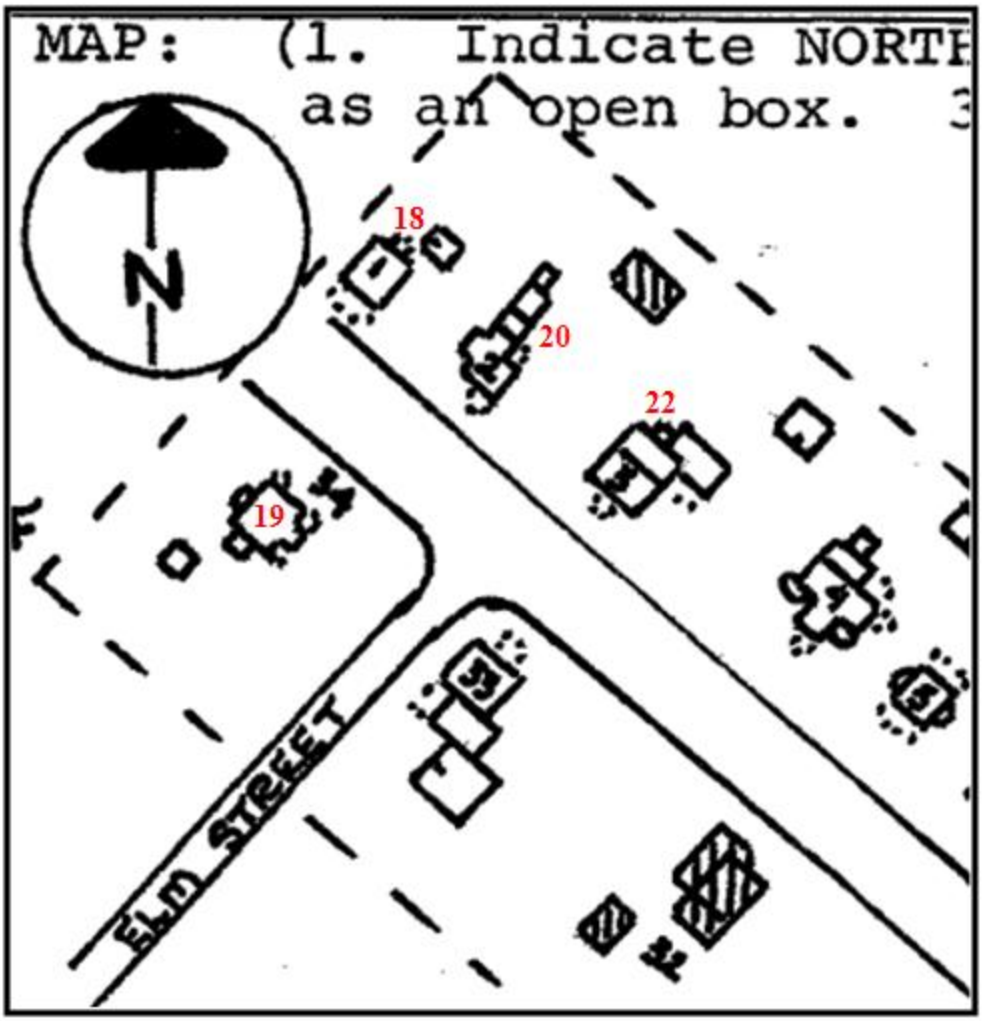


Figure 6. Detail from the Vermont Historic Sites & Structures Survey map of the Maple Street Historic District with contributing buildings in the project area along Maple Street indicated by address street number in red; 17 Maple Street, which is not currently included in the District, is located just northwest of 19 Maple Street (VDHP 1984).

Determination of Effect and Recommendations

1 Jackson Street/Flex-A-Seal, Inc.: This historic property lies adjacent to the currently defined project boundaries; project work will have *No Adverse Effect* on it. A review of final plans is recommended to confirm this determination.

11 Maple Street/Mason Brothers Warehouse: Part of the newly proposed road (Crescent Connector) will be built along the west side of the parking lot associated with the historic cannery building that presently houses the Mason Brothers Architectural Salvage Warehouse. A new parking lot will be constructed to the west of the proposed road, alongside the NECR railroad tracks. Right of Way (ROW) acquisition will be needed to construct the road at this location. The impact to the Mason Brothers Warehouse will be minimal. As long as there are no changes to project plans that would result in an adverse impact to this property, project work will have *No Adverse Effect* on this historic resource. A review of final plans is recommended to confirm this determination.

2, 12, 14 and 16 Railroad Street/Essex Agency, Residences, Essex Eye Assoc.: Project work along Railroad Street includes the reconstruction of the street and existing sidewalks. Work will take place within the existing ROW; only temporary construction easements will be required to complete project work. There will be *No Adverse Effect* to the four historic buildings located along the east side of Railroad Street as a result of the project as currently designed. A review of final plans is recommended to confirm this determination.

17, 18, 19, 20 and 22 Maple Street/Residences, All State Insurance: The Crescent Connector project proposes work along Maple Street for a distance of approximately 325 ft (99 m) to the east of Railroad Street; limits of construction will end approximately at Elm Street. Although current conceptual plans indicate a ROW taking along Maple Street, communication with project engineers indicates that a redesign of project plans has eliminated the need to acquire the ROW and that final plans will indicate these conditions (Pers. Comm.: DuBois & King October 2013). Based on this information, project work will have *No Adverse Effect* on the Maple Street Historic District. A review of final plans is recommended to confirm this determination.

Additional General Project Improvements: Additional improvements that will take place as part of the Village of Essex Junction Crescent Connector STP 5300(13) Project, such as the installation of traffic signals, railroad signals, and street lighting will have *No Adverse Effect* on any historic properties. The new traffic signals planned for the intersection of Maple Street and the Crescent Connector do not directly affect any historic property, and it does not appear that they will cause any indirect adverse effects to resources within the nearby Maple Street Historic District. Street lighting planned as part of the project work will match the others in the Village. Street lights will be painted black and installed at approximately 70' intervals along each side of the Crescent Connector, and the south side of Maple Street.

SUMMARY

The Village of Essex Junction Crescent Connector STP 5300(13) project proposes a roadway that would connect Vermont Route 2A (Park Street), Vermont Route 117 (Maple Street), and Vermont Route 15 (Main Street) within the Village of Essex Junction. The University of Vermont Consulting Archaeology Program (UVM CAP) conducted an Archaeological Resources Assessment and Historic Resources Review of the project in 2010 as part of an initial Scoping Study, and again in 2013 when conceptual plans were available.

Archaeological Resources Assessment

The Archaeological Resources Assessment determined that the project area is unlikely to yield any significant historic or precontact Native American archaeological resources due to historic and modern ground disturbance in the area and a low score on the VDHP's Environmental Predictive Model. Therefore, no additional archaeological work is recommended within the project area and the UVM CAP recommends a determination of *No Effect* on archaeological resources.

Historic Resources Review

The Historic Resources Review of the project identified eleven significant historic properties within or adjacent to the project area; four of the properties are contributing resources to the State Register-listed Maple Street Historic District. The District buildings are located along both the north and south sides of Maple Street. Two additional historic buildings are situated along the south side of Maple Street; one of these buildings, a house at 17 Maple Street, is considered eligible for inclusion in the District. The remaining historic properties include one building along Jackson Street, which abuts the southern boundary of the project area, and four buildings on the east side of Railroad Street. One of the Railroad Street buildings, #2-4 Railroad Street, is listed on the National Register of Historic Places as part of the Downtown Essex Junction Commercial Historic District. The Historic Resources Review of potential impacts to these properties concluded that as currently planned, the Village of Essex Junction Crescent Connector STP 5300(13) project will not significantly impact any of the properties and a determination of *No Adverse Effect* is recommended. A review of final project plans is recommended prior to the commencement of construction to confirm this determination.

REFERENCES

DuBois & King, Inc.

2012 *Proposed Improvement, Village of Essex Junction, County of Chittenden: Crescent Connector STP 5300(13).* Conceptual Plans dated December 2012. Copy on file, UVM CAP, Burlington, Vermont.

DuBois & King, Inc.

2013 *Graphic Image: Crescent Connector STP 5300(13).* Conceptual Plans (sheets 1 and 2) dated February 2013. Copy on file, UVM CAP, Burlington, Vermont.

Kenny, Kate and Catherine Quinn

2010 *Archaeological Resource Assessment and historic Resources Review for the Crescent Connector Scoping Study, Essex Junction, Chittenden County, Vermont*. UVM CAP Report No. 630. Submitted to Resource Systems Group and the Vermont Division for Historic Preservation.

Vermont Division for Historic Preservation (VDHP)

1984 *Historic Sites and Structures Survey: Maple Street Historic District, Essex Junction*. Prepared by Karen Czaikowski. Copy on file, VDHP, Montpelier, Vermont.

1984 *Historic Sites and Structures Survey: Essex Junction*. Prepared by Karen Czaikowski. Copy on file, VDHP, Montpelier, Vermont.

National Park Service, USDI

2004 *National Register Nomination Form for the Downtown Essex Junction Commercial Historic District*. Reference No. 04001216. Copy on file, VDHP, Montpelier, Vermont.

APPENDIX I: 2010 SCOPING STUDY

ARCHAEOLOGICAL RESOURCE ASSESSMENT AND HISTORIC RESOURCES REVIEW FOR THE CRESCENT CONNECTOR SCOPING STUDY, ESSEX JUNCTION, CHITTENDEN COUNTY, VERMONT



View north along Park Street (VT RT 2A) in the early 20th century, Essex Junction, Vermont (from Powell 1977:58).

Submitted to
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60 Lake Street, Suite 1E
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Submitted by
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December 2010

UVM CAP Report No. 630

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TABLE OF CONTENTS

LIST OF FIGURES ii
INTRODUCTION 1
PROJECT DESCRIPTION AND EXISTING CONDITIONS 1
PRECONTACT NATIVE AMERICAN RESOURCES 6
HISTORIC BACKGROUND 8
Vermont Central Railroad 8
M.L. Snyder's Marble Shop / Essex Junction Marble and Granite Company 11
HISTORIC / STANDING RESOURCES 15
Vermont Maple Orchards Warehouse/Flex-a-Seal 16
Baxter Bros. Cannery / Mason Bros. Warehouse 18
Automotive Service Garage 21
The Village Jail/Residence 22
Former Flanders Building Supply Building – General Area 23
Flanders Building Supply and Lumber Company 28
Gas Station 31
The Freight Depot 31
Other Railroad Buildings 31
The Railroad Street Area 32
Trackside "Store House" 32
Fletcher Block 33
Residence 34
Residence 34
Residence 36
STATEMENT OF SIGNIFICANCE / DETERMINATION OF EFFECT AND RECOMMENDATIONS 37
Archaeological Resources 37
Standing Historic Resources 38
APPENDIX I: VDHP HISTORIC SITES & STRUCTURES SURVEY 39
REFERENCES 57

LIST OF FIGURES

Figure 1. Project location, Essex Junction, Chittenden County, Vermont. 2

Figure 2. View southeast within the project area towards the Mason Brothers Warehouse (formerly the Baxter Brothers' Cannery). 3

Figure 3. View south within the project area showing the western end of the Mason Brothers Warehouse. 3

Figure 4. View southeast within the project area showing the north side of the former Flanders Building Supply building. 4

Figure 5. View northeast within the project area showing the southern side of the former Central Feed Company building. This building was joined to the Flanders building to the north ca. 1978-1987. 4

Figure 6. View southeast within the project area showing one of the metal clad sheds standing near the former Flanders Building Supply building. 5

Figure 7. View north of the project area from just north of the Mason Brothers Warehouse towards Railroad Street. The small blue building at right center was once the village jail. 5

Figure 8. View south of the project area, along Railroad Street. 6

Figure 9. Known archaeological sites within approximately 1 km (0.62 mi) of the current project area. 7

Figure 10. Schematic map showing existing and former buildings within and adjacent to the project area (Aerial Explorations 1937; Areographics Corp. 1974; Beers 1869; Geotechnics & Resources Inc. 1962; Harris Surveying & Land Dispute Resolution 2002; Sanborn Mapping & Publishing Company 1894, 1899, 1904, 1910, 1922, 1928, 1944, and 1962; USGS 1987; Vermont Mapping Program 1978; Walling 1857). 9

Figure 11. Detail of "Painesville" (now Essex Junction) from H.F. Walling's *Map of Chittenden County, Vermont* (1857). 10

Figure 12. Detail of "Essex Junction" from F.W. Beers' *Atlas of Chittenden County, Vermont* (1869). 11

Figure 13. Advertisement for M.L. Snyder (from Child 1882:286). 12

Figure 14. View east along Maple Street, ca. 1903 (Postcard Collection, Special Collections, Bailey-Howe Library, University of Vermont). The west end of M.L. Snyder's residence can be seen at right. 14

Figure 15. Image showing the location of buildings within or adjacent to the project area that are included on the VDHP Survey (in yellow), and additional buildings surveyed/researched (in red). 15

Figure 16. View southwest of the Vermont Maple Orchards Warehouse/Flex-A-Seal building. 16

Figure 17. An early 20th century view of the Vermont Maple Syrup Co. factory, looking east (from Powell 1977:58). 17

Figure 18. View south of the Baxter Bros. Cannery/Mason Bros. Warehouse building. 18

Figure 19. Plan of land owned by the Essex Industrial Company and the Snowflake Canning Co., ca. 1948 (ELR 48:369). 19

Figure 20. An early 20th century view of the Essex Junction corn canning factory, looking east northeast (Postcard Collection, Special Collections, Bailey-Howe Library, University of Vermont). Note the lightly constructed husking shed to the left of the cannery. 20

Figure 21. View south of the Village Jail/Residence at 15 Maple Street. 22

Figure 22. Detail of a 1937 aerial photograph of Essex Junction, Vermont, showing the project area and buildings within it (Aerial Explorations Inc., 1937). 23

Figure 23. Detail of an oblique air image of Essex Junction, Vermont, looking southward ca. 1939 showing buildings in the general project area (Henry Sheldon Museum cat#1986.310.224-226 Negative #225). 24

Figure 24. Detail of a 1962 aerial photograph of Essex Junction, Vermont, showing the project area and the addition of and changes to buildings within the project area since 1937 (see Figure 16) (Geotechnics & Resources Inc., 1962). 25

Figure 25. Detail of a 1974 aerial photograph of Essex Junction, Vermont, showing the project area and the additions of and changes to buildings since 1962 (Areographics Corp., 1974). 26

Figure 26. Detail of a 1978 aerial photograph of Essex Junction, Vermont, showing the project area and buildings within it (Vermont Mapping Program 1978). 27

Figure 27. An early 20th century view of the Flanders Building Supply site (just past the parked boxcar on the right side of Park Street), looking north northeast (from Powell 1977:58). The Central Feed building would be built this side of the boxcar in this view. This image also shows the railroad freight depot (at center with the loop drive), the Baxter Brothers' canning factory (at right center), and another railroad building / storage building (in the right foreground). 28

Figure 28. Map recorded with a lease executed between the Central Vermont Railroad and the Flanders Building Supply Company in 1953, north is to the bottom right (ELR 54:77). ... 29

Figure 29. Map recorded with a warranty deed executed between the Central Vermont Railroad and the Flanders Building Supply Company in 1959, north is to the bottom right (ELR 62:66). 30

Figure 30. View east of the Central Vermont Railroad's freight house, which was located within the current project area, but is no longer extant (image from the VDHP's Historic Sites & Structures Survey, #0405-107). 32

Figure 31. View northeast of the brick commercial block at 2-4 Railroad Street (left). 33

Figure 32. View east of 12 Railroad Street (left) and 14 Railroad Street (right). 35

Figure 33. View northeast of 12 Railroad Street (left) and 14 Railroad Street (right). 35

Figure 34. View east of 16 Railroad Street. 36

Figure 35. View southeast of 16 Railroad Street. 37

INTRODUCTION

This Archaeological Resource Assessment (ARA) and Historic Resources Review was conducted by the University of Vermont Consulting Archaeology Program (UVM CAP) and prepared on behalf of Resource Systems Group Inc., for the Essex Junction Crescent Connector Scoping Study being conducted for the Chittenden County Metropolitan Planning Organization. The Crescent Connector is a proposed roadway that would connect Vermont Route 2A (Park Street), Vermont Route 117 (Maple Street), and Vermont Route 15 (Main Street) in the Village of Essex Junction, Chittenden County, Vermont (Figure 1). This review assists with compliance under Section 106 of the 1966 National Historic Preservation Act and its amendments. The proposed project was reviewed according to standards set forth in 36 CFR, the regulations established by the Advisory Council on Historic Preservation to implement Section 106. Review consists of identifying potential archaeological resources within the project area at a general level, and identifying and evaluating potential impacts to historic resources on or eligible for listing on the National Register of Historic Places that may be impacted by project work. A wide range of archival sources were utilized in preparing this report including historic maps, aerial photographs, newspapers, historic postcards, vital records, federal census records, land records, the files of the Vermont Division for Historic Preservation, and published local histories. A site visit and visual inspection of the project area was also conducted.

PROJECT DESCRIPTION AND EXISTING CONDITIONS

Currently, the proposed project consists solely of a scoping study; future, anticipated project activities may include, but are not limited to road construction, structural demolition and new construction. The project area is an approximately 8 to 9 acre multiple lot parcel located on a relatively level relic glacial outwash delta. The Soil Conservation Service's survey of Chittenden County indicates that the native soil within the study area is primarily Hinesburg fine sandy loam (Allen 1974). The site inspection of the project area noted visual evidence of ground modification, including grading and leveling, building construction and deconstruction, and, activities done in connection with the railroad such as tack construction and adding ballast. According to the 1987 USGS topographic map, the elevations within the project area range from approximately 99.1 m (325 ft) to 106.7 m (350 ft) above mean sea level. The closest surface water is the head of an unnamed tributary to the Winooski River located about 140 m (459.3 ft) to the south. Indian Brook is about 525 m (1722.4 ft) to the northeast. The primary standing structures within the current project area include the Mason Brothers Architectural Salvage Warehouse (Figures 2 and 3) and the former Flanders Building Supply and Lumber Company building along with its associated outbuildings (Figures 4-6). Given their location adjacent to, and possibly partially within the project area, an evaluation of buildings along Railroad Street and immediately south of the project area, was also conducted as part of this review (Figures 7 and 8).

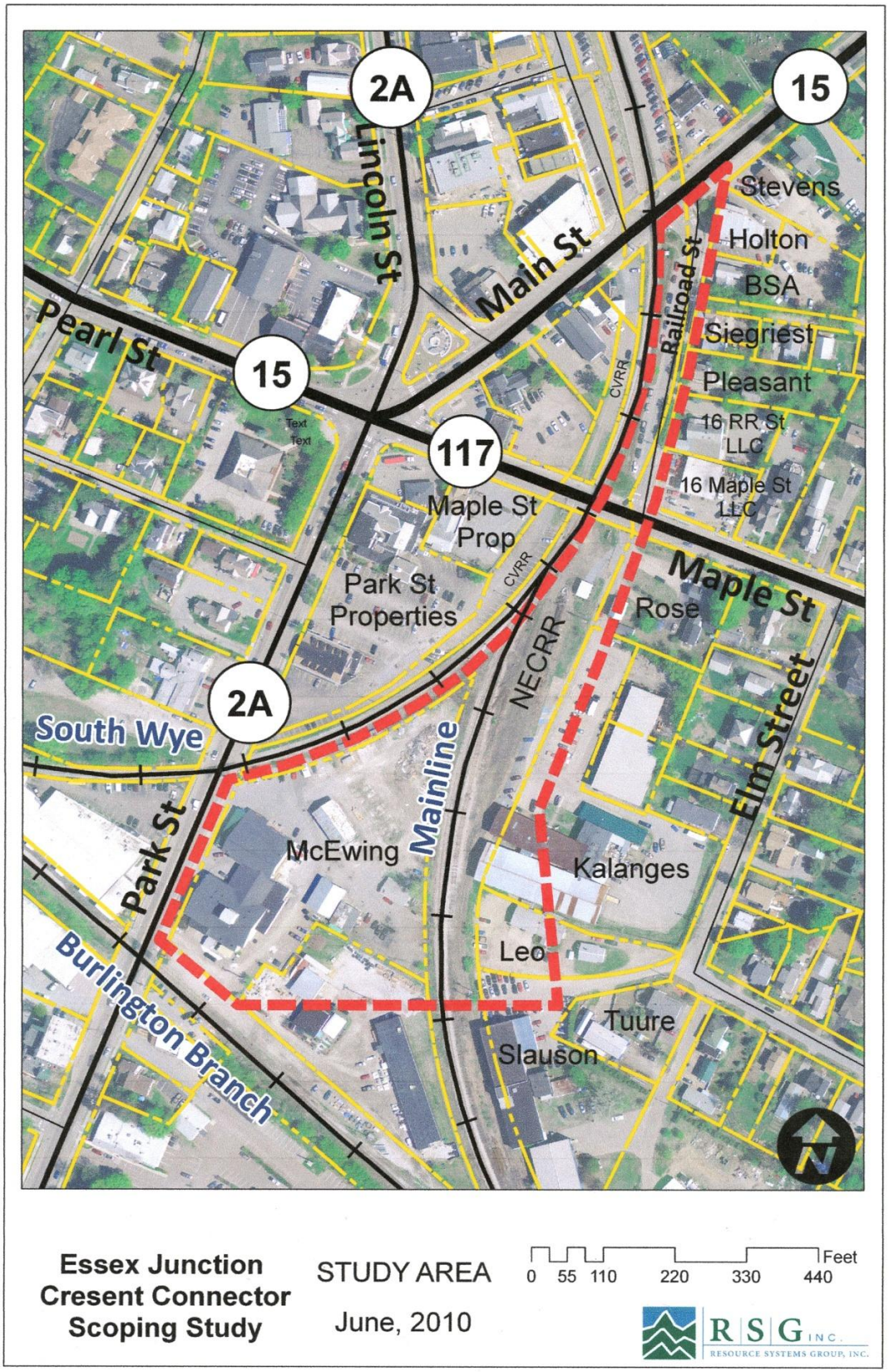


Figure 1. Project location, Essex Junction, Chittenden County, Vermont.



Figure 2. View southeast within the project area towards the Mason Brothers Warehouse (formerly the Baxter Brothers' Cannery).



Figure 3. View south within the project area showing the western end of the Mason Brothers Warehouse.



Figure 4. View southeast within the project area showing the north side of the former Flanders Building Supply building.



Figure 5. View northeast within the project area showing the southern side of the former Central Feed Company building. This building was joined to the Flanders building to the north ca. 1978-1987.



Figure 6. View southeast within the project area showing one of the metal clad sheds standing near the former Flanders Building Supply building.



Figure 7. View north of the project area from just north of the Mason Brothers Warehouse towards Railroad Street. The small blue building at right center was once the village jail.



Figure 8. View south of the project area, along Railroad Street.

PRECONTACT NATIVE AMERICAN RESOURCES

A review of the Vermont Archaeological Inventory (VAI), which is maintained by the Vermont Division for Historic Preservation (VDHP) indicates that there are eight previously reported precontact Native American sites within an approximately 1 km (0.62 mi) radius of the current project area (Figure 9 and Table 1). In applying the VDHP's Environmental Predictive Model for Locating Precontact Archaeological Sites to this project area, a score of 28 is generated, based on its location on a delta complex, its proximity to a relic drainage/intermittent stream, and its proximity to the relic head of draw of the same drainage. Not only does the project area not reach the threshold score (32) to be considered archaeologically sensitive based on the predictive model, historic and modern ground disturbance have altered the project area significantly.

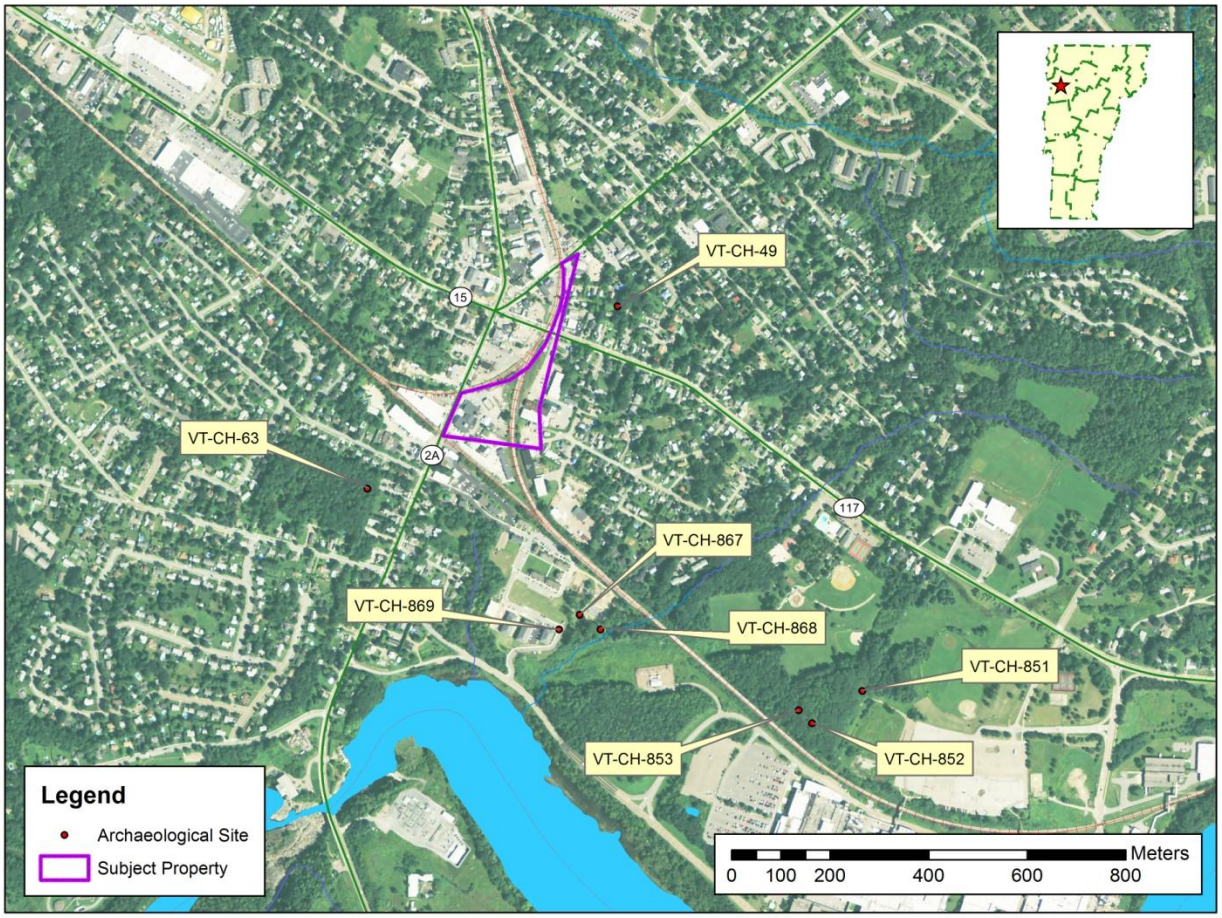


Figure 9. Known archaeological sites within approximately 1 km (0.62 mi) of the current project area.

Table 1. Description of known archaeological sites indicated on Figure 9

Site#	Type	Sub-Type	Time Period	Key Artifacts
VT-CH-49	Precontact Native American	Isolated Find	Archaic	Slate projectile point.
VT-CH-63	Precontact Native American	Undetermined	Archaic-Woodland	Slate, chert, and quartzite bifaces, Levanna and side notched projectile points.
VT-CH-851	Precontact Native American	Undetermined	Unknown	Lithic debitage.
VT-CH-852	Precontact Native American	Undetermined	Unknown	Lithic debitage, utilized flakes, fire cracked rock, features.
VT-CH-853	Precontact Native American	Undetermined	Unknown	Lithic debitage, preform, utilized flake, fire cracked rock.
VT-CH-867	Precontact Native American	Single Occupation	Terminal Late Archaic ca. 1800-1500 BC	Susquehanna (or Normanskill) projectile point, slate gorget, lithic debitage, bifaces, scrapers, core, drill, knife, preform, hammerstone, utilized flakes.
VT-CH-868	Precontact Native American	Temporary Camp	Middle to Late Woodland ca. 750-1500 AD	Levanna projectile point, scraper, lithic debitage.
VT-CH-869	Precontact Native American	Undetermined	Unknown Possible Late Archaic ca.2500-1000 BC	Brewerton-like projectile point, lithic debitage, fire cracked rock, knife, hammerstone.

HISTORIC BACKGROUND

Many of the buildings within the project area were directly associated with either the railroads or industry and commerce from the mid-19th century through the 20th century (Figure 10). Other buildings, such as houses were likely constructed as an indirect result of the arrival of the railroad and the growth of industry/commerce in Essex Junction. Documentary evidence of settlement or use of this area previous to the arrival of the railroad was inconclusive.

VERMONT CENTRAL RAILROAD
(New England Central Railroad)

In the mid-1800s, the Village of Essex Junction, originally known as Painesville, became the meeting point of two early railroads, the Vermont & Canada and the Vermont Central (together later known as the Central Vermont Railroad). In 1848, with the arrival of the first large construction crew, the Vermont & Canada reportedly held "a formal ground breaking ceremony . . . near the present-day Maple Street crossing site" (Bent 1963:100; Jones 1981:35). Not long afterwards, it was reported that the directors of the Vermont Central Railroad were buying land in "Essex . . . for the purposes of the station building, grounds &c., at the junction of the road with the Vermont and Canada . . . on highly favorable terms" (*Burlington Free Press* September 18, 1849). Much of the land that the Vermont Central purchased in the heart of the village of Essex Junction, south of Maple Street was acquired from Elijah G. Stanton (Essex Land Records [ELR] 9:506; Walling 1857). Elijah Stanton sold an eleven acre lot, which included the current project area, to the Vermont Central Railroad Company in 1850 (ELR 9:506). In this deed, Stanton reserved the right to remove his house and barn that he had built on it ca. 1849 (ELR 9:506). Unfortunately, the documents do not pinpoint the location of these structures on the larger lot and their site may or may not be within the current project area. The Walling map of 1857 indicates that at that time Stanton's residence was on the western side of Park Street roughly opposite from the former Flanders Building Supply structure (Figure 11) (Walling 1857). It is known that the buildings in question were removed from the property very soon after their construction, thereby considerably lowering their location's archaeological potential.

The first structures known to be within the current project area were related to the railroad. The Vermont Central Railroad's first passenger station was located within the current project area on the eastern side of Park Street in the area of the former Flanders Building Supply building or just to the north (see Figure 11) (Walling 1857). Little is known about this building except that it was superseded by one built in October of 1862 where the present station (which was built in 1957) is located today (Figure 12). The Walling map also indicates that another railroad related structure, possibly later used as a wagon house and then a storehouse, was located in the southwest portion of the current project area (see Figures 10, 11 and 12).

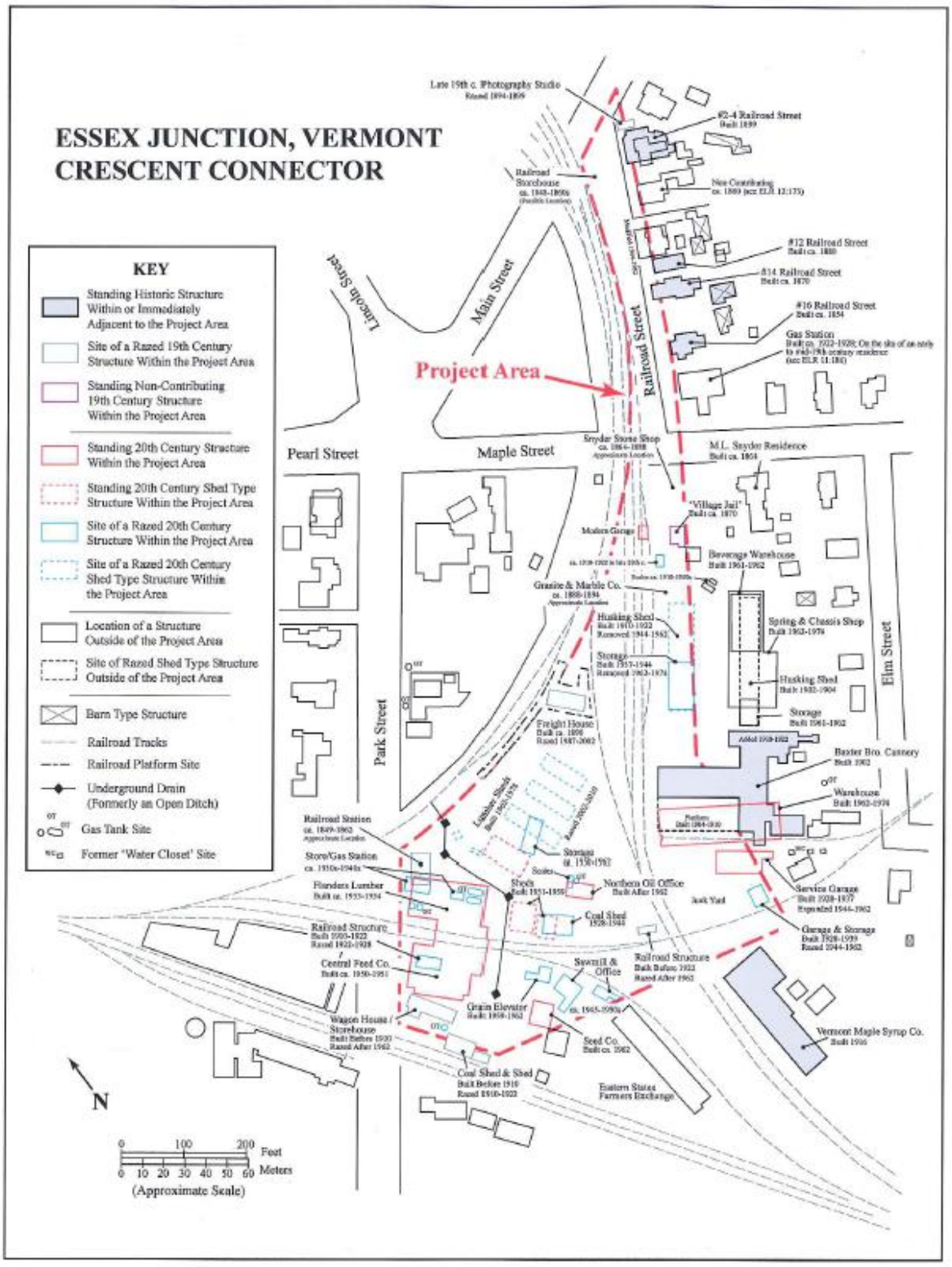


Figure 10. Schematic map showing existing and former buildings within and adjacent to the project area (Aerial Explorations 1937; Areographics Corp. 1974; Beers 1869; Geotechnics & Resources Inc. 1962; Harris Surveying & Land Dispute Resolution 2002; Sanborn Mapping & Publishing Company 1894, 1899, 1904, 1910, 1922, 1928, 1944, and 1962; USGS 1987; Vermont Mapping Program 1978; Walling 1857).

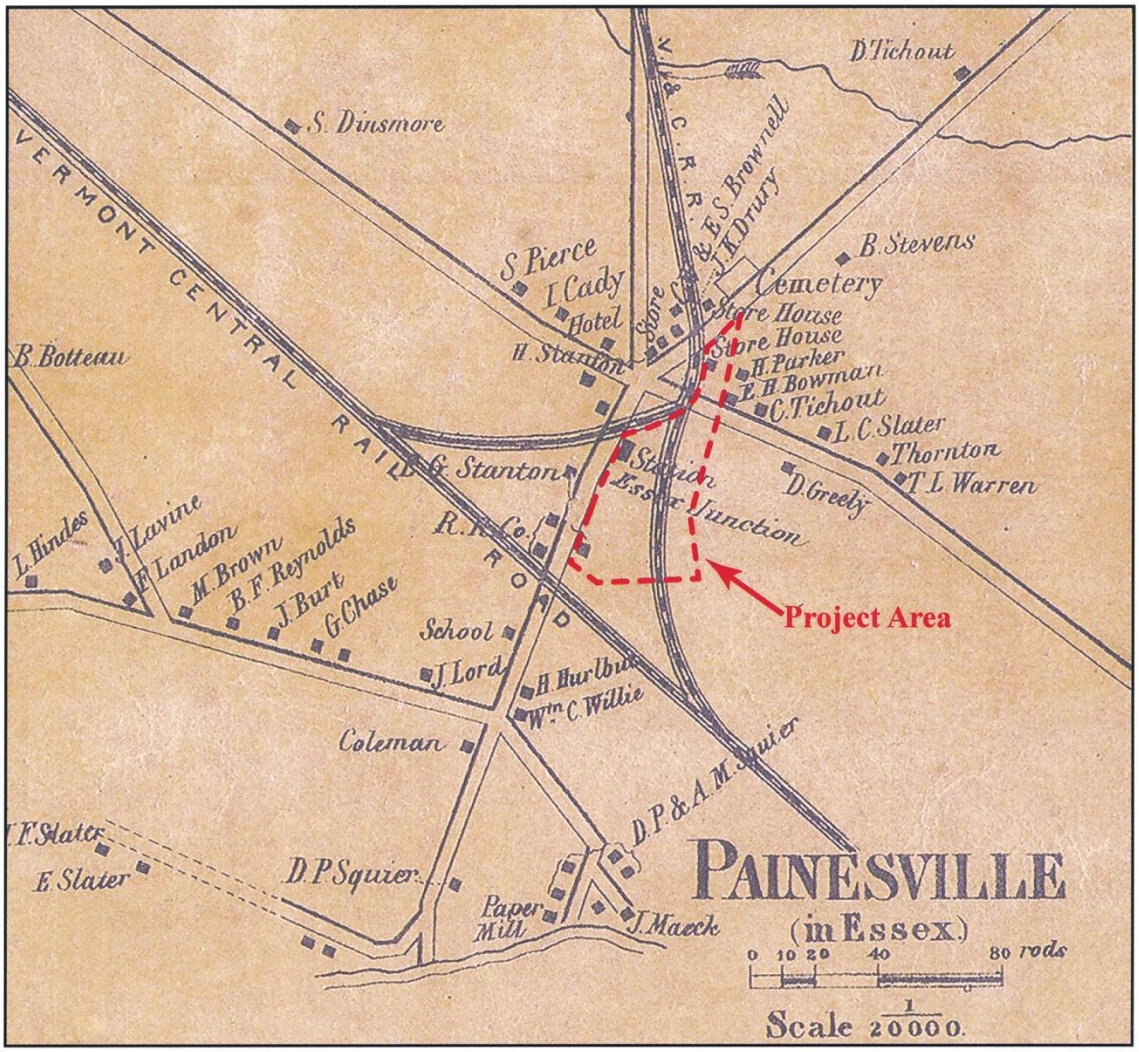


Figure 11. Detail of "Painesville" (now Essex Junction) from H.F. Walling's *Map of Chittenden County, Vermont* (1857).

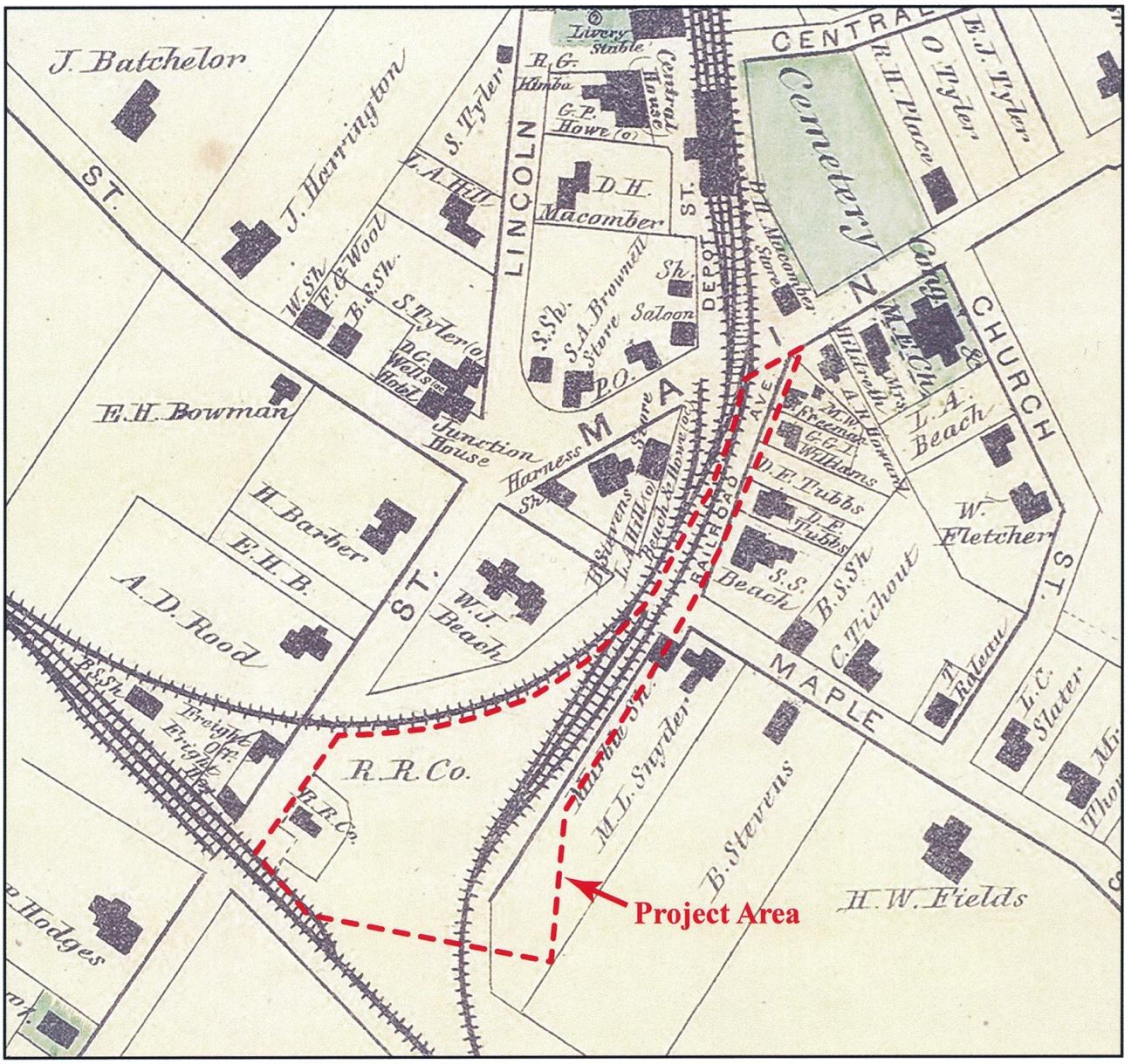


Figure 12. Detail of "Essex Junction" from F.W. Beers' *Atlas of Chittenden County, Vermont* (1869).

M.L. SNYDER'S MARBLE SHOP / ESSEX JUNCTION MARBLE AND GRANITE COMPANY

The portion of the project area east of the railroad tracks and south of Maple Street has been used for industrial and/or commercial purposes since the mid-1800s. The first known industry in the area was a stone cutting shop operated by Marvin Snyder. The general location of this enterprise is indicated on the Beers map of 1869 (see Figure 12). Marvin Leonard Snyder was born in Huntington, Vermont, on August 25, 1824, the third of seven children of John and Eunice (Squires) Snyder (Free Press Association 1901:95; Rann 1886:853). Marvin Snyder attended the University of Vermont and taught in New Jersey before getting into the marble business as a cutter and a sales agent ca. 1860 and establishing a shop in Essex Junction under the style of Snyder & Brownell in 1864 (Free Press Association 1901:95; Rann 1886:853; U.S. Census 1870 and 1880). Marvin Snyder was married twice; his first wife was Sophia Clark,

daughter of Phillip and Lucy (Swallow) Clark, of Pawlet, Vermont, and his second wife, whom he married in 1863, was Jane H. Latham (b. 1830), daughter of Jacob and Polly (White) Latham, of Jericho, Vermont (Essex Vital Records; Rann 1886:853; U.S. Census 1880). Marvin and Jane Snyder had one child, John Latham Snyder, who was born on September 8, 1872 (Essex Vital Records; Rann 1886:853; U.S. Census 1880 and 1900).

Land records indicate that the stone cutting shop, as well as Snyder's residence, stood on land that was, in part, purchased by Jane Snyder from E.H. Bowman on April 3, 1865 (1¼ A) as well as another parcel to the south that Marvin Snyder bought in 1866 and which he conveyed to his wife in April of 1893 (ELR 13:259; 14:8; 22:274-275). Initial land record research suggests that this land was part of the property purchased by the Vermont Central Railroad in the 1840s, but that it was conveyed to John S. Eldridge in 1856 (to settle some of its debts), who later sold it to a man named Beach who sold it to Bowman (ELR 9:506, 11:157, and 12:230).

Snyder bought out Brownell in 1867 and he carried on the business under his own name into the late 1880s (Figure 13) (Child 1882:195, 309; U.S. Census 1870 and 1880). The 1880 federal industrial census indicates that Snyder employed ten men (all over eighteen years of age) full-time for eight months of the year paying wages ranging from $2.25 for skilled workers to $1.25 for unskilled workers for each ten hour day (U.S. Industrial Census, Essex, Vermont, 1880). At this time, Snyder's shop transformed an estimated $1000 of raw stone into $6500 worth of finished product annually (U.S. Industrial Census, Essex, Vermont, 1880).

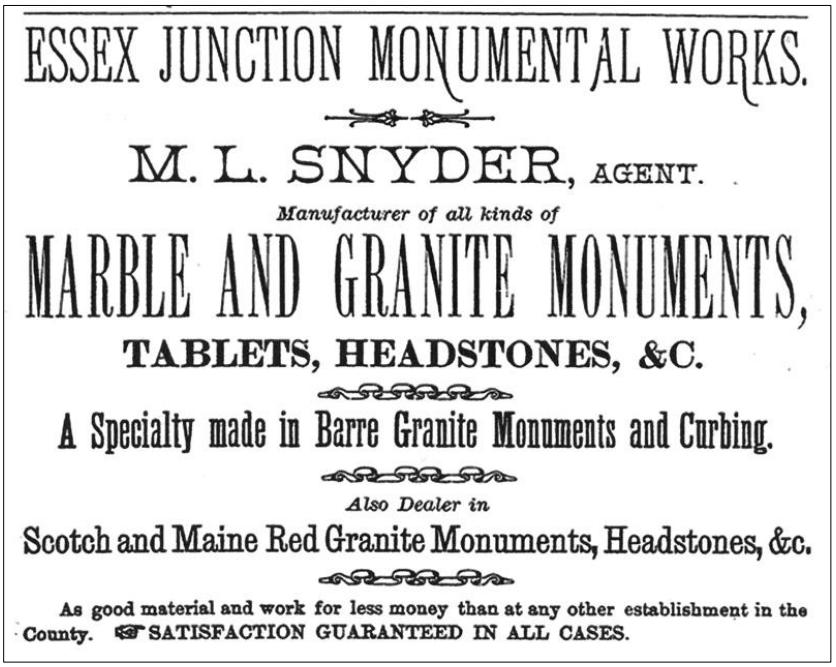


Figure 13. Advertisement for M.L. Snyder (from Child 1882:286).

In April of 1888, Marvin Snyder joined with several others to form the Essex Junction Marble and Granite Company. The land occupied by this company was leased from M.L. Snyder and his wife (ELR 20:137). On this property, the company built a few new structures somewhere south of Snyder's old shop fronting Maple Street. The lease as well as a mortgage on the property held by William Fletcher & Sons, described the parcel as being owned by Jane H. Snyder and as being on the southerly side of Maple Street "adjoining the lands of the Central Vt. Railroad on the westerly side" (ELR 19:303; 20:137). The land leased extended "southerly from said road to the new buildings" (consisting of "marble and granite cutting sheds and blacksmith shop thereto attached and the engine and polishing house") and "covering all the land upon which the said buildings are erected" along with "the privilege of entering upon a space four feet wide around said buildings, for the purpose of completing and repairing the same" (ELR 19:303; 20:137). The documents also reveal that in addition to the new buildings, the new company would also have the "use of the old shop recently moved, and the shop near Maple Street," which Snyder was to "move back" on the property, "so the same will adjoin the northerly end of the new building recently erected" (ELR 20:137). In May of 1888 a local newspaper described the property in even more detail:

> The Essex Junction Marble and Granite Company of Essex Junction, Vt, which was organized in March last, shows a commendable activity which argues well for the prosperity of the new firm. Within 30 days from the date of its organization it had constructed a cutting shed 107 by 30 feet, [a] blacksmith shop 18 x 20 feet, engine and polishing building 22 x 35 feet, equipped the same with a fine Burrell engine of 12 horse power and two of the finest polishing machines ever turned out by Smith, Whitcomb & Cook, of Barre, Vt., had erected their derricks, equipped their shops, built a new side track to accommodate the same, and had the whole business in full blast with an active force of 40 men on their payroll. The firm has already over $20,000 orders booked, and are running their polishing rooms night and day to fill their orders, and already contemplate enlarging their facilities in this direction, to meet the increasing demands of the business. The various departments are ably superintended by the members of the firm themselves, M.L. Snyder and J.S. Young, who have been in the business all their lives so far, having personal charge of the active running of the works and E.R. Fletcher having charge of the books and superintendence of the office, J.W. Bailey a veteran for years in the business, acting as general salesman (*Burlington Clipper* May 24, 1888).

The newspaper added that the "side track to the yard of the new marble works" was laid out "so that blocks of marble can be moved from the cars to the different doors of the shops by a derrick, the building having been built in a semi-circle around the derrick" (*Burlington Clipper* May 24, 1888). The J.W. Bailey noted here was John W. Bailey, the father of Guy W. Bailey who later became president of the University of Vermont.

According to *Walton's Vermont Register*, the Essex Junction Marble and Granite Company broke up by ca. 1890 into the firms of Fletcher & Co. and M.L. Snyder & Son (Walton 1890). M.L. Snyder & Son probably continued to work at the site within the current project area. This company appears to have ceased work around 1894 or 1895, soon after the death of Marvin

Snyder in Essex on October 11, 1893 (Free Press Association 1901:95; Walton 1892, 1893, 1894, and 1895). Marvin Snyder died owning few possessions, specifically "about $75 worth of household furniture & . . . clothing, a few book accounts not exceed $25 and a few stone cutters tools not to exceed $25" (Chittenden County Probate Court, Record for M.L. Snyder 1893). His wife, Jane Snyder, continued to live on Maple Street until her death on March 30, 1910 (Figure 14) (Chittenden County Probate Court, Record for Jane Snyder 1910; Essex Vital Records). Their son, John L. Snyder, moved to Stockbridge, Massachusetts, in the 1890s and continued in the stone cutting business until his death there on March 2, 1911 (Massachusetts Deaths; Chittenden County Probate Court, Record for John L. Snyder 1913; U.S. Census 1900 and 1910). It does not appear that anyone ever worked in the Snyder's stone shops again and it is not known when the structures were removed and/or destroyed, but none of the marble shop related buildings are extant today.



Figure 14. View east along Maple Street, ca. 1903 (Postcard Collection, Special Collections, Bailey-Howe Library, University of Vermont). The west end of M.L. Snyder's residence can be seen at right.

HISTORIC / STANDING RESOURCES

A total of six buildings listed on the Vermont Division for Historic Preservation's (VDHP) Historic Sites & Structures Survey fall partially within or immediately adjacent to the project area (Figure 15; Appendix I). These buildings were assessed in the field and researched through historic documents. Several other buildings within the project area that are not listed on the survey were also assessed and researched (see Figure 15).

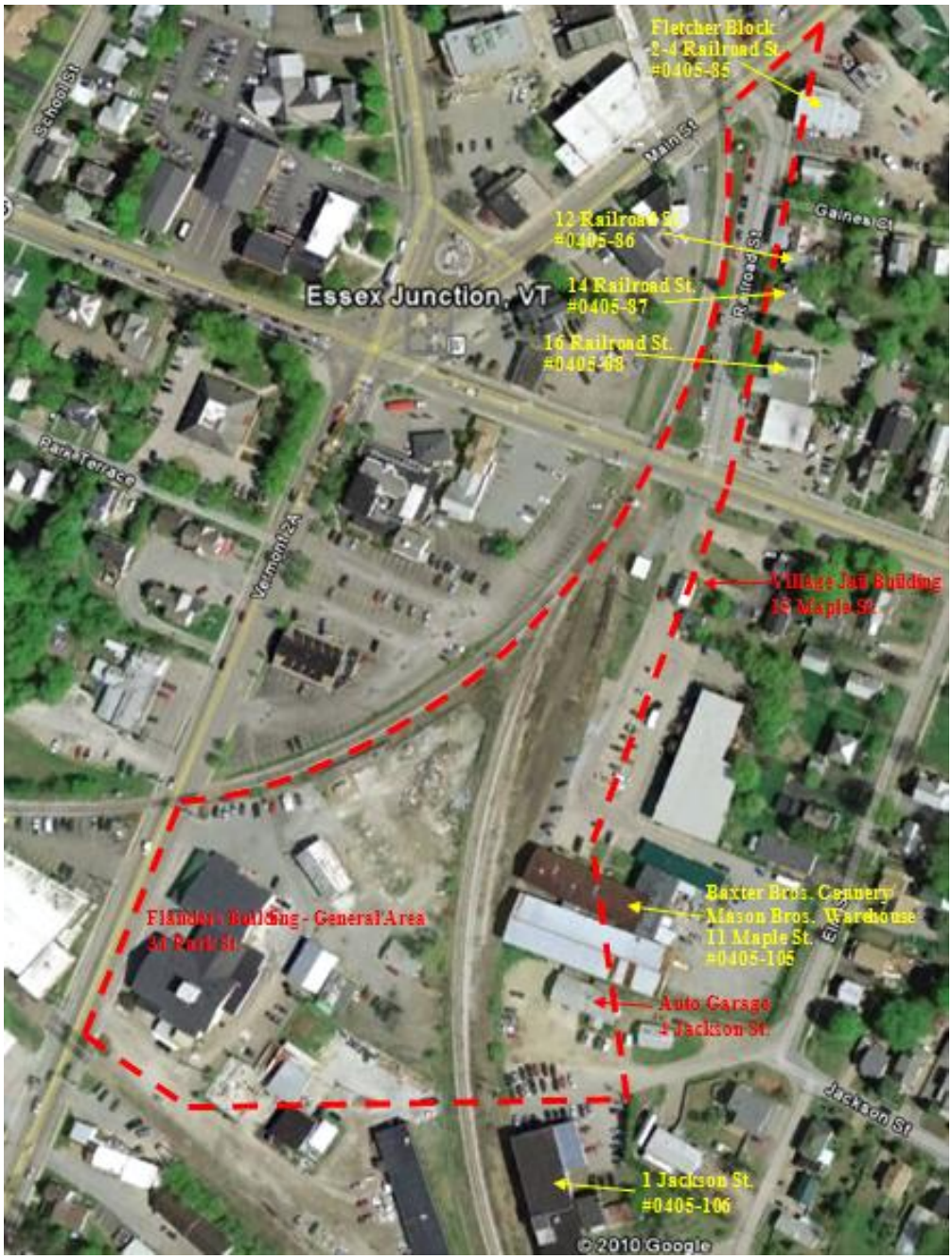


Figure 15. Image showing the location of buildings within or adjacent to the project area that are included on the VDHP Survey (in yellow), and additional buildings surveyed/researched (in red).

VERMONT MAPLE ORCHARDS WAREHOUSE/FLEX-A-SEAL
1 Jackson Street
VDHP Survey No.: #0405-106



Figure 16. View southwest of the Vermont Maple Orchards Warehouse/Flex-A-Seal building.

The industrial building situated adjacent to the southern edge of the project area, just outside the currently defined project area, was formerly a maple syrup factory and storage facility (see Figure 15; Figure 16 and 17). It is included on the VDHP's Historic Sites & Structures Survey which lists a construction date of c. 1890. The building first appears on the Sanborn Fire Insurance Map of 1922 (Sanborn Mapping & Publishing Company 1922). A maple syrup business was located in the building until at least 1984; today the facility is occupied by Flex-A-Seal, Inc., an international mechanical seal manufacturer. The building consists of a two story rectangular structure with a flat or very low pitched roof. Since the 1984 VDHP survey, clapboards have been replaced/covered by vinyl siding, windows appear to have been replaced (though they are still multi-paned), and the northern end wall of the building has been raised with a parapet-type wall extension.



Figure 17. An early 20th century view of the Vermont Maple Syrup Co. factory, looking east (from Powell 1977:58).

BAXTER BROS. CANNERY / MASON BROS. WAREHOUSE
11 Maple Street
VDHP Survey No.: #0405-105



Figure 18. View south of the Baxter Bros. Cannery/Mason Bros. Warehouse building.

Located approximately 480 ft south of Maple Street, immediately east of a set of railroad tracks, is the Baxter Brothers Cannery/Mason Brothers Warehouse building (see Figure 15; Figure 18). In 1901, the H.C. Baxter & Bros. Company of Brunswick, Maine (established ca. 1888), then reported to be "the largest canning concern in the United States" showed interest in setting up a cannery in Essex Junction (*Burlington Clipper* November 23, 1901). At the time, the Baxter Brothers already had three factories in the state; located at Westminster (1892), Windsor (1896), and Brattleboro (1898) (Anonymous 1904:81-82). The company stipulated that they would locate their new cannery in Essex Junction if "the sum of $4000" was "raised to erect the necessary buildings, which the company will lease from the town," and if local farmers pledged to raise at least 700 acres of corn a year (*Burlington Clipper* November 23, 1901). It was reported that before the public meeting called to discuss the company's offer broke up that "$2,400 had been subscribed" and that "nearly all of the $4000 was promised the next day" (*Burlington Clipper* November 23, 1901). Almost immediately, an organization called 'The Essex Industrial Company', created with the "avowed intention of bringing industries to the village of Essex Junction", acquired 2¾ acres from Jane Snyder (via S.A. Brownell) "on Maple Street behind her residence and contiguous to the railway" for $900 and promptly leased it to the Baxter Brothers (Figure 19) (*Burlington Clipper* November 30, 1901 and December 7, 1901;

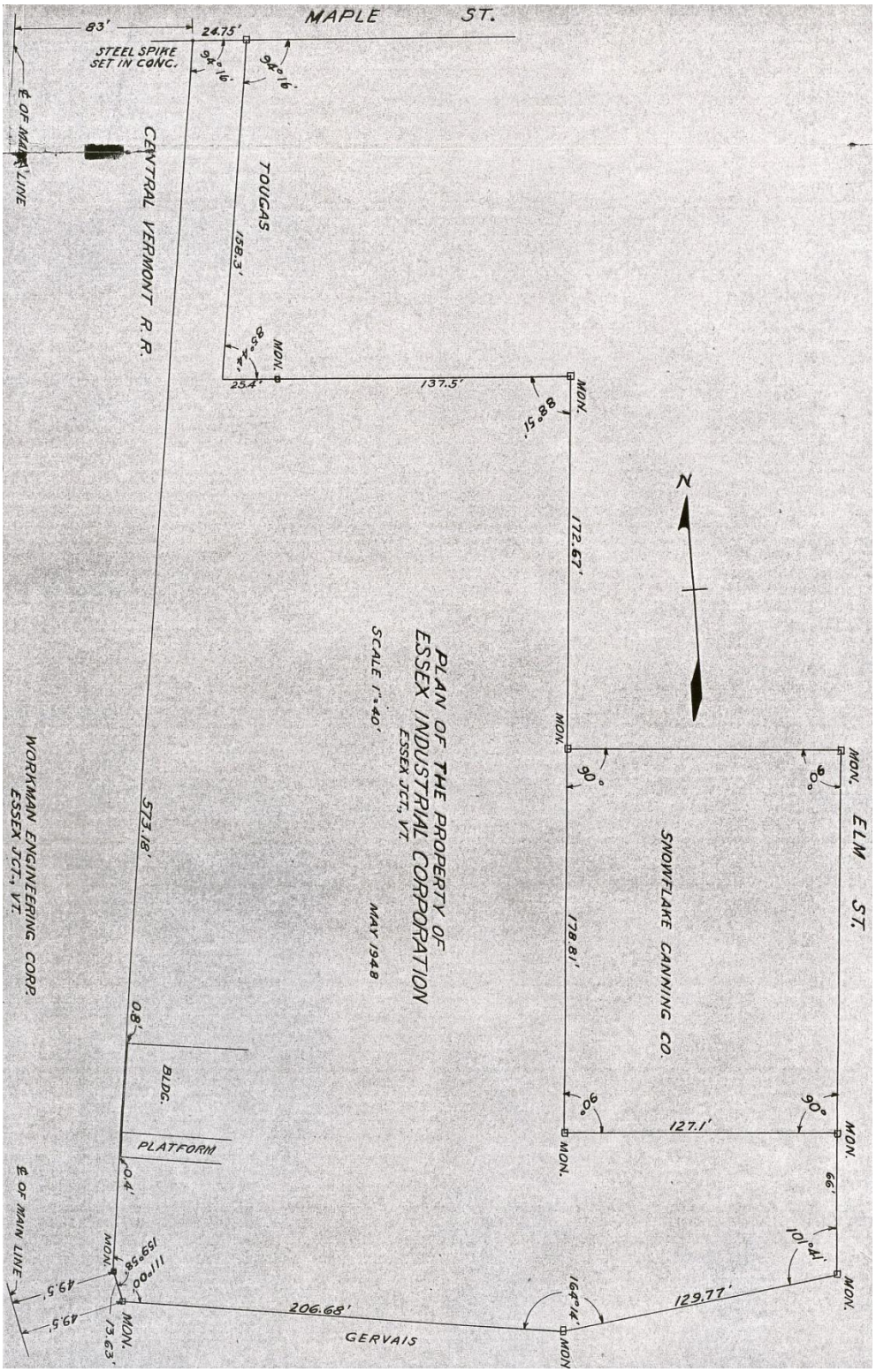


Figure 19. Plan of land owned by the Essex Industrial Company and the Snowflake Canning Co., ca. 1948 (ELR 48:369).

ELR 26:469; 23:158; 29:344-347). In the transfer, Jane Snyder also included a 24 foot wide right-of-way to access the property from Maple Street and a structure, "formerly used as a tenant house," that apparently stood within the right-of-way (ELR 26:469).

The main cannery building was built in January and February of 1902 and was "painted the latest tint of red, something between a Louis Quinze pink and a crushed watermelon" (Figure 20) (*Burlington Clipper* December 14, 1901; *Burlington Clipper* September 13, 1902). The main part of the building was approximately 150 feet long, 45 feet wide, and two stories high (Sanborn Mapping & Publishing Company 1910). By early February, it was reported that some of the skilled workmen had arrived from Maine "to begin the manufacture of tin cans at the canning factory" and that "the machinery and steam plant is now being set up" (*Burlington Clipper* February 15, 1902). However, the first use of the building was for a library fundraiser. A local paper noted: "the big floor space of the new canning factory was utilized as it probably will never be again last Thursday night on the occasion of the endeavor on the part of the library trustees to give the public something in the way of entertainment that would result ultimately in the financial benefit of the book catalogue of the library" (*Burlington Clipper* March 1, 1902).



Figure 20. An early 20th century view of the Essex Junction corn canning factory, looking east northeast (Postcard Collection, Special Collections, Bailey-Howe Library, University of Vermont). Note the lightly constructed husking shed to the left of the cannery.

Canning operations began with a trial run early in September of 1902 with A.H. Barrows and Albert Miller of Colchester bringing in the first loads of corn to be processed (*Burlington Clipper* September 13, 1902). At the time, it was reported that: "the cannery at Essex Junction is the finest and most thoroughly equipped plant of its kind in New England" (*Burlington Clipper* November 1, 1902). The original complement of machinery included "seven cutters, two silkers, two cookers, two wipers, two capping machines and 19 retorts" (*Burlington Clipper* September 13, 1902). Although the first season of production was marred by a poor corn crop, the cannery remained an important business in Essex for over fifty years (*Burlington Clipper* November 1, 1902). Each year, "as many as 100 workers were hired for the three-to four week canning season starting in late August" (Allen and Allen 2004:44*; Burlington Clipper* September 13, 1902). These workers were probably mostly huskers as this task was not easily mechanized. It was noted that "the husks and cobs go back to the farmers for feed" (*Burlington Clipper* September 13, 1902). While initially it was planned that at the Essex facility would also can "peas, beans, tomatoes, and succotash," through most, if not all, of its history its output was corn (*Burlington Clipper* November 23, 1901; *Suburban List* March 12, 1957). The cannery later operated as a division of the Snowflake Canning Company, which was owned in part by the Baxter Brothers (*Suburban List* March 12, 1957). The plant was "modernized from time to time till it ceased operation in 1959" (Bent 1963:100). The property was sold by the Essex Industrial Company to the Robinson Warehousing & Distributing Company on July 14, 1961 (ELR 64:446). The warehouse to the south of the main cannery building was added to the property between 1962 and 1974 (Areographics 1974; Geotechnics 1962). This warehouse was built over the old cannery's southern addition (engine house/boiler) and its railroad platform site.

With the construction of the Essex Junction factory in 1902, Vermont had seven canning factories with a combined estimated output of 2,700,000 two-pound cans in 1903 (Anonymous 1904:81-82). All-in-all Vermont would only have eleven towns hosting industrial scale canneries, these were Brattleboro, Essex, Island Pond, Newbury, Northfield, Randolph, St. Albans, Shelburne, Waterbury, Westminster, and Windsor (Frederic 2002:6). The canning industry faded in Vermont after World War II with most, if not all, of the plants shutting down by the 1960s (Frederic 2002:163). The building now houses an architectural salvage business, antiques store and other small businesses. Much of the interior of the building appears to remain relatively unaltered and there are several features, such as a large service elevator that are likely original to the building. The western half of the building lies directly within the project area.

AUTOMOTIVE SERVICE GARAGE
4 Jackson Street

Four Jackson Street, located immediately south of the Baxter Bros. Cannery/Mason Bros. Warehouse building, is a single story concrete block automotive repair garage that was built between 1937 and 1944 and expanded between 1944 and 1962 (Aerial Explorations 1937; Sanborn Mapping & Publishing Company 1928, 1944, and 1962). The building is currently occupied by Jason Leo's Automotive. It is situated almost entirely within the project area. This garage is not included on the VDHP's Historic Sites & Structures Survey.

THE VILLAGE JAIL/RESIDENCE
15 Maple Street



Figure 21. View south of the Village Jail/Residence at 15 Maple Street.

Just within the project area near Maple Street is a building known as the old village jail (see Figure 15; Figure 21). Constructed in the1870s, this building was used as a barber shop by 1899, and converted into a small jail between 1904 and 1910 (Baker 1973:21; Sanborn Mapping & Publishing Company 1899, 1904, and 1910). Reportedly, as the village lock-up:

> …..it contained two individual cells, or 'cages' as they were called at that time on the first floor. They were of primitive construction-1/8 inch steel sheets on three sides and at the top, with an iron door set in the center of a row of iron bars serving as the fourth side. A set of stairs at the back of the building led to living quarters above. At one time a woman lived above the jail. She provided meals for the inmates whenever the jail was occupied (Baker 1973:21).

The building was converted into a residence and store in the 1920s (Baker 1973:21; Sanborn Mapping & Publishing Company 1922 and 1928). The cells were finally taken out ca.1938 and after their removal they were "stored in a shed behind Lincoln Hall until World War II when the doors were disposed of and the iron bars sold for scrap. The village street department cut up the

sheet steel walls and used them to repair their trucks and elevate the sides" (Baker 1973:21). The building is not included on the VDHP's Historic Sites & Structures Survey.

FORMER FLANDERS BUILDING SUPPLY BUILDING – GENERAL AREA

As noted earlier, in the 19th century much of the land located at the southwest end of the project area was owned by the railroad company. This land remained open for many years with the exception of a few structures that were located east of Park Street such as the early passenger station, a wagon house, and some wood/coal sheds (see Figure 10). However, in the 20th century, the railroad company not only built additional structures for themselves, but they also rented and/or sold off portions of this land to other businesses who also constructed a number of new buildings; aerial photographs and other images document the building changes within the project area here (Figures 22-26).

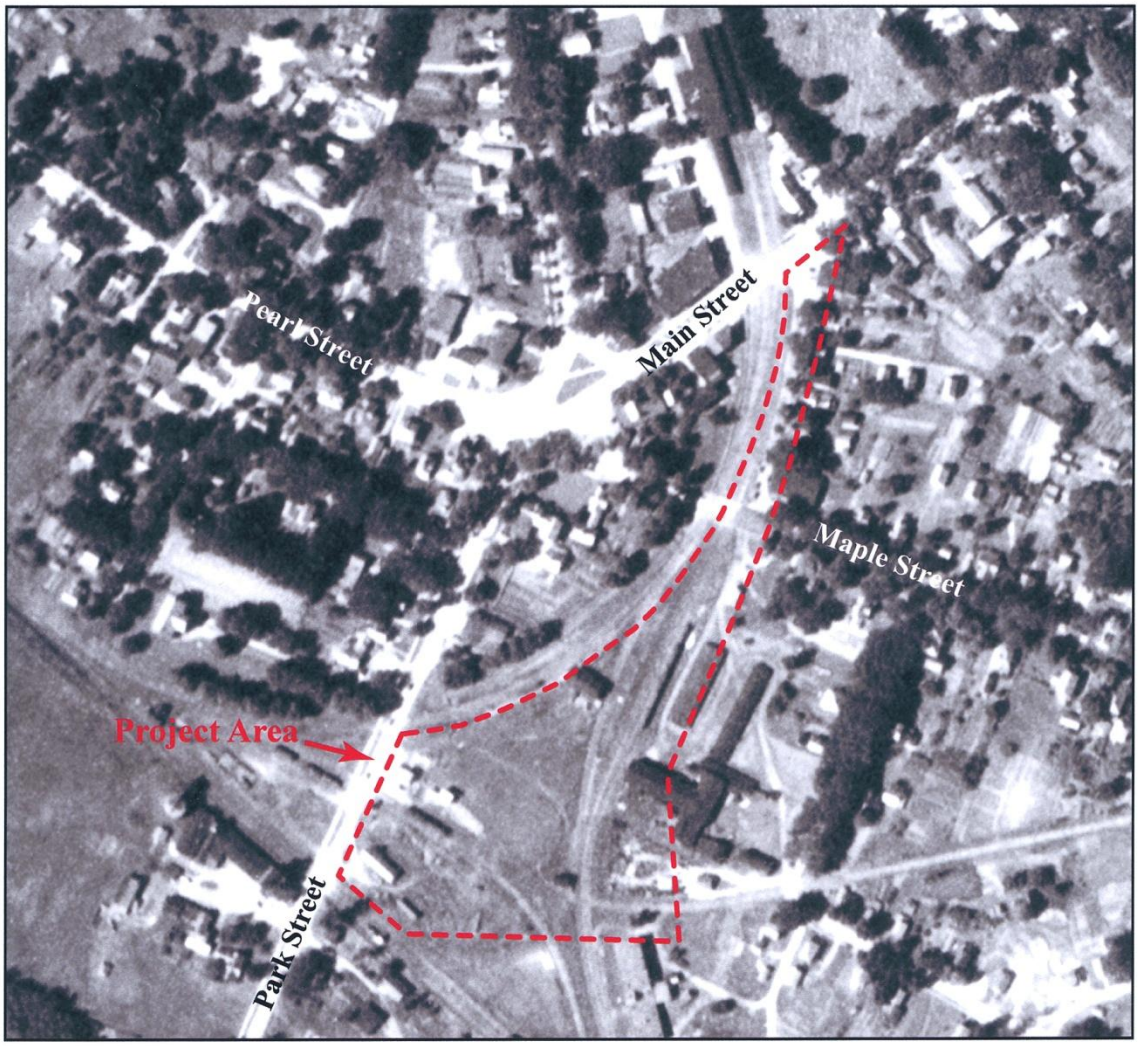


Figure 22. Detail of a 1937 aerial photograph of Essex Junction, Vermont, showing the project area and buildings within it (Aerial Explorations Inc., 1937).



Figure 23. Detail of an oblique air image of Essex Junction, Vermont, looking southward ca. 1939 showing buildings in the general project area (Henry Sheldon Museum cat#1986.310.224-226 Negative #225).

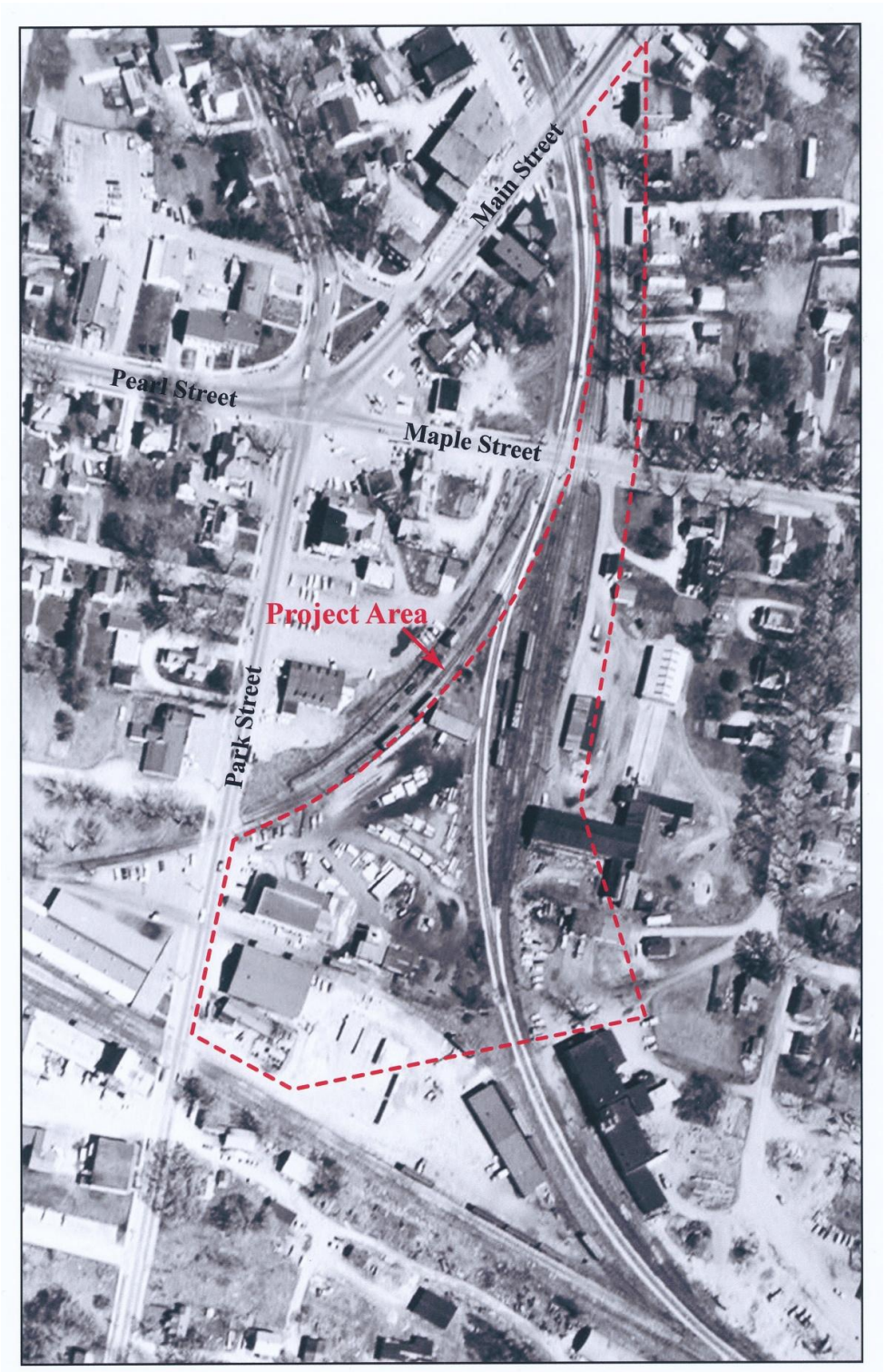


Figure 24. Detail of a 1962 aerial photograph of Essex Junction, Vermont, showing the project area and the addition of and changes to buildings within the project area since 1937 (see Figure 16) (Geotechnics & Resources Inc., 1962).

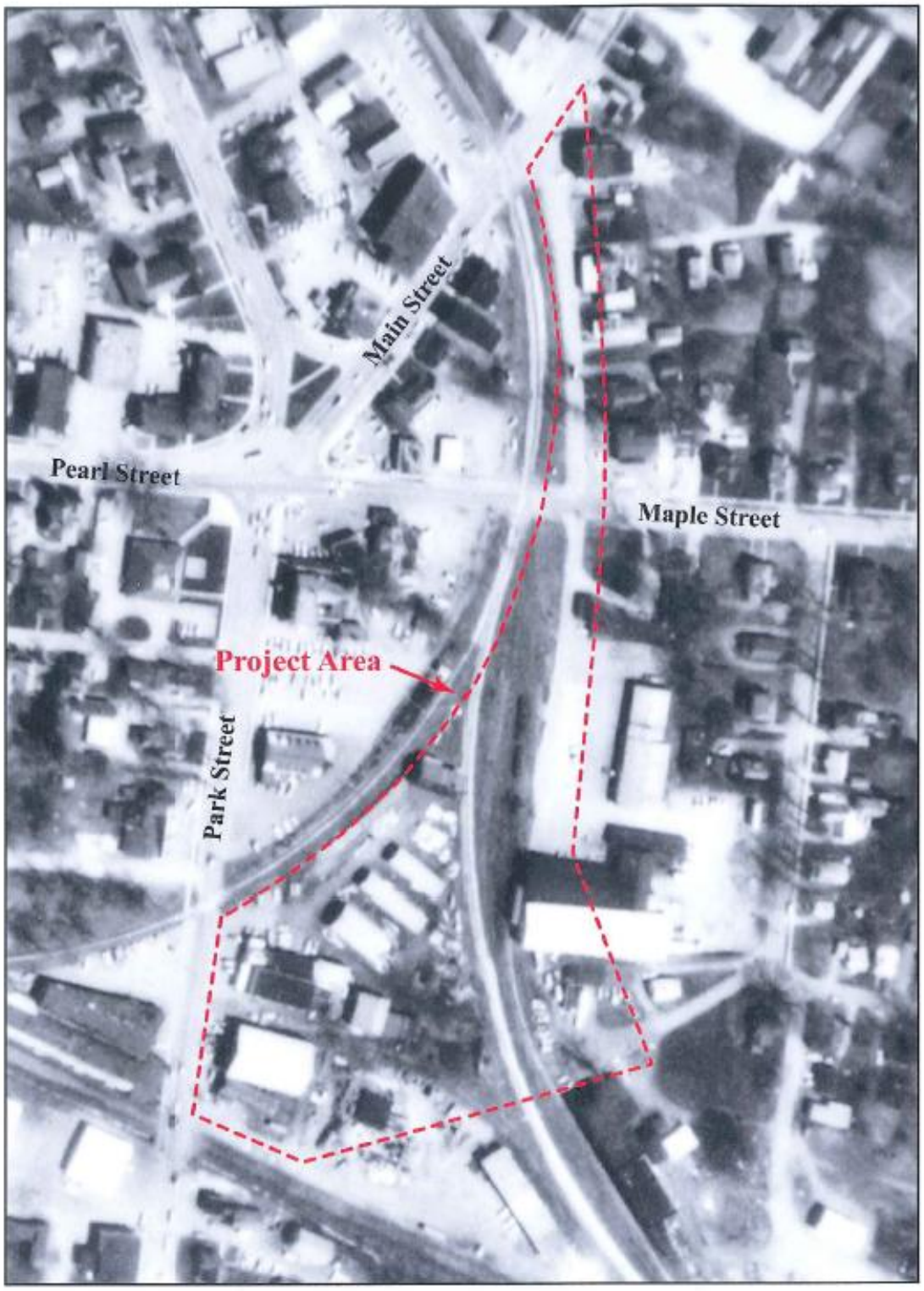


Figure 25. Detail of a 1974 aerial photograph of Essex Junction, Vermont, showing the project area and the additions of and changes to buildings since 1962 (Areographics Corp., 1974).

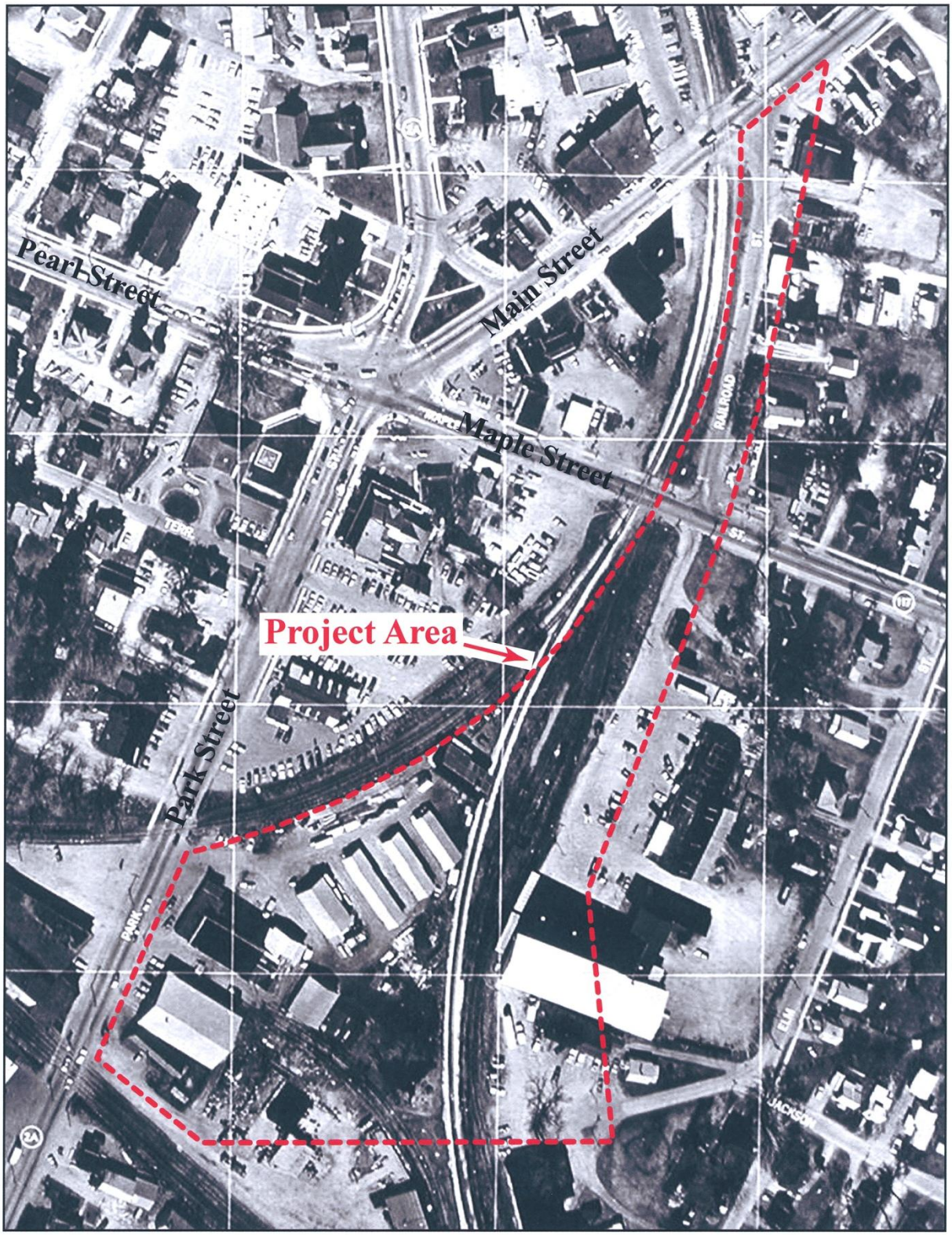


Figure 26. Detail of a 1978 aerial photograph of Essex Junction, Vermont, showing the project area and buildings within it (Vermont Mapping Program 1978).

Flanders Building Supply and Lumber Company
34 Park Street

The existing former Flanders building on Park Street is made up of two mid-20th century structures; the ca. 1950-1951 Central Feed Company building (south) and the ca. 1953-1954 Flanders Lumber and Supply building (north) (see Figure 15; Figures 27-29) (ELR 54:77 and 62:66; H.A. Manning & Co., 1952 and 1954). These two structures were connected sometime between 1978 and 1987, after the set of tracks separating them was abandoned (probably in the 1960s) (Vermont Mapping Program 1978; USGS 1987). The early Flanders building housed its own sawmill. Today, the building houses several smaller businesses. The Flanders Company also built a number of shed type structures to cover lumber, store coal, and sawdust on the property, a few of which still stand (see Figure 10). None of these buildings are included on the VDHP's Historic Sites & Structures Survey.



Figure 27. An early 20th century view of the Flanders Building Supply site (just past the parked boxcar on the right side of Park Street), looking north northeast (from Powell 1977:58). The Central Feed building would be built this side of the boxcar in this view. This image also shows the railroad freight depot (at center with the loop drive), the Baxter Brothers' canning factory (at right center), and another railroad building / storage building (in the right foreground).

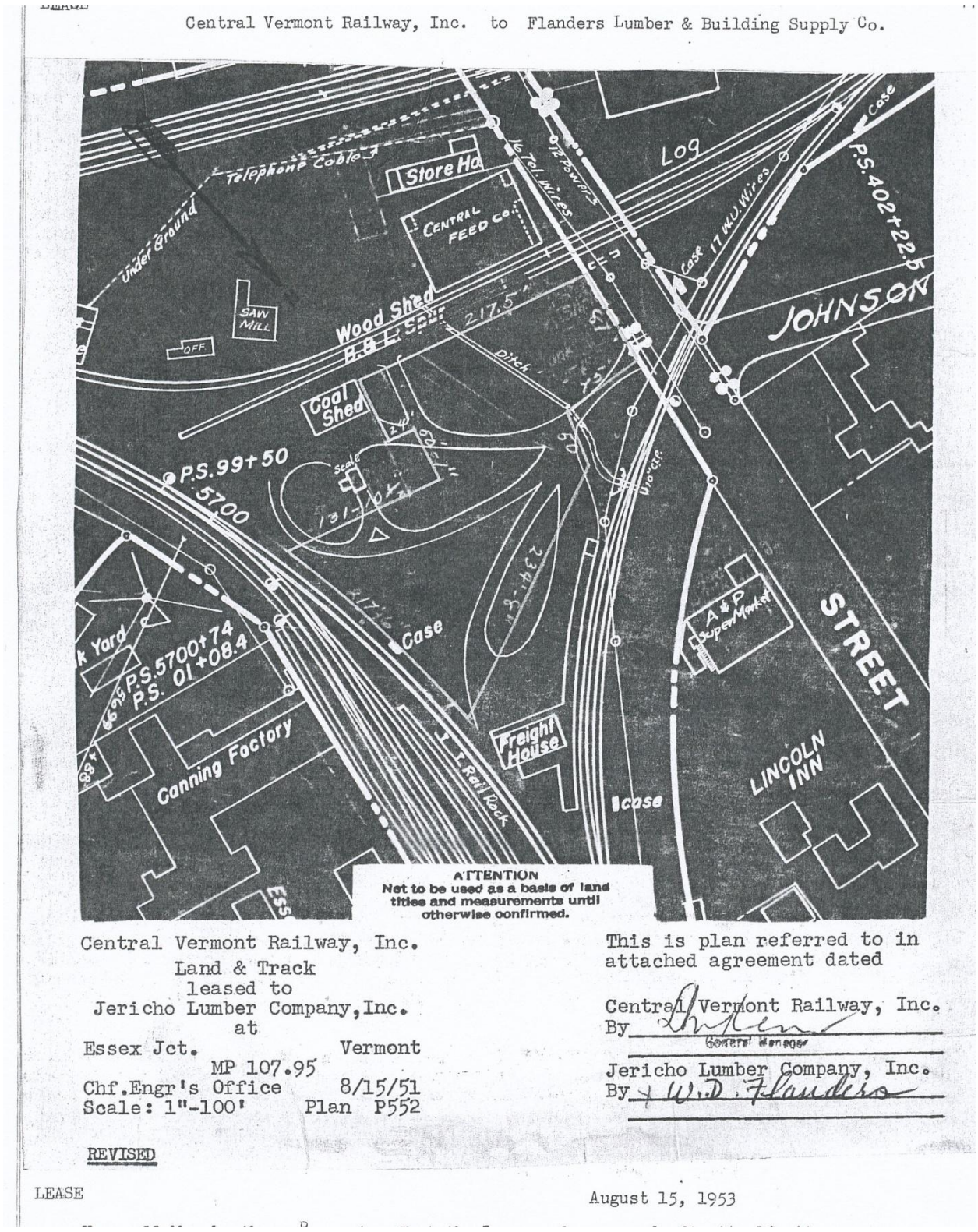


Figure 28. Map recorded with a lease executed between the Central Vermont Railroad and the Flanders Building Supply Company in 1953, north is to the bottom right (ELR 54:77).

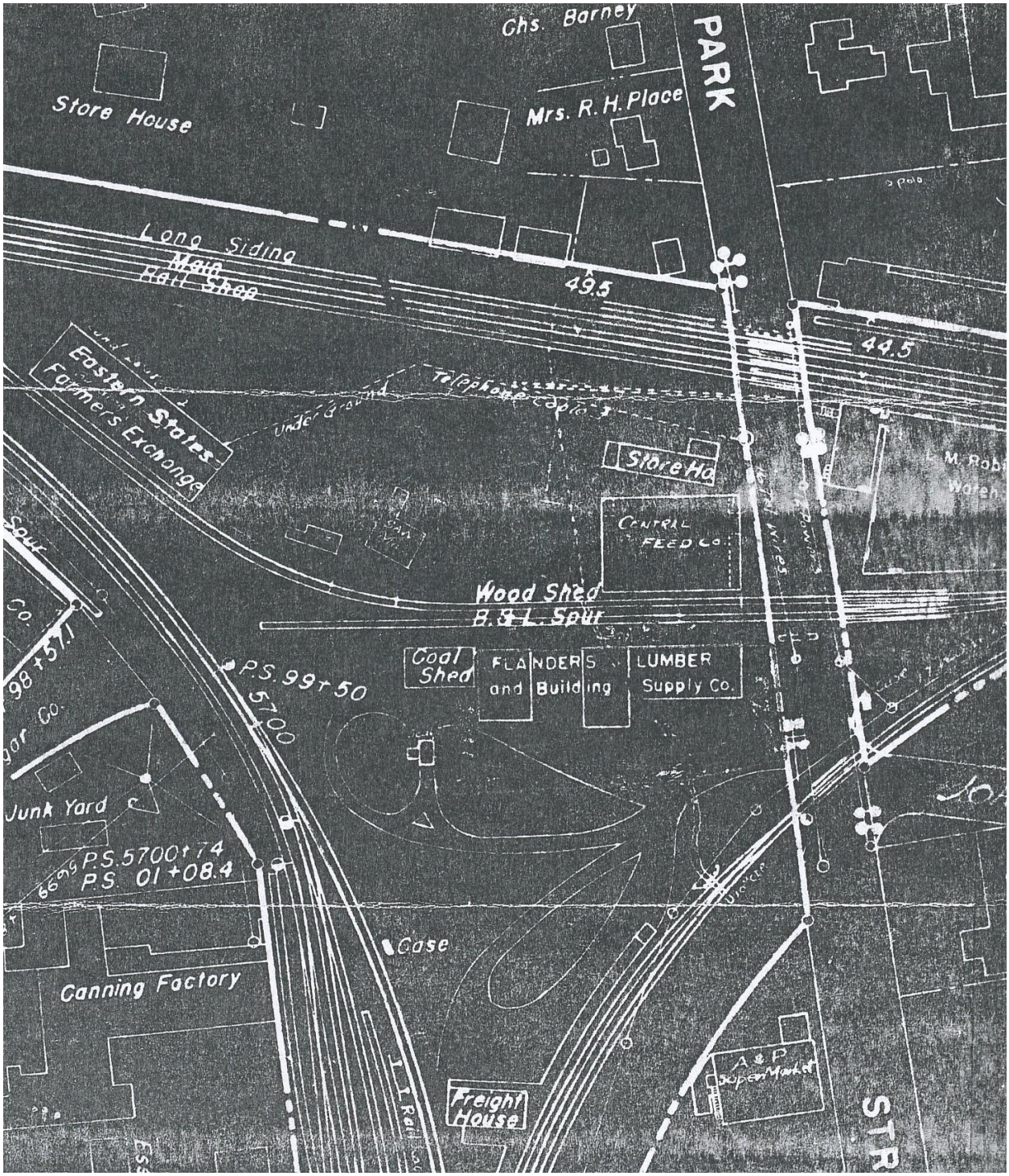


Figure 29. Map recorded with a warranty deed executed between the Central Vermont Railroad and the Flanders Building Supply Company in 1959, north is to the bottom right (ELR 62:66).

Gas Station
No Longer Extant

In the area now generally occupied by the former Flanders Building Supply and Lumber Company building there was once an automotive supply store (tire and battery shop) / gas station (with some in ground and some above ground tanks) that was built between 1928 and 1937 and removed between 1944 and 1951 (Aerial Explorations 1937; ELR 54:77 and 62:66; H.A. Manning & Co. 1937, 1940, 1943; Sanborn Mapping & Publishing Company 1928, 1944, and 1962).

The Freight Depot
No Longer Extant

In 1869, the Central Vermont Railroad's primary freight house in Essex Junction was located on the western side of Park Street, across the road from the current project area (see Figure 12) (Beers 1869). However, by ca. 1890, the company had built another freight house within the project area (Figure 30; see Figures 10 and 27) (Beers 1869; Sanborn Mapping & Publishing Company 1910). This latter structure was roughly 7.9 x 11 m (26 x 36 ft) in plan and 1½ stories high with a concrete foundation, balloon frame, and clapboard and corrugated sheet metal covering. This freight house was listed on the VDHP's Historic Sites & Structures Survey in 1984 (#0405-107). Even at that time it was described as partially fire damaged and the building was eventually torn down/lost between 1987 and 2002 (Harris Surveying & Land Dispute Resolution 2002; USGS 1987).

Other Railroad Buildings
No Longer Extant/Altered

In the area east of Park Street there were several other structures associated with the railroad including a wagon shed / storehouse, coal shed, and other sheds (see Figure 10). Some of these buildings may date to the mid 1800s as both the Walling and Beers maps indicate railroad related structures in this general area. The long wagon house / store house once located in the south west corner of the project area, south of the Central Feed Company structure, possibly dated to soon after the construction of the railroad (see Figures 10, 11 and 12). During the 20th century, this structure was used variously as a wagon shed (1910), storage building (1922, 1944, and 1962), and as paint shop (1928) (Sanborn Mapping & Publishing Company 1910, 1922, 1928, 1944, and 1962). It was apparently razed between ca. 1978 and 1987 (Harris Surveying & Land Dispute Resolution 2002; USGS 1987; Vermont Mapping Program 1978). Other potentially railroad related structures in this portion of the project area were either altered or replaced by the structures associated with the Flanders Building Supply and Lumber Company (see Figure 10).

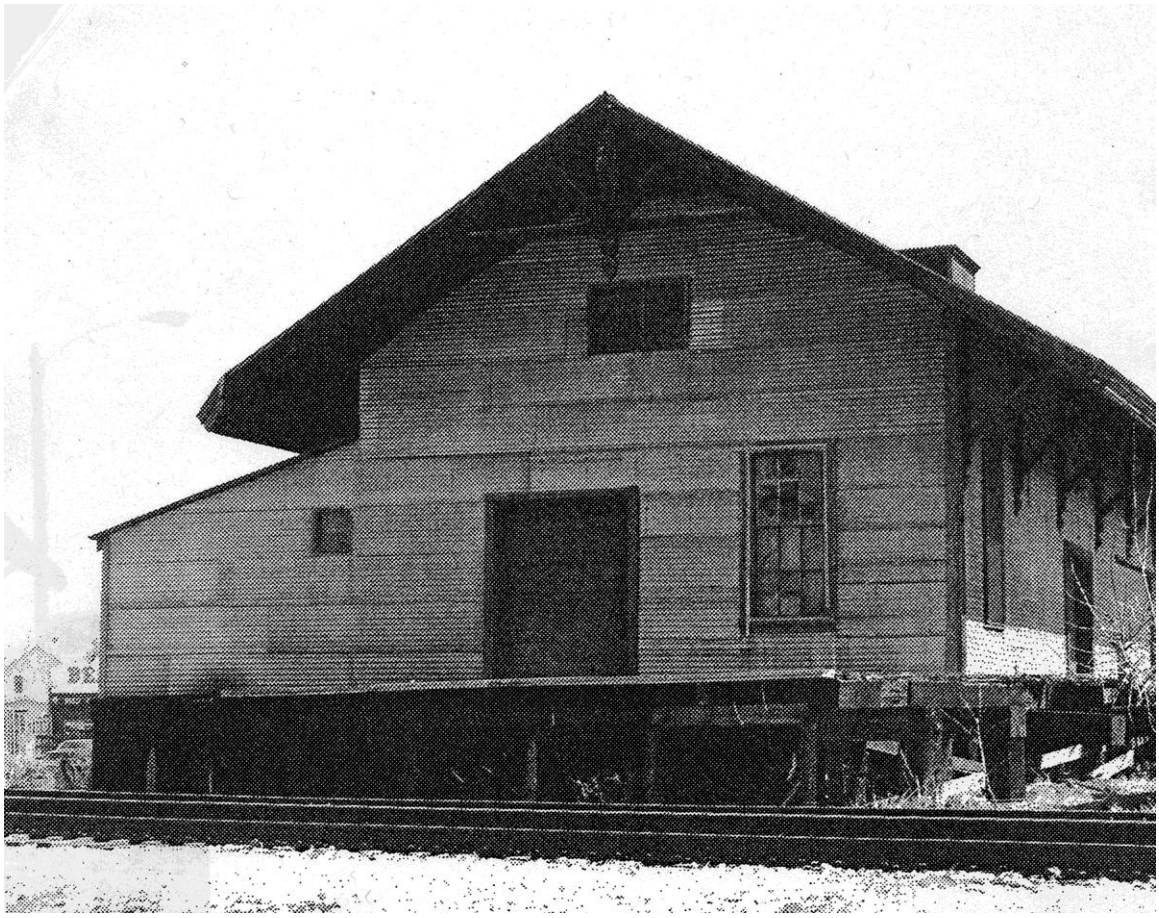


Figure 30. View east of the Central Vermont Railroad's freight house, which was located within the current project area, but is no longer extant (image from the VDHP's Historic Sites & Structures Survey, #0405-107).

THE RAILROAD STREET AREA

Trackside "Store House"

No Longer Extant

The H. P. Walling map of 1857 indicates that before Railroad Street was formerly opened ca.1857-1865 there was an early trackside "store house," possibly within the present street's right-of-way near its intersection with Main Street (see Figure 11) (Beers 1869; ELR 13:372; Walling 1857). Based on initial land record research, this structure was probably built by Byron Stevens, who owned most of the land north of Maple Street near the project area in the mid-1800s.

This storehouse was not the only structure of its kind in the area. Another early railroad storehouse was located on Main Street west of the Essex Village Cemetery, while another (not depicted on the Walling map) was located on the west side of the railroad tracks on the north side

of Maple Street. The latter building was described in a deed from Byron Stevens to the Vermont & Canada Railroad in April of 1858, which included the following property description:

> …..beginning on the north line of the highway leading from Stanton's Tavern stand to Richmond at a point in said north line nine feet westerly from the centre line of the Vermont and Canada Railroad. Thence westerly to a point at the south east of my storehouse and twenty eight feet westerly from said centre line. Thence northerly to a point in the southerly line of said highway leading from said Stanton's Tavern to Essex Center, twenty four feet westerly from said center line, thence easterly in the last named highway seventeen feet easterly of said center line. Thence southerly to a point east of the south east corner of said store house and eighteen feet easterly from center line. Thence southerly to a point in the north line of said first named highway and fifty six feet easterly from said center line. Thence westerly in the north line of said first highway to the point if beginning containing one fourth of an acre . . . for the purpose of a railroad track or tracks . . . the company shall maintain at their own cost and expense a side track or turnout to and along side my storehouse now standing between said highway or any future storehouse on the same site while said company shall occupy said land" (ELR 11:426).

Fletcher Block
2-4 Railroad Street
VDHP Survey No.: 0405-85



Figure 31. View northeast of the brick commercial block at 2-4 Railroad Street (left).

The 2 story, flat roof, brick commercial block with a roofline sculpted and bracketed entablature, located at the corner of Railroad Street and Main Street was built in 1899 by William S. Fletcher to accommodate a meat market and grocery store (see Figure 15; Figure 31). It was constructed on the site of a combination residential structure and drug store (built ca. 1857-1865) as well as a late 19th century (wood frame and tin clad) photography studio, which was located on the corner of Main and Railroad Streets (ELR 13:372; Sanborn Mapping & Publishing Company 1894). The building has rounded arch windows with brick splayed lintels and granite keystones and sills. A 2 story flat roof wing addition with second story porch is attached to the rear of the building.

Residence
12 Railroad Street
VDHP Survey No.: 0405-86

The 2 story, wood framed commercial structure with front projecting box eaves was built ca. 1880 (see Figure 15; Figures 32 and 33). This building was used to house many mercantile enterprises since its construction including a grocery (1894), a restaurant (1899, 1904), a stone cutting shop (1910), and a jewelry store (1922 and 1928) before being converted into a dwelling sometime between 1928 and 1944 (Sanborn Mapping & Publishing Company 1894, 1899, 1904, 1910, 1922, 1928 1944, and 1962). A low pitched roof has been added on top of the original flat roof sometime after the 1984 survey and the front entrance door appears to have been replaced.

Residence
14 Railroad Street
VDHP Survey No.: 0405-87

This 1 ½ story, wood frame residence with associated barn at 14 Railroad Street was built ca. 1870 (see Figures 15, 31 and 32). The building has a gable roof with projecting box cornice, returns, and corner and sill trim boards. It has a gable front orientation toward Railroad Street. There is an enclosed porch on the front of the house, and a wing addition to the back of the house. Since the 1984 survey, windows appear to have been added to the front porch, fully enclosing it, and the enclosed porch formerly located on the south side of the house has been eliminated and replaced with a small, open porch with entrance door and projecting roof.



Figure 32. View east of 12 Railroad Street (left) and 14 Railroad Street (right).



Figure 33. View northeast of 12 Railroad Street (left) and 14 Railroad Street (right).

Residence
16 Railroad Street
VDHP Survey No.: 0405-88

The 1 ½ story, gable front, wood frame residential structure at 16 Railroad Street dates from the mid-1800s (see Figure 15; Figures 34 and 35). The VDHP's Historic Sites & Structure Survey estimates its construction ca. 1865, but it could be earlier. Land records suggest that Byron Stevens, a prominent local builder and farmer sold a half acre building lot near the railroad to Henry M. Parker in 1854 and that the same property was sold to David F. Tubbs in October of 1856 (see Figures 11 and 12) (Beers 1869; ELR 11:173; Rann 1886: 853; Walling 1857). The earlier deed also suggests that a railroad watering facility was located nearby along the tracks. Modifications since the 1984 survey include: the removal of a front porch, the enclosure of a porch on the north side of the building, the construction of a sizeable addition that projects from the front of the building, and window replacement.



Figure 34. View east of 16 Railroad Street.



Figure 35. View southeast of 16 Railroad Street.

STATEMENT OF SIGNIFICANCE / DETERMINATION OF EFFECT AND RECOMMENDATIONS

Documentary evidence indicates that the project area was developed beginning in the mid-1800s. Much of the initial development within the project area occurred as a direct result of the arrival of the railroad in Essex Junction. Once the industrial/commercial trend for development was established, continued development occurred through the 20th century; within the last two decades, there appears to have been little additional development to the area.

ARCHAEOLOGICAL RESOURCES

While it is expected that some buried, physical evidence of earlier historic structures within the current project area remains, such as evidence of the old railway station, M.L. Snyder's first stone working shop, and buildings related to the marble/stone industry, it is unlikely that any significant historic archaeological resources would be encountered, or additional significant information on the buildings would be determined, given,

1. the type of buildings that previously existed within the current project area (e.g. light commercial or railroad storage structures, such as sheds, warehouses, and open factory structures);

2. the time period of those structures (from the mid-to-late 19th century through the 20th century);
3. the available documentary resources detailing most of these structures; and
4. the significant land modification to the project area within the historic period (e.g. construction and demolition of numerous buildings, landscaping, railroad track activities, such as adding ballast, repairing/replacing track).

Using Vermont's predictive model, and considering the disturbance outlined above, the project area is also unlikely to yield significant precontact Native American archaeological material and information. Therefore, no additional archaeological work is recommended within the project area and it is recommended that any activities within the currently defined project area would result in a determination of *No Effect* on archaeological resources.

STANDING HISTORIC RESOURCES

Six properties that lie within or immediately adjacent to the proposed Essex Crescent Connector project area are individually included on the VDHP Historic Sites & Structures Survey: the Vermont Maple Orchards Warehouse/Flex-A-Seal building (#0405-106); the Baxter Bros. Cannery/Mason Bros. Warehouse (#0405-105), Fletcher Block/2-4 Railroad Street (#0405-85), 12 Railroad Street (#0405-86), 14 Railroad Street (0405-87), and 16 Railroad Street (#0405-88). These buildings represent the growth in commerce and industry that took place from the mid-1800s and into the 20th century as a result of the railroad's arrival in Essex Junction in 1849. The development that occurred as a result of the railroad transformed a small village center, then known as Painesville, into a prosperous commercial, industrial and residential center.

All six properties are considered significant historic resources at the state level and this review recommends that any road construction, structural demolition, new construction or other proposed project work avoid any harmful impacts to the buildings because such impacts would likely result in a determination of *Adverse Effect* on historic resources. Two of the buildings within the project area (Nos. 85 and 105) are likely eligible for inclusion on the National Register of Historic Places, under Criterion C: properties that embody the distinctive characteristics of a type, period or method of construction. Building No. 83, the Fletcher Block is significant under the architecture and commerce categories, and building No. 105, the Baxter Bros. Cannery/Mason Bros. Warehouse, is significant under the architecture and industry categories. Both of these buildings retain their historic integrity, distinctive architectural characteristics, and their qualities of location, design, setting, materials, workmanship, feeling and association. Early project planning and coordination with the VDHP is recommended so that undue adverse effects can be avoided.

APPENDIX I: VDHP HISTORIC SITES & STRUCTURES SURVEY

STATE OF VERMONT
Division for Historic Preservation
Montpelier, VT 05602

HISTORIC SITES & STRUCTURES SURVEY
Individual Structure Survey Form

SURVEY NUMBER: 0405-106
NEGATIVE FILE NUMBER: 84-A-134
UTM REFERENCES: Zone/Easting/Northing 18/650750/4927550
U.S.G.S. QUAD. MAP: 7.5 Essex Junction
PRESENT FORMAL NAME: Vt. Maple Orchards Inc.
ORIGINAL FORMAL NAME:

COUNTY: Chittenden
TOWN: Essex Junction
LOCATION: 1 Jackson Street, End of Jackson Street; north of Elm Street
COMMON NAME: Vt. Maple Orchards Inc.
FUNCTIONAL TYPE: Warehouse
OWNER: Vt. Maple Orchards Inc.
ADDRESS: 1 Jackson Street, Essex Junction, VT 05452
ACCESSIBILITY TO PUBLIC: Yes ☐ No ☐ Restricted ■
LEVEL OF SIGNIFICANCE: Local ☐ State ■ National ☐

PRESENT USE: Warehouse
ORIGINAL USE: Warehouse
ARCHITECT/ENGINEER: Unknown
BUILDER/CONTRACTOR: Unknown
PHYSICAL CONDITION OF STRUCTURE: Excellent ☐ Good ■ Fair ☐ Poor ☐
STYLE: vernacular
DATE BUILT: c.1890

GENERAL DESCRIPTION:
Structural System
1. Foundation: Stone ☐ Brick ☐ Concrete ■ Concrete Block ☐
2. Wall Structure
   a. Wood Frame: Post & Beam ☐ Balloon ■
   b. Load Bearing Masonry: Brick ☐ Stone ☐ Concrete ☐ Concrete Block ☐
   c. Iron ☐ d. Steel ☐ e. Other:
3. Wall Covering: Clapboard ■ Board & Batten ☐ Wood Shingle ☐ Shiplap ☐ Novelty ☐ Asbestos Shingle ☐ Sheet Metal ☐ Aluminum ☐ Asphalt Shingle ☐ Brick Veneer ☐ Stone Veneer ☐
   Bonding Pattern: Other:
4. Roof Structure
   a. Truss: Wood ■ Iron ☐ Steel ☐ Concrete ☐
   b. Other:
5. Roof Covering: Slate ☐ Wood Shingle ☐ Asphalt Shingle ☐ Sheet Metal ☐ Built Up ☐ Rolled ☐ Tile ☐ Other:
6. Engineering Structure:
7. Other:

Appendages: Porches ☐ Towers ☐ Cupolas ☐ Dormers ☐ Chimneys ☐ Sheds ■ Ells ☐ Wings ■ Bay Window ☐ Other:
Roof Style: Gable ☐ Hip ☐ Shed ☐ Flat ■ Mansard ☐ Gambrel ☐ Jerkinhead ☐ Saw Tooth ☐ With Monitor ☐ With Bellcast ☐ With Parapet ☐ With False Front ☐ Other:
Number of Stories: 2
Number of Bays: 3 x 7
Entrance Location: Multiple
Approximate Dimensions: 40 x 60

THREAT TO STRUCTURE: No Threat ☐ Zoning ☐ Roads ☐ Development ☐ Deterioration ☐ Alteration ☐ Other:

LOCAL ATTITUDES: Positive ☐ Negative ☐ Mixed ☐ Other:

ADDITIONAL ARCHITECTURAL OR STRUCTURAL DESCRIPTION:

Rectangular plan, flat roof, clapboard warehouse with shaped exposed rafter ends, fascia, corner and sill boards. The facade-fenestrated by paired 8/8 sash windows and 16/16 sash windows with plain surrounds and cap molded lintels-has north-side double hinge crossbuck doors. An east side pedimented gable hood with shaped trusses protects a modern glass door. Numerous one story, clapboard and brick common bond wings and sheds extend on the south side.

RELATED STRUCTURES: (Describe)

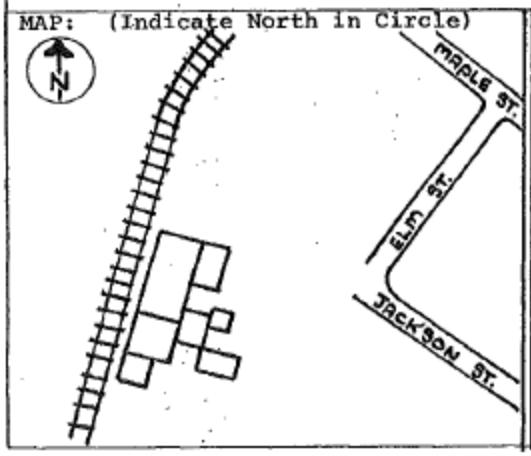
STATEMENT OF SIGNIFICANCE:

M.L. Snyder owned a Marble Shop on the northern section of this land (c.1870) and since then the proximity of the railroad has kept this area commercially valuable. As far as can be documented the Vermont Maple Orchards Company has been in this building since the early 1900's making and storing their syrup here.

REFERENCES:

Sanborn Map, 1922
Beer's Atlas, 1869

MAP: (Indicate North in Circle)



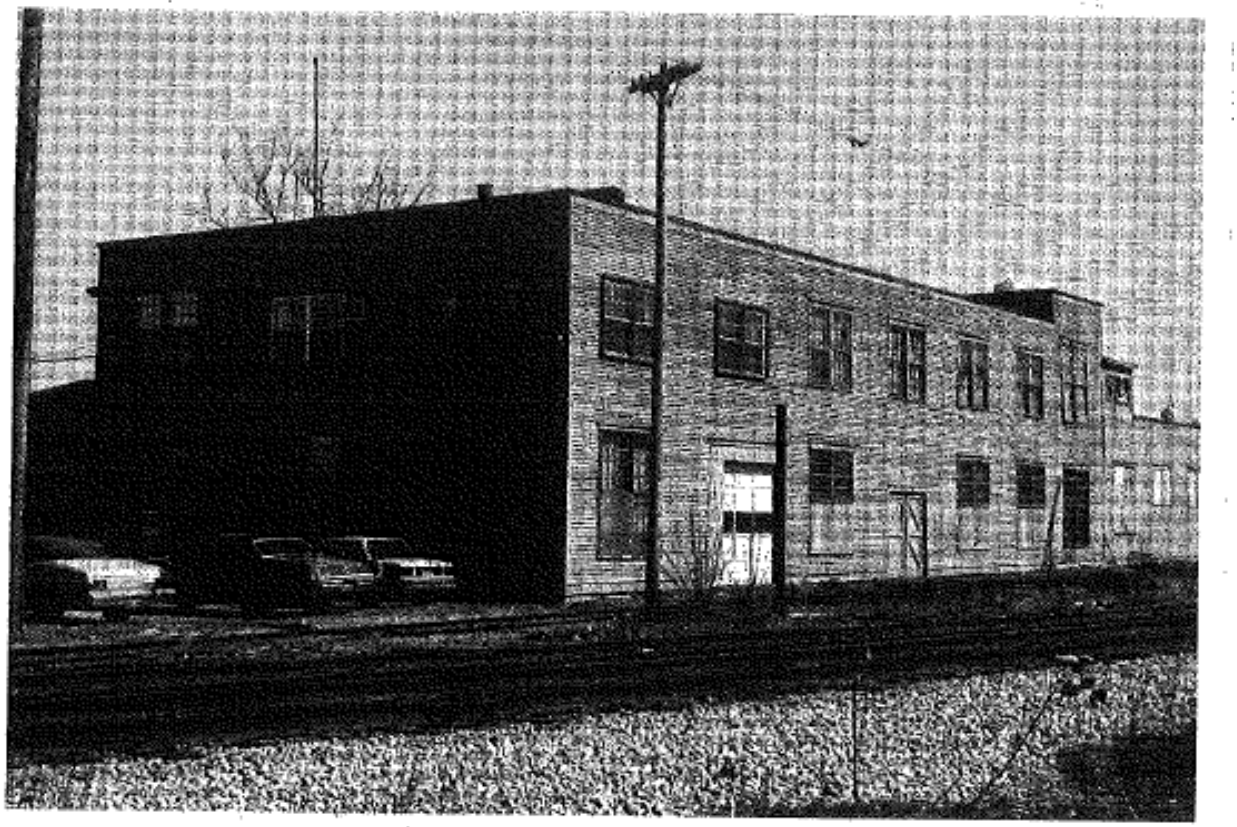
SURROUNDING ENVIRONMENT:

Open Land ☐ Woodland ☐
Scattered Buildings ☐
Moderately Built Up ■
Densely Built Up ☐
Residential ☐ Commercial ■
Agricultural ☐ Industrial ☐
Roadside Strip Development ☐
Other:

RECORDED BY:
Karen Czaikowski

ORGANIZATION:
Vt. Div. for Historic Preservation

DATE RECORDED:
4/12/84



0405-106

STATE OF VERMONT
Division for Historic Preservation
Montpelier, VT 05602

HISTORIC SITES & STRUCTURES SURVEY
Individual Structure Survey Form

SURVEY NUMBER: 0405-105

NEGATIVE FILE NUMBER: 84-A-134

UTM REFERENCES: Zone/Easting/Northing
18/650700/4927620

U.S.G.S. QUAD. MAP: 7.5 Essex Junction

PRESENT FORMAL NAME:

ORIGINAL FORMAL NAME: Baxter Canning Company

COUNTY: Chittenden

TOWN: Essex Junction

LOCATION: 11 Maple Street, end of Jackson Street, north of Elm Street

COMMON NAME:

FUNCTIONAL TYPE: Warehouse

OWNER: Investors Corporation of VT
ADDRESS: 95 St. Paul Street Suite 3C
Burlington VT 05401

ACCESSIBILITY TO PUBLIC:
Yes ☐ No ☐ Restricted ■

LEVEL OF SIGNIFICANCE:
Local ☐ State ■ National ☐

PRESENT USE: Warehouse

ORIGINAL USE: Warehouse

ARCHITECT/ENGINEER: Unknown

BUILDER/CONTRACTOR: Unknown

PHYSICAL CONDITION OF STRUCTURE:
Excellent ☐ Good ■
Fair ☐ Poor ☐

STYLE: vernacular

DATE BUILT: c.1890

GENERAL DESCRIPTION:
Structural System
1. Foundation: Stone ☐ Brick ■ Concrete ☐ Concrete Block ☐
2. Wall Structure
   a. Wood Frame: Post & Beam ☐ Balloon ■
   b. Load Bearing Masonry: Brick ☐ Stone ☐ Concrete ☐ Concrete Block ☐
   c. Iron ☐ d. Steel ☐ e. Other:
3. Wall Covering: Clapboard ■ Board & Batten ☐ Wood Shingle ☐ Shiplap ☐ Novelty ☐ Asbestos Shingle ☐ Sheet Metal ☐ Aluminum ☐ Asphalt Shingle ☐ Brick Veneer ☐ Stone Veneer ☐
   Bonding Pattern: Other:
4. Roof Structure
   a. Truss: Wood ■ Iron ☐ Steel ☐ Concrete ☐
   b. Other:
5. Roof Covering: Slate ☐ Wood Shingle ☐ Asphalt Shingle ☐ Sheet Metal ■ Built Up ☐ Rolled ☐ Tile ☐ Other:
6. Engineering Structure:
7. Other:

Appendages: Porches ☐ Towers ☐ Cupolas ☐ Dormers ☐ Chimneys ■ Sheds ☐ Ells ■ Wings ☐ Bay Window ☐ Other:

Roof Style: Gable ■ Hip ☐ Shed ☐ Flat ☐ Mansard ☐ Gambrel ☐ Jerkinhead ☐ Saw Tooth ☐ With Monitor ☐ With Bellcast ☐ With Parapet ☐ With False Front ☐ Other:

Number of Stories: 2

Number of Bays: 4 x 9

Entrance Location: Multiple

Approximate Dimensions: 30 x 100

THREAT TO STRUCTURE:
No Threat ☐ Zoning ☐ Roads ☐
Development ☐ Deterioration ☐
Alteration ☐ Other:

LOCAL ATTITUDES:
Positive ☐ Negative ☐
Mixed ☐ Other:

ADDITIONAL ARCHITECTURAL OR STRUCTURAL DESCRIPTION:

An L-shaped plan, clapboard, gable sheet metal roof warehouse with projecting box eaves and corner boards. The facade-originally fenestrated by 6/6 sash windows with plain surrounds and lip molded lintels-has some altered modern and in-filled windows. On the east-side is a two story, gable ell and one story, clapboard shed. To the west is a one bay garage.

RELATED STRUCTURES: (Describe)

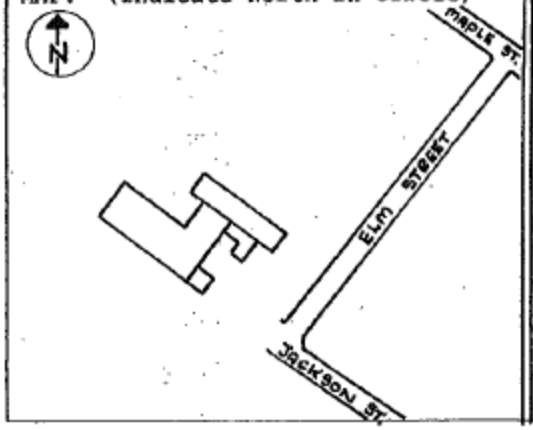
STATEMENT OF SIGNIFICANCE:

This L-shaped warehouse once housed the machine, steam boiler and packing rooms of the H.C. Baxter & Bros. Corn Canning Factory. Local farms, such as the Whitcomb Farm, supplied the corn for the autumn processing season. By 1922 it was still a canning company but then called The Snowflake Canning Co.

REFERENCES:

Sanborn Map, 1904, 1910, 1922

MAP: (Indicate North in Circle)



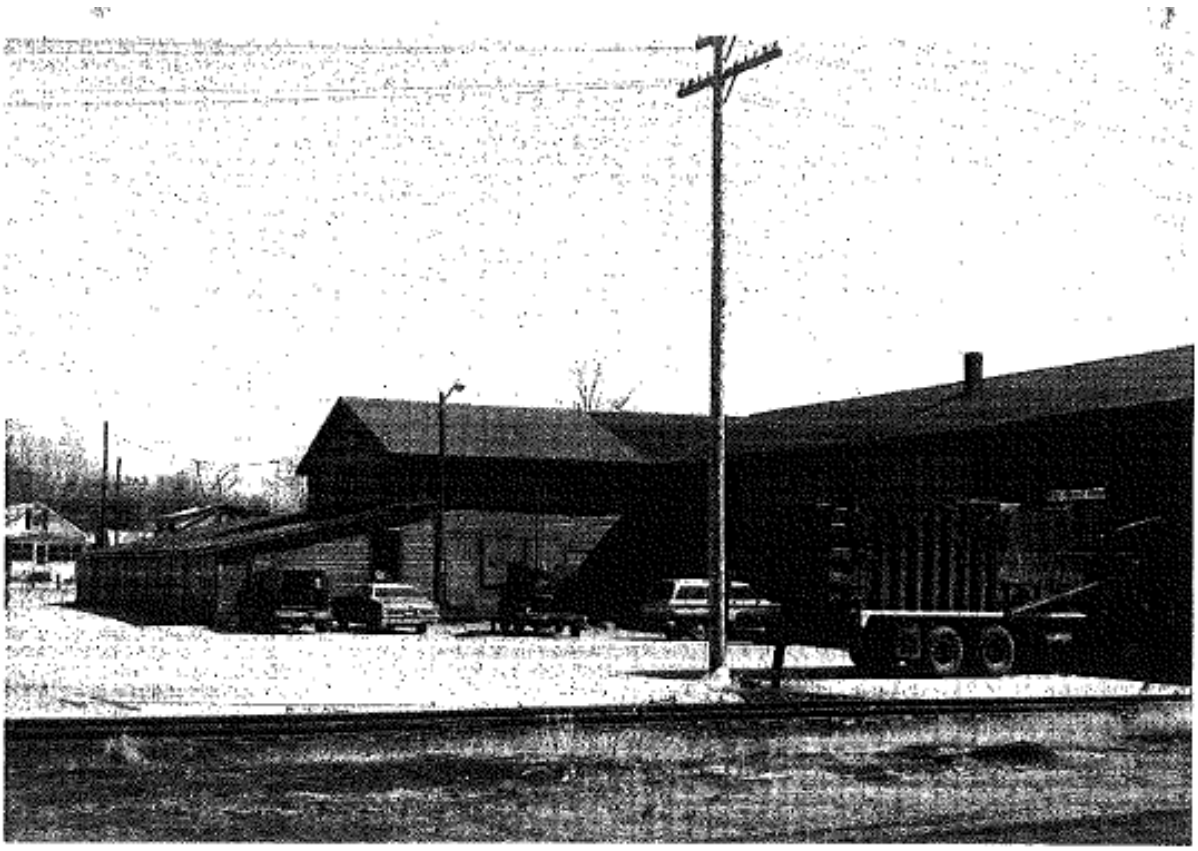
SURROUNDING ENVIRONMENT:

Open Land☐ Woodland☐
Scattered Buildings☐
Moderately Built Up■
Densely Built Up☐
Residential☐ Commercial■
Agricultural☐ Industrial☐
Roadside Strip Development☐
Other:

RECORDED BY:
Karen Czaikowski

ORGANIZATION:
Vt. Div. for Historic Preservation

DATE RECORDED:



0403-105

STATE OF VERMONT
Division for Historic Preservation
Montpelier, VT 05602

HISTORIC SITES & STRUCTURES SURVEY
Individual Structure Survey Form

SURVEY NUMBER: 0405-85

NEGATIVE FILE NUMBER: 77-A-109/84-A-119

UTM REFERENCES: Zone/Easting/Northing
18/650680/4927960

U.S.G.S. QUAD. MAP: 7.5 Essex Junction

PRESENT FORMAL NAME: Accent Travel Agency

ORIGINAL FORMAL NAME: Fletcher Block

PRESENT USE: Commercial

ORIGINAL USE: Commercial

ARCHITECT/ENGINEER: Unknown

BUILDER/CONTRACTOR: W.S. Fletcher

PHYSICAL CONDITION OF STRUCTURE:
Excellent ☐ Good ■
Fair ☐ Poor ☐

STYLE: vernacular

DATE BUILT: 1899

COUNTY: Chittenden

TOWN: Essex Junction

LOCATION: 2-4 Railroad Street, corner of Railroad and Main Streets

COMMON NAME:

FUNCTIONAL TYPE: Commercial Block

OWNER: John Hynes & David Holton
ADDRESS: 2 Railroad Street
Essex Junction, VT 05452

ACCESSIBILITY TO PUBLIC:
Yes ☐ No ☐ Restricted ■

LEVEL OF SIGNIFICANCE:
Local ☐ State ■ National ☐

GENERAL DESCRIPTION:
Structural System
1. Foundation: Stone ☐ Brick ■ Concrete ☐ Concrete Block ☐
2. Wall Structure
   a. Wood Frame: Post & Beam ☐ Balloon ☐
   b. Load Bearing Masonry: Brick ■ Stone ☐ Concrete ☐ Concrete Block ☐
   c. Iron ☐ d. Steel ☐ e. Other:
3. Wall Covering: Clapboard ☐ Board & Batten ☐ Wood Shingle ☐ Shiplap ☐ Novelty ☐ Asbestos Shingle ☐ Sheet Metal ☐ Aluminum ☐ Asphalt Shingle ☐ Brick Veneer ■ Stone Veneer ☐
   Bonding Pattern: stretcher Other:
4. Roof Structure
   a. Truss: Wood ■ Iron ☐ Steel ☐ Concrete ☐
   b. Other:
5. Roof Covering: Slate ☐ Wood Shingle ☐ Asphalt Shingle ☐ Sheet Metal ☐ Built Up ☐ Rolled ☐ Tile ☐ Other:
6. Engineering Structure:
7. Other:

Appendages: Porches ■ Towers ☐ Cupolas ☐ Dormers ☐ Chimneys ■ Sheds ☐ Ells ☐ Wings ■ Bay Window ☐ Other:

Roof Style: Gable ☐ Hip ☐ Shed ☐ Flat ■ Mansard ☐ Gambrel ☐ Jerkinhead ☐ Saw Tooth ☐ With Monitor ☐ With Bellcast ☐ With Parapet ☐ With False Front ☐ Other:

Number of Stories: 2

Number of Bays: 6 x 2

Approximate Dimensions: 36 x 36

Entrance Location: Eaves front recessed center

THREAT TO STRUCTURE:
No Threat ☐ Zoning ☐ Roads ☐
Development ☐ Deterioration ☐
Alteration ☐ Other:

LOCAL ATTITUDES:
Positive ☐ Negative ☐
Mixed ☐ Other:

ADDITIONAL ARCHITECTURAL OR STRUCTURAL DESCRIPTION:

A brick stretcher bond, front canted corner, vernacular commercial block with projecting box cornice, sculpted brackets and organic motif entablature, 1/1 sash, arch head windows with brick splayed arch lintels, granite keystone and granite rock face sills fenestrate the facade. A front modern sign board, below a molded cornice belt board and plain entablature, hides a small paned transom above symmetrical picture windows with granite rock face sills. Front granite steps lead to two canted entries with modern glass doors. To the rear is a two story, clapboard, flat roof, false front wing with similar fenestration and a two story, south side porch with scroll sawn brackets, turned posts and square railing. On the north side below a shed hood is a large double horizontal pane and paneled door. A second story porch similar to the wing porches is on the north side.

RELATED STRUCTURES: (Describe)

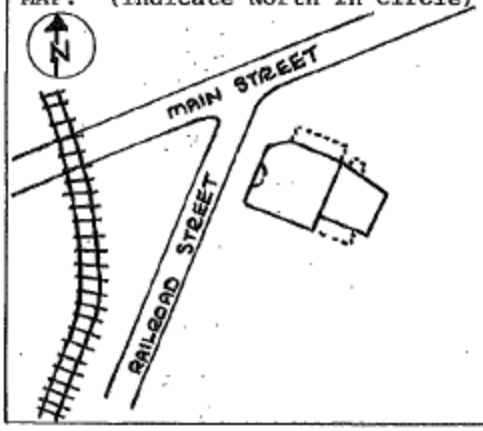
STATEMENT OF SIGNIFICANCE:

Following the building impetus begun by S.A. Brownell in the Essex Junction commercial district, W.S. Fletcher built his commercial block to house a meat market and grocery store. The structure's diagonal location from the Brownell Block complements the commercial atmosphere of the district and accentuates its own position with ornate detailing.

REFERENCES:

Sanborn Map, 1899
Hugh Henry Town History, 1984

MAP: (Indicate North in Circle)



SURROUNDING ENVIRONMENT:

Open Land ☐ Woodland ☐
Scattered Buildings ☐
Moderately Built Up ☐
Densely Built Up ■
Residential ☐ Commercial ■
Agricultural ☐ Industrial ☐
Roadside Strip Development ☐
Other:

RECORDED BY:
Karen Czaikowski

ORGANIZATION:
Vt. Div. for Historic Preservation

DATE RECORDED:
3/28/84



0405-85

STATE OF VERMONT
Division for Historic Preservation
Montpelier, VT 05602

HISTORIC SITES & STRUCTURES SURVEY
Individual Structure Survey Form

SURVEY NUMBER: 0405-86

NEGATIVE FILE NUMBER: 77-A-108/84-A-119

UTM REFERENCES: Zone/Easting/Northing
18/650670/4927940

U.S.G.S. QUAD. MAP: 7.5 Essex Junction

PRESENT FORMAL NAME:

ORIGINAL FORMAL NAME:

COUNTY: Chittenden
TOWN: Essex Junction
LOCATION: 12 Railroad Street, three lots from the corner of Main Street

COMMON NAME:

FUNCTIONAL TYPE: House
OWNER: Ronald & Alice Siegrest
ADDRESS: 226 River Road
Essex Junction, VT 05401

ACCESSIBILITY TO PUBLIC:
Yes☐ No■ Restricted☐

LEVEL OF SIGNIFICANCE:
Local☐ State■ National☐

PRESENT USE: House
ORIGINAL USE: House
ARCHITECT/ENGINEER: Unknown
BUILDER/CONTRACTOR: Unknown

PHYSICAL CONDITION OF STRUCTURE:
Excellent☐ Good■
Fair☐ Poor☐

STYLE: vernacular
DATE BUILT: c.1880

GENERAL DESCRIPTION:
Structural System
1. Foundation: Stone☐ Brick■ Concrete☐ Concrete Block☐
2. Wall Structure
   a. Wood Frame: Post & Beam☐ Balloon■
   b. Load Bearing Masonry: Brick☐ Stone☐ Concrete☐ Concrete Block☐
   c. Iron☐ d. Steel☐ e. Other:
3. Wall Covering: Clapboard■ Board & Batten☐ Wood Shingle☐ Shiplap☐ Novelty☐ Asbestos Shingle☐ Sheet Metal☐ Aluminum☐ Asphalt Shingle☐ Brick Veneer☐ Stone Veneer☐
   Bonding Pattern: Other:
4. Roof Structure
   a. Truss: Wood■ Iron☐ Steel☐ Concrete☐
   b. Other:
5. Roof Covering: Slate☐ Wood Shingle☐ Asphalt Shingle☐ Sheet Metal☐ Built Up☐ Rolled☐ Tile☐ Other:
6. Engineering Structure:
7. Other:

Appendages: Porches■ Towers☐ Cupolas☐ Dormers☐ Chimneys■ Sheds☐ Ells☐ Wings☐ Bay Window☐ Other:
Roof Style: Gable☐ Hip☐ Shed☐ Flat■ Mansard☐ Gambrel☐ Jerkinhead☐ Saw Tooth☐ With Monitor☐ With Bellcast☐ With Parapet☐ With False Front☐ Other:
Number of Stories: 2
Number of Bays: 3 x 3
Approximate Dimensions: 20 x 24
Entrance Location: Eaves front, left & center

THREAT TO STRUCTURE:
No Threat☐ Zoning☐ Roads☐
Development☐ Deterioration☐
Alteration☐ Other:

LOCAL ATTITUDES:
Positive☐ Negative☐
Mixed☐ Other:

ADDITIONAL ARCHITECTURAL OR STRUCTURAL DESCRIPTION:

A flat roof, rectangular plan, clapboard, vernacular style house with front projecting box eaves, scroll sawn brackets, wide fascia board and corner boards. 2/2 sash windows with plain surrounds and cap molded lintels fenestrate the facade. A front porch with dimension lumber posts protects two picture windows with small pane transoms and two single pane and paneled doors. A 2-story dimension lumber porch rises in the rear.

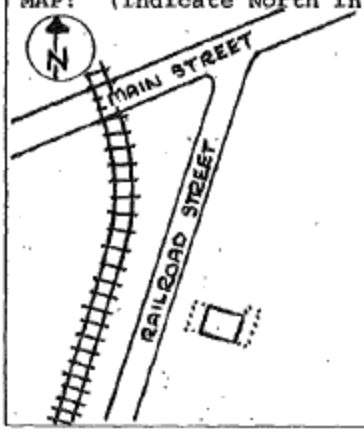
RELATED STRUCTURES: (Describe)

STATEMENT OF SIGNIFICANCE:

The simplistic, vernacular style of this flat roofed building contributes variety to a streetscape of mostly gable front structures. It represents a popular late nineteenth century building type found among commercial districts such as this.

REFERENCES:

MAP: (Indicate North in Circle)



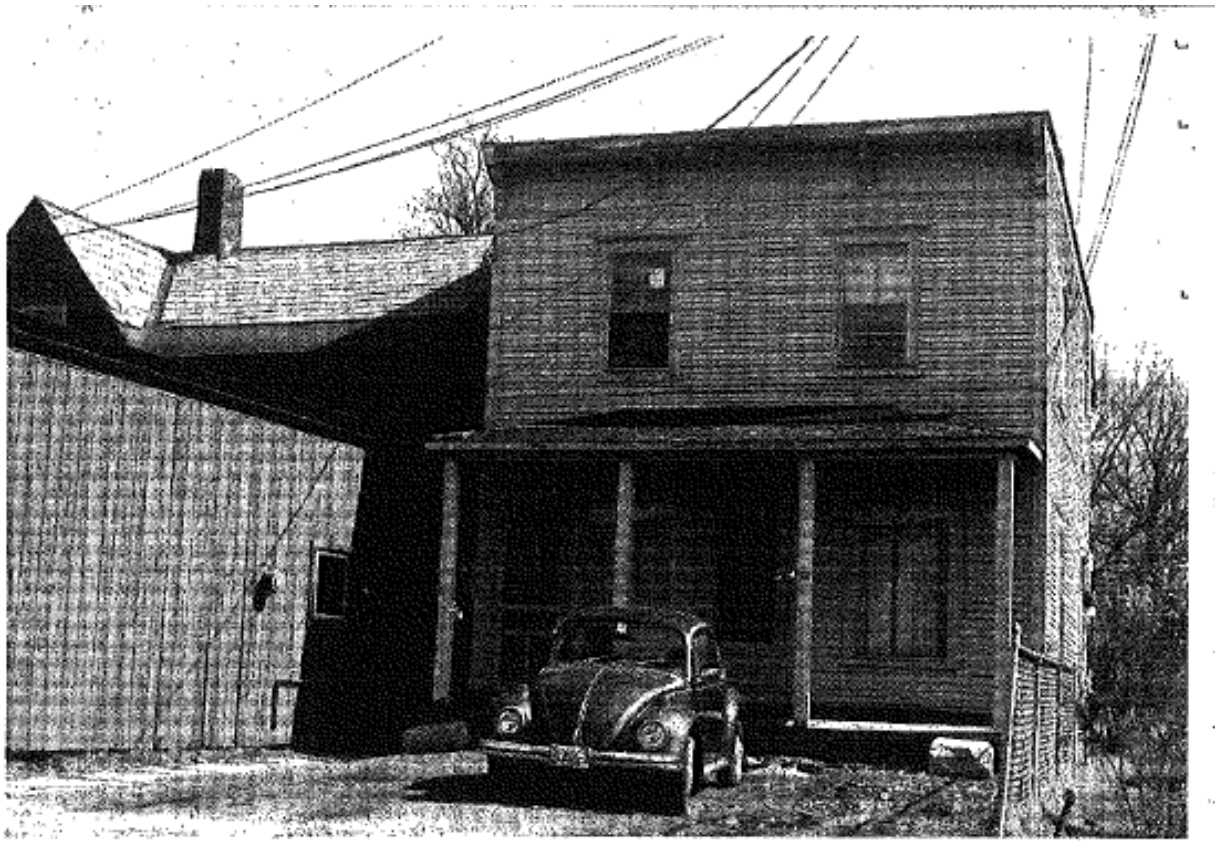
SURROUNDING ENVIRONMENT:

Open Land☐ Woodland☐
Scattered Buildings☐
Moderately Built Up☐
Densely Built Up■
Residential☐ Commercial■
Agricultural☐ Industrial☐
Roadside Strip Development☐
Other:

RECORDED BY:
Karen Czaikowski

ORGANIZATION:
Vt. Div. for Historic Preservation

DATE RECORDED: 3/28/84



0405-86

STATE OF VERMONT
Division for Historic Preservation
Montpelier, VT 05602

HISTORIC SITES & STRUCTURES SURVEY
Individual Structure Survey Form

SURVEY NUMBER: 0405-87

NEGATIVE FILE NUMBER: 77-A-108/84-A-119

UTM REFERENCES: Zone/Easting/Northing 18/650680/4927880

U.S.G.S. QUAD. MAP: 7.5 Essex Junction

PRESENT FORMAL NAME:

ORIGINAL FORMAL NAME:

COUNTY: Chittenden
TOWN: Essex Junction
LOCATION: 14 Railroad Street, two lots from corner of Maple Street

COMMON NAME:

FUNCTIONAL TYPE: House
OWNER: Chittenden Trust Co.
ADDRESS: P.O. Box 820, 2 Burlington Square, Burlington, VT 05402

ACCESSIBILITY TO PUBLIC: Yes ☐ No ■ Restricted ☐

LEVEL OF SIGNIFICANCE: Local ☐ State ■ National ☐

PRESENT USE: House
ORIGINAL USE: House
ARCHITECT/ENGINEER: Unknown
BUILDER/CONTRACTOR: Unknown
PHYSICAL CONDITION OF STRUCTURE: Excellent ☐ Good ■ Fair ☐ Poor ☐

STYLE: vernacular
DATE BUILT: c.1870

GENERAL DESCRIPTION:
Structural System
1. Foundation: Stone ■ Brick ☐ Concrete ☐ Concrete Block ☐
2. Wall Structure
   a. Wood Frame: Post & Beam ☐ Balloon ■
   b. Load Bearing Masonry: Brick ☐ Stone ☐ Concrete ☐ Concrete Block ☐
   c. Iron ☐ d. Steel ☐ e. Other:
3. Wall Covering: Clapboard ■ Board & Batten ☐ Wood Shingle ☐ Shiplap ☐ Novelty ☐ Asbestos Shingle ☐ Sheet Metal ☐ Aluminum ☐ Asphalt Shingle ☐ Brick Veneer ☐ Stone Veneer ☐
   Bonding Pattern: Other:
4. Roof Structure
   a. Truss: Wood ■ Iron ☐ Steel ☐ Concrete ☐
   b. Other:
5. Roof Covering: Slate ■ Wood Shingle ☐ Asphalt Shingle ☐ Sheet Metal ☐ Built Up ☐ Rolled ☐ Tile ☐ Other:
6. Engineering Structure:
7. Other:

Appendages: Porches ■ Towers ☐ Cupolas ☐ Dormers ■ Chimneys ■ Sheds ☐ Ells ☐ Wings ■ Bay Window ☐ Other:
Roof Style: Gable ■ Hip ☐ Shed ☐ Flat ☐ Mansard ☐ Gambrel ☐ Jerkinhead ☐ Saw Tooth ☐ With Monitor ☐ With Bellcast ☐ With Parapet ☐ With False Front ☐ Other:
Number of Stories: 1½
Number of Bays: 3 x 2
Approximate Dimensions: 18 x 24
Entrance Location: Gable front, right

THREAT TO STRUCTURE: No Threat ☐ Zoning ☐ Roads ☐ Development ☐ Deterioration ☐ Alteration ☐ Other:

LOCAL ATTITUDES: Positive ☐ Negative ☐ Mixed ☐ Other:

ADDITIONAL ARCHITECTURAL OR STRUCTURAL DESCRIPTION:

A gable front, right sidehall plan, clapboard, vernacular style house with projecting box cornice, returns, fascia, corner and sill boards. 1/1 sash windows with plain surrounds and cap molded lintels fenestrate the facade which rises to a north-side hip roof wall dormer. A front porch with plain entablature, capped box posts and clapboard skirt protects a molded cornice above a 3/4 pane and paneled door flanked by full sidelights and pilaster strips. A one story wing with a similar enclosed porch is on the rear. To the north-side is a one story, clapboard wing.

RELATED STRUCTURES: (Describe)

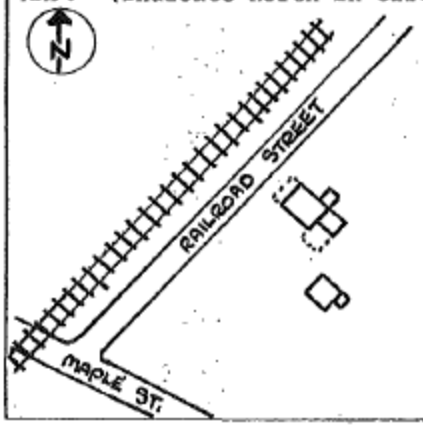
A gable front, clapboard barn with a sheet metal roof is now a brass bed store with modern sliding glass doors. 6/6 sash windows, a 6-pane peak window and plank hay door open the facade. A shed is attached to the rear.

STATEMENT OF SIGNIFICANCE:

This house and original barn, presently used as a brass bed store, contribute to the mostly gable front streetscape facing the railroad tracks. It complements the neighboring nineteenth century structures.

REFERENCES:

MAP: (Indicate North in Circle)



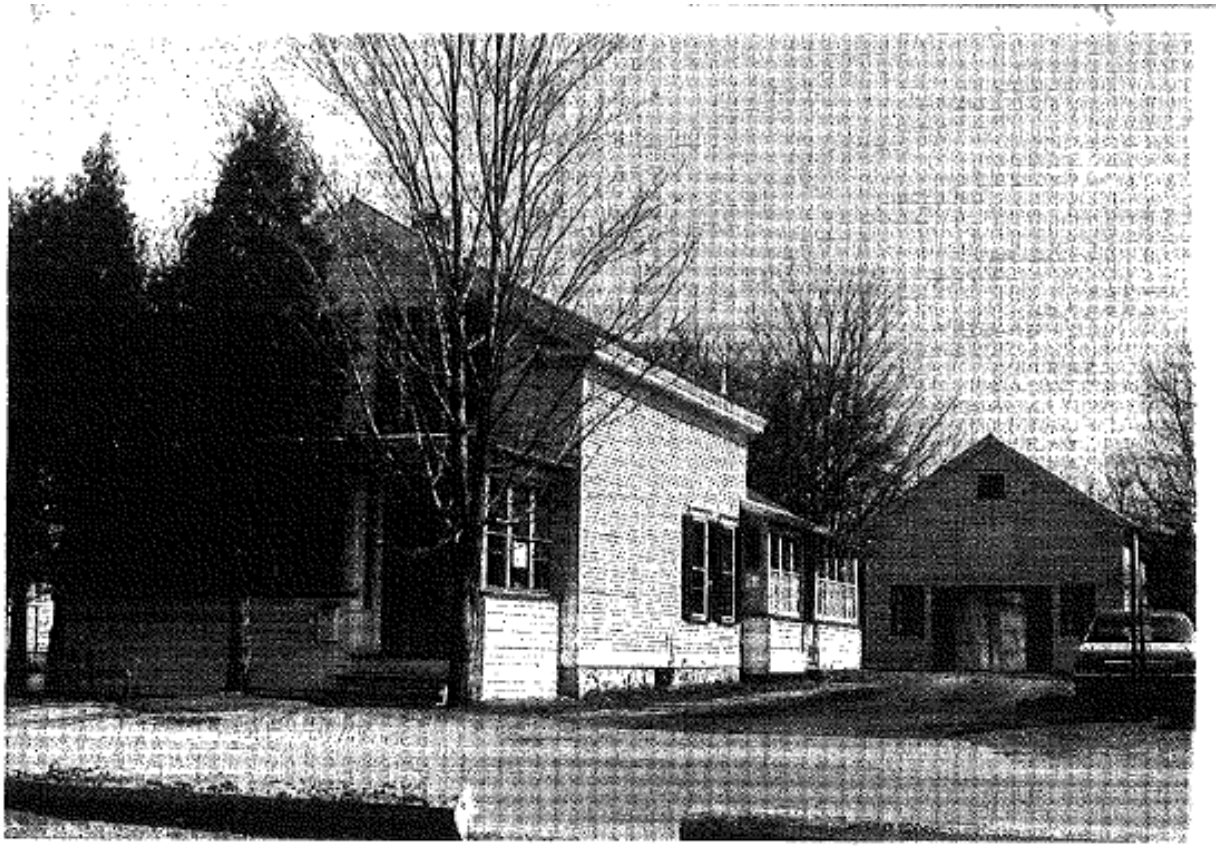
SURROUNDING ENVIRONMENT:

Open Land☐ Woodland☐
Scattered Buildings☐
Moderately Built Up☐
Densely Built Up■
Residential☐ Commercial■
Agricultural☐ Industrial☐
Roadside Strip Development☐
Other:

RECORDED BY:
Karen Czaikowski

ORGANIZATION:
Vt. Div. for Historic Preservation

DATE RECORDED:
3/28/84



0405-87

STATE OF VERMONT
Division for Historic Preservation
Montpelier, VT 05602

HISTORIC SITES & STRUCTURES SURVEY
Individual Structure Survey Form

SURVEY NUMBER: 0405-88

NEGATIVE FILE NUMBER: 77-A-108/84-A-119

UTM REFERENCES: Zone/Easting/Northing 18/650700/4927860

U.S.G.S. QUAD. MAP: 7.5 Essex Junction

PRESENT FORMAL NAME: Guilfoy Medical Office

ORIGINAL FORMAL NAME:

COUNTY: Chittenden

TOWN: Essex Junction

LOCATION: 16 Railroad Street, one lot from Maple Street

COMMON NAME:

FUNCTIONAL TYPE: House

PRESENT USE: Office

ORIGINAL USE: House

ARCHITECT/ENGINEER: Unknown

BUILDER/CONTRACTOR: Unknown

OWNER: Edwin J. Grilfoy, M.D.
ADDRESS: P.O. Box 688
Essex Junction, VT 05452

PHYSICAL CONDITION OF STRUCTURE:
Excellent ☐ Good ☐
Fair ☐ Poor ☐

ACCESSIBILITY TO PUBLIC:
Yes ☐ No ☐ Restricted ■

STYLE: vernacular Greek Revival

LEVEL OF SIGNIFICANCE:
Local ☐ State ■ National ☐

DATE BUILT: c.1865

GENERAL DESCRIPTION:

Structural System

1. Foundation: Stone ■ Brick ☐ Concrete ☐ Concrete Block ☐
2. Wall Structure
   a. Wood Frame: Post & Beam ☐ Balloon ■
   b. Load Bearing Masonry: Brick ☐ Stone ☐ Concrete ☐ Concrete Block ☐
   c. Iron ☐ d. Steel ☐ e. Other:
3. Wall Covering: Clapboard ☐ Board & Batten ☐ Wood Shingle ☐ Shiplap ☐ Novelty ☐ Asbestos Shingle ☐ Sheet Metal ☐ Aluminum ■ Asphalt Shingle ☐ Brick Veneer ☐ Stone Veneer ☐
   Bonding Pattern: Other:
4. Roof Structure
   a. Truss: Wood ■ Iron ☐ Steel ☐ Concrete ☐
   b. Other:
5. Roof Covering: Slate ☐ Wood Shingle ☐ Asphalt Shingle ■ Sheet Metal ☐ Built Up ☐ Rolled ☐ Tile ☐ Other:
6. Engineering Structure:
7. Other:

Appendages: Porches ■ Towers ☐ Cupolas ☐ Dormers ☐ Chimneys ■ Sheds ☐ Ells ☐ Wings ■ Bay Window ☐ Other:

Roof Style: Gable ■ Hip ☐ Shed ☐ Flat ☐ Mansard ☐ Gambrel ☐ Jerkinhead ☐ Saw Tooth ☐ With Monitor ☐ With Bellcast ☐ With Parapet ☐ With False Front ☐ Other:

Number of Stories: 1½
Number of Bays: 3 x 2
Approximate Dimensions: 18 x 24
Entrance Location: Gable front center

THREAT TO STRUCTURE:
No Threat ☐ Zoning ☐ Roads ☐
Development ☐ Deterioration ☐
Alteration ☐ Other:

LOCAL ATTITUDES:
Positive ☐ Negative ☐
Mixed ☐ Other:

ADDITIONAL ARCHITECTURAL OR STRUCTURAL DESCRIPTION:

A gable front, center hall plan, aluminum sided, vernacular Greek Revival style house with a projecting box cornice and north-south, one story front gable wings. Altered 6/1 sash windows with plain surrounds fenestrate the facade. A front porch with turned posts, square railing and trellis skirt protects a molded cornice above a modern panel door flanked by full sidelights and pilasters. On the rear north-side is a modern enclosed shed with picture window and shed hood entry (c.1970). Also to the rear is a second story matchstick board sleeping porch.

RELATED STRUCTURES: (Describe)

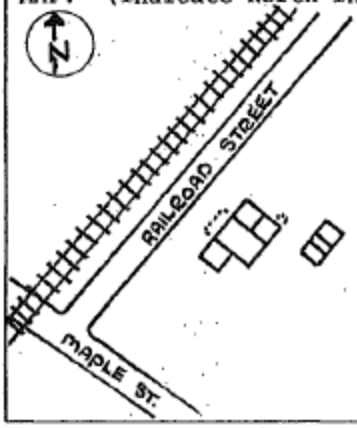
A one-bay, gable front, wood shingle garage with six-pane peak window has two shed additions (c.1910).

STATEMENT OF SIGNIFICANCE:

This house appears to be the oldest structure on Railroad Street. Its gable front location, facing the railroad tracks, contributes to a nineteenth century streetscape and represents the latter 1800 development that continued down Maple Street.

REFERENCES:

MAP: (Indicate North in Circle)



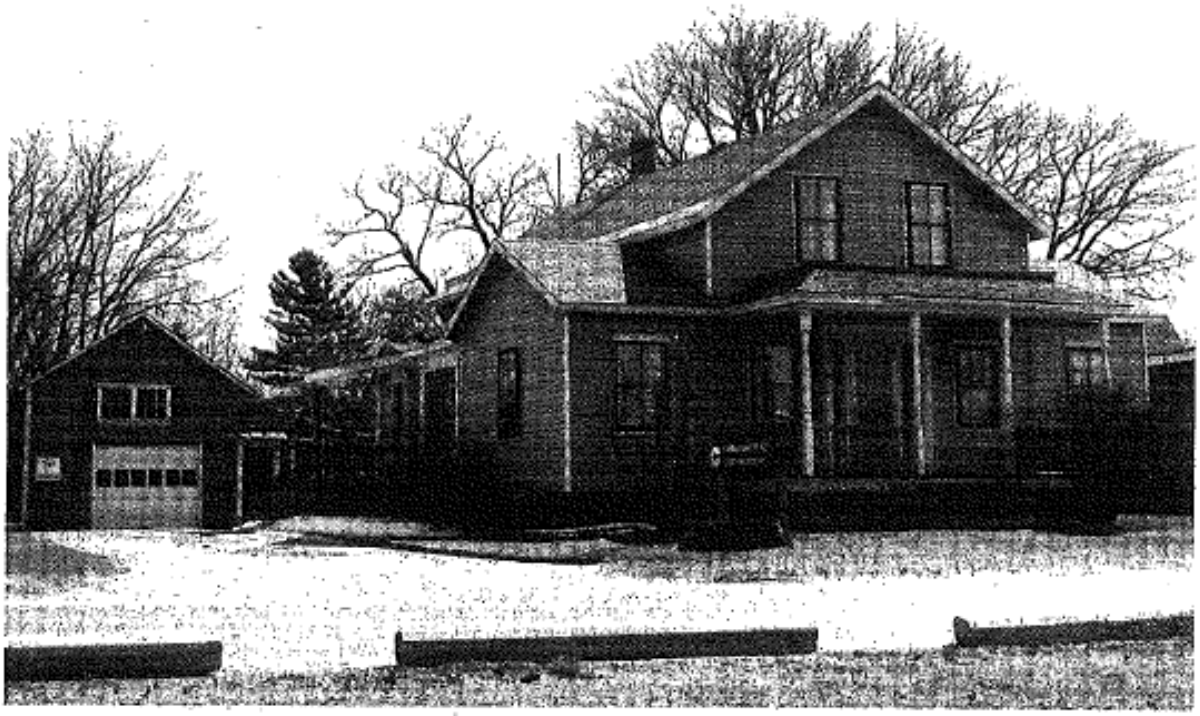
SURROUNDING ENVIRONMENT:

Open Land ☐ Woodland ☐
Scattered Buildings ☐
Moderately Built Up ☐
Densely Built Up ■
Residential ☐ Commercial ■
Agricultural ☐ Industrial ☐
Roadside Strip Development ☐
Other:

RECORDED BY:
Karen Czaikowski

ORGANIZATION:
Vt. Div. for Historic Preservation

DATE RECORDED:
3/27/84



0405-88

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1901 November 30, "The Canning Factory" (8:3)
1901 December 7, "Essex Industrial Company" (8:1)
1901 December 14, "Bids for Canning Factory Wanted" (7:6)
1902 February 15, "Essex Junction" (8:3)
1902 March 1, "The Corn Soiree" (8:3)
1902 September 13, "At the Canning Factory" (1:5)
1902 November 1, "Canning of Corn" (5:3)

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Village of Essex Junction, Vermont
Crescent Connector Project
Draft Environmental Assessment

Appendix G

Pre-Preliminary Plans

INDEX OF SHEETS:

1	TITLE SHEET
2	GENERAL NOTES
3–5	TYPICAL SECTIONS
6–10	PLAN AND PROFILE SHEETS
11–15	UTILITY & LIGHTING PLANS
16–25	PAVEMENT MARKING & SIGNING PLANS
26–33	CROSS SECTIONS

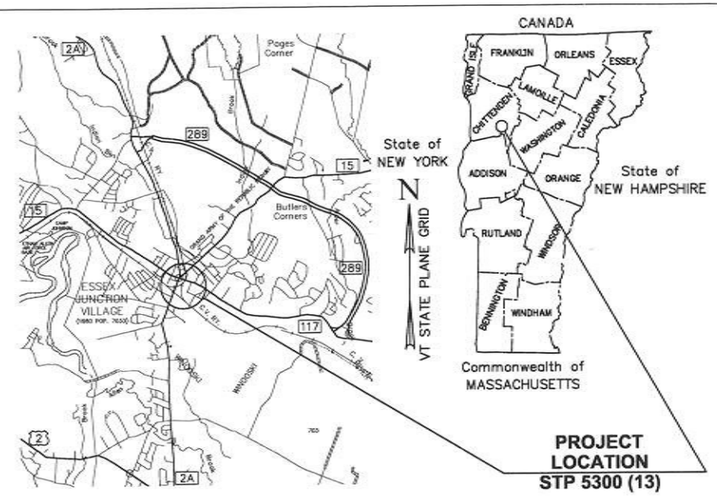
SUPPLEMENTAL PLANS:

1	TRAFFIC SIGNAL PLANS
2	RAIL CROSSING PLANS

PROPOSED IMPROVEMENT
VILLAGE OF ESSEX JUNCTION
COUNTY OF CHITTENDEN
STP 5300 (13)
CRESCENT CONNECTOR

PROJECT LOCATION: BEGINNING AT A POINT ON PARK STREET APPROXIMATELY 875 FEET SOUTH OF THE "5 CORNERS" INTERSECTION, THEN EXTENDING NORTH ALONG PARK STREET TO THE NEW ENGLAND CENTRAL RAILROAD (NECR) BURLINGTON BRANCH; ALONG THE EAST SIDE OF NECR'S BURLINGTON BRANCH AND CROSSING NECR'S MAIN LINE; CONTINUING NORTH ACROSS MAPLE STREET; AND THEN ALONG THE EXISTING ALIGNMENT OF RAILROAD STREET TO THE INTERSECTION OF MAIN STREET.

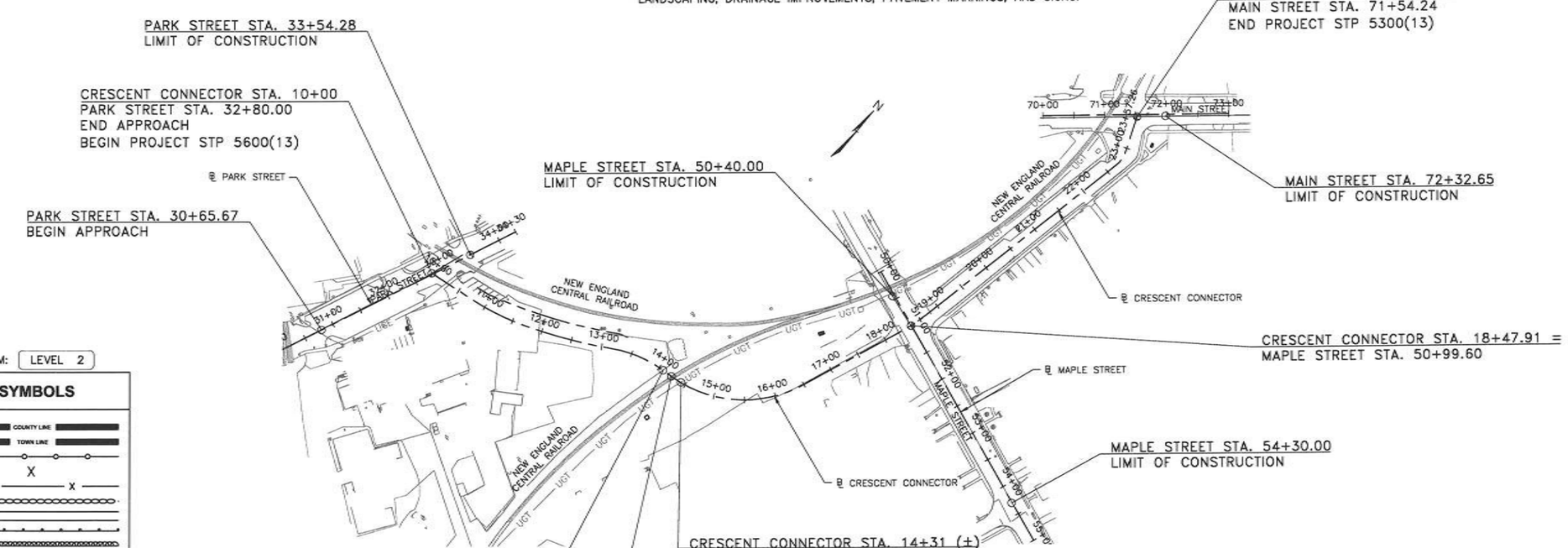
PROJECT DESCRIPTION: WORK TO BE PERFORMED UNDER THIS CONTRACT INCLUDES THE CONSTRUCTION OF A NEW ROADWAY (CRESCENT CONNECTOR) ON A NEW ALIGNMENT; ADDITION OF TURNING LANES ON PARK STREET AND MAPLE STREET; RECONSTRUCTION OF RAILROAD STREET; INSTALLATION OF TRAFFIC SIGNALS AND RAILROAD SIGNALS; AND INSTALLATION OF CONCRETE SIDEWALKS, GRANITE CURBS, STREET LIGHTS, LANDSCAPING, DRAINAGE IMPROVEMENTS, PAVEMENT MARKINGS, AND SIGNS.



LOCATION MAP

0 1 2 4

APPROXIMATE SCALE IN MILES



QUALITY ASSURANCE PROGRAM: LEVEL 2

CONVENTIONAL SYMBOLS

COUNTY LINE
TOWN LINE
LIMITS OF ACCESS
POINT OF ACCESS
FENCE LINE
STONE WALL
TRAVELED WAY
GUARD RAIL
RAILROAD
WETLANDS
SURVEY LINE
CULVERT
POWER POLE
TELEPHONE POLE
TREES
CONTROL OF ACCESS
PROPERTY LINE
EXISTING R.O.W.
R.O.W. TAKING LINE
SLOPE RIGHTS
TOP OF CUT
TOE OF SLOPE

SURVEYED BY: DUBOIS & KING, INC. IN 2012

DATUM
VERTICAL NAVD 88
HORIZONTAL ASSUMED

DuBois & King engineering planning management development

PLOTTED Oct 29, 2013

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE MANAGER FOR THE VILLAGE OF ESSEX JUNCTION.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011, FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS

PRE-PRELIMINARY PLANS
OCTOBER, 2013

VILLAGE OF ESSEX JUNCTION
CHAIR, TRUSTEES

APPROVED _____ DATE _____

PROJECT NAME : CRESCENT CONNECTOR

PROJECT NUMBER : STP 5300 (13)

SHEET 1 OF 33 SHEETS

Y:\621803\1 Crescent Connector\DESIGN\CAD0 FILES\D&K Standard Titleblock 22x34.dwg

GENERAL NOTES:

1. EXCEPT WHERE NOTED, ALL WORK AND MATERIAL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH BY THE VILLAGE OF ESSEX JUNCTION LAND DEVELOPMENT CODE, OR IF NOT COVERED BY THE CODE, WITH THE VERMONT AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, AND ALL OF ITS SUBSEQUENT REVISIONS AND UPDATES.
2. THE OWNER OF THIS PROJECT IS THE VILLAGE OF ESSEX JUNCTION, VT.
3. TOPOGRAPHY AND PLANIMETRIC DATA SHOWN ON THESE PLANS ARE BASED ON FIELD SURVEY COMPLETED BY DUBOIS & KING, INC. IN 2012.
4. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN CASE OF CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWING OR SPECIFICATION, THE OWNER'S REPRESENTATIVE SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATIONS.
5. THE CONTRACTOR SHALL BID AND PERFORM THE WORK FROM A COMPLETE SET OF PLANS AND SPECIFICATIONS, AND SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY CONFLICTS WITHIN THE CONSTRUCTION DOCUMENTS.
6. THE CONTRACTOR SHALL BID AND PERFORM THE WORK IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL CODES, SPECIFICATIONS, REGULATIONS, STANDARDS, AND DETAILS.
7. NO DEVIATION OR DEPARTURE FROM THE DESIGN INTENT PRESENTED IN THE CONTRACT DOCUMENTS (PLANS AND SPECIFICATIONS) WILL BE ALLOWED UNLESS AUTHORIZED BY THE OWNER'S REPRESENTATIVE.
8. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE OF ANY CONDITIONS THAT ARE UNEXPECTED, UNKNOWN, AND/OR NOT INDICATED ON THE DRAWINGS AND SHALL PROCEED AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
9. THE CONTRACTOR MUST RECEIVE PRIOR WRITTEN AUTHORIZATION FROM THE OWNER'S REPRESENTATIVE FOR ANY PROPOSED SUBSTITUTIONS FOR ITEMS AND MATERIALS SPECIFIED ON THESE DRAWINGS.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY DUBOIS & KING, INC. DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR OR OWNER'S REPRESENTATIVE HERE ON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), LOCAL REGULATIONS, AND/OR THE BOARD OF LABOR.
11. TOXIC OR HAZARDOUS WASTE IS NOT TO BE STORED OR DISCHARGED ON OR FROM THIS SITE. ALL EQUIPMENT IS TO BE REMOVED FROM REGULATORY JURISDICTIONAL AREAS DAILY OR AFTER OPERATIONS ARE CEASED. ALL EQUIPMENT IS TO BE STORED IN SUITABLE AREAS WHERE ANY WASTE WOULD NOT DISCHARGE TO WATERS OF THE STATE.
12. FORMATION OF THE EMBANKMENTS (INCLUDING COMPACTION) SHALL BE CONSTRUCTED IN ACCORDANCE WITH DIVISION 200 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION. SUITABLE MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION 703. PAYMENT FOR CONSTRUCTION OF THE ROADWAY EMBANKMENT USING EXCAVATED MATERIAL SHALL BE CONSIDERED INCIDENTAL TO ITEM 203.15, "COMMON EXCAVATION".
13. SHOULD THE OWNER'S REPRESENTATIVE DETERMINE THAT THERE IS INSUFFICIENT VOLUME OF SUITABLE ON-SITE EXCAVATED MATERIAL TO CONSTRUCT THE ROADWAY EMBANKMENTS, THEN EARTH BORROW SHALL BE USED TO SUPPLEMENT THE DIFFERENCE. PAYMENT TO SUPPLY THE EARTH BORROW AND PLACE IN A FORMED AND COMPACTED EMBANKMENT SHALL BE PAID UNDER ITEM 203.30, "EARTH BORROW". THE CONTRACTOR SHALL NOT IMPORT AND PLACE EARTH BORROW UNTIL WRITTEN AUTHORIZATION HAS BEEN RECEIVED FROM THE OWNER'S REPRESENTATIVE.
14. PRIOR TO CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE TO LAYOUT BASELINE, MAINTAINING HORIZONTAL AND VERTICAL CONTROL, AND RE-ESTABLISHING ELEVATION BENCH MARKS THAT WILL BE LOST OR DISTURBED DURING CONSTRUCTION. THE COST TO LAYOUT AND MAINTAIN THE BASELINE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. PAYMENT WILL NOT BE MADE DIRECTLY, BUT WILL BE CONSIDERED INCIDENTAL TO ITEM 635.11, "MOBILIZATION/DEMOBILIZATION".
15. ANY SURFACE OR SUBSURFACE FEATURES DAMAGED BY THE CONTRACTOR DURING CONSTRUCTION SHALL BE RESTORED TO A CONDITION AT LEAST EQUAL TO THAT IN WHICH THEY WERE FOUND IMMEDIATELY PRIOR TO THE BEGINNING OF CONSTRUCTION. ALL COSTS ASSOCIATED WITH THE RESTORATION SHALL BE AT THE CONTRACTORS SOLE EXPENSE.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING FIELD MEASUREMENTS OF ALL EXISTING CONDITIONS AFFECTING THE WORK. ANY DISCREPANCIES IN DIMENSIONS, CHARACTER OR EXTENT OF EXISTING FEATURES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE BEFORE ADVANCING THE WORK. SHOP DRAWINGS REQUIRED FOR VARIOUS ITEMS OF THE WORK SHALL INDICATE THE ACTUAL FIELD MEASUREMENTS BY THE CONTRACTOR PRIOR TO SUBMITTAL FOR THE OWNER'S REPRESENTATIVE'S APPROVAL AND SHALL BE SO NOTED.
17. RESTORATION OF DISTURBED AREAS: RESTORE DISTURBED AREAS, EXCEPT STONE FILL AREAS, WITH FOUR INCHES TOPSOIL SEED AND MULCH, UNLESS THE OWNER'S REPRESENTATIVE DIRECTS THE USE OF SUITABLE EXCAVATED MATERIAL.
18. THIS PROJECT SHALL BE CONSTRUCTED IN COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT.
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING AND UNDERSTANDING ALL APPLICABLE ENVIRONMENTAL PERMITS AND ENSURE THAT ALL CONSTRUCTION REQUIREMENTS ARE MET.

MEETINGS, SUBMITTAL, AND REQUIRED INSPECTIONS:

1. THE CONTRACTOR MUST PARTICIPATE IN A PRE-CONSTRUCTION CONFERENCE.
2. THE CONTRACTOR MUST SUBMIT AN ANTICIPATED WORK SCHEDULE TO THE OWNER'S REPRESENTATIVE AT THE BEGINNING OF THE PROJECT.
3. CONTRACTOR SHALL SUBMIT SEDIMENT AND EROSION CONTROL METHODS TO THE OWNER'S REPRESENTATIVE FOR APPROVAL 14 DAYS PRIOR TO START OF WORK.

CONSTRUCTION NOTES:

1. ALL STANDING EXISTING TREES TO REMAIN AND SHALL BE PROTECTED UNLESS OTHERWISE IDENTIFIED ON THE DRAWINGS OR DIRECTED BY THE OWNER'S REPRESENTATIVE.
2. TYPICAL CROSS SECTIONS ARE MEANT FOR GUIDANCE ONLY. FIELD CONDITIONS MAY VARY AND MUST BE FIELD VERIFIED BY CONTRACTOR.
3. NO WORK BEYOND THE LIMITS OF CONSTRUCTION SHOWN ON THE PLANS WILL BE ALLOWED. WORKING OUTSIDE OF THESE LIMITS MAY TRIGGER ADDITIONAL PERMITTING REQUIREMENTS, WHICH WILL BE THE CONTRACTOR'S RESPONSIBILITY.
4. ANY EXCESS TOPSOIL AND EXCAVATED MATERIAL SHALL BE PLACED / DISPOSED OF IN OWNER PRE-APPROVED LOCATIONS ALLOWED UNDER CURRENT FEDERAL, STATE, AND LOCAL REGULATIONS. MATERIAL SHALL BE PLACED IN SUCH A MANNER AS TO PREVENT SUBSEQUENT EROSION AND DEPOSITION INTO WETLANDS OR WATERS. IF EXCESS MATERIAL REMOVED FROM OWNER'S PROPERTY, MATERIAL SHALL BE PLACED / DISPOSED OF IN ACCORDANCE WITH ALL CURRENT FEDERAL, STATE AND LOCAL REGULATIONS IN ACCORDANCE WITH SECTION 105 OF THE VAOT STANDARD SPECIFICATIONS.

UTILITIES NOTES:

1. THE OWNER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION BE SHALL BE DETERMINED AND AGREED UPON BY THE OWNER'S REPRESENTATIVE BEFORE PROCEEDING WITH THE WORK.
2. THE CONTRACTOR SHALL NOT DISRUPT ANY EXISTING UTILITY SERVICE (PRIVATE OR PUBLIC) WITHOUT WRITTEN AUTHORIZATION FROM THE VILLAGE OF ESSEX JUNCTION.
3. SUBSURFACE FEATURES SUCH AS ELECTRIC AND TELEPHONE LINES, WATER LINES, SEWER LINES, STORM DRAIN AND CULVERTS, ETC., ENCOUNTERED IN THE CONSTRUCTION OF THE PROJECT SHALL BE PROTECTED, SUPPORTED, OR REMOVED AND REPLACED BY THE CONTRACTOR UNLESS OTHERWISE NOTED ON THE PLANS. THE COST OF THIS WORK SHALL BE INCIDENTAL TO THE CONTRACT UNLESS PAYMENT IS SPECIFICALLY NOTED AS A SEPARATE PAY ITEM. THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES AND/OR HIGHWAY DEPARTMENTS WHEN THE WORK INVOLVES THEIR RESPECTIVE FACILITIES.
4. THE CONTRACTOR SHALL MAKE DIRECT CONTACT WITH THE VILLAGE OF ESSEX JUNCTION PUBLIC WORKS DEPARTMENT SO THE VILLAGE CAN MARK THE LOCATIONS OF VILLAGE OWNED UTILITIES IN THE CONSTRUCTION ZONE.
5. THE CONTRACTOR SHALL CONTACT "DIG SAFE" [1-888-DIG-SAFE (1-888-344-7233)] AND ALL AFFECTED UTILITY COMPANIES PRIOR TO PERFORMING ANY EXCAVATION, IN ACCORDANCE WITH DIG SAFE'S RULES OF NOTIFICATION. THE COST OF COORDINATING WITH DIG SAFE AND THE UTILITY COMPANIES SHALL BE INCIDENTAL TO ITEM 635.11, "MOBILIZATION/DEMOBILIZATION".
6. THE LOCATIONS, SIZES AND TYPES OF EXISTING UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATIONS ONLY. THE OWNER AND/OR DESIGN ENGINEER HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATIONS, SIZES AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES AND SHALL CONFIRM THAT THERE ARE NO INTERFERENCES WITH EXISTING UTILITIES AND THE PROPOSED UTILITY ROUTES, INCLUDING ROUTES WITHIN THE PUBLIC RIGHTS OF WAY. EXPLORATORY EXCAVATION SHALL BE PAID FOR UNDER ITEM 204.22 – TRENCH EXCAVATION OF EARTH, EXPLORATORY.

TRAFFIC CONTROL:

1. THE CONTRACTOR SHALL BE IN SOLE CHARGE OF, AND SOLELY RESPONSIBLE FOR, ALL ON-SITE JOB SAFETY, INCLUDING TRAFFIC CONTROL.
2. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVES DURING CONSTRUCTION.
3. TRAFFIC CONTROL FOR THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT VTRANS T-SERIES STANDARDS AND THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). TYPICAL APPLICATIONS OF THE MUTCD'S TEMPORARY TRAFFIC CONTROL PRINCIPALS CAN BE FOUND IN CHAPTER 6H OF THE MUTCD. THE FOLLOWING TYPICAL APPLICATIONS ARE ANTICIPATED ALONG THE STREETS BELOW AND SHOULD BE CONSIDERED WHEN THE CONTRACTOR DEVELOPS TRAFFIC CONTROL PLANS:

   A. PARK STREET AND MAIN STREET

   - "WORK BEYOND THE SHOULDER" (TA-1)
   - "WORK ON THE SHOULDERS" (TA-3)
   - "SHOULDER WORK WITH MINOR ENCROACHMENT" (TA-6)

   B. MAPLE STREET

   - "WORK BEYOND THE SHOULDER" (TA-1)
   - "WORK ON THE SHOULDERS" (TA-3)
   - "SHOULDER WORK WITH MINOR ENCROACHMENT" (TA-6)
   - "LANE CLOSURE ON A TWO-LANE ROAD USING FLAGGERS" (TA-10)
   - "LANE CLOSURE ON A MINOR STREET" (TA-18)

4. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION. THE COST OF PREPARING THIS PLAN (AND MAKING CHANGES IF NECESSARY) SHALL NOT BE PAID SEPARATELY BUT SHALL BE INCIDENTAL TO ITEM 641.10, "TRAFFIC CONTROL".
5. ADDITIONAL SIGNING MAY BE REQUIRED AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
6. THE BID PRICE FOR TRAFFIC CONTROL, ITEM 641.10, SHALL INCLUDE ALL APPROACH AND ON-PROJECT CONSTRUCTION SIGNING, BARRELS, CONES, BARRICADES, TEMPORARY REGULATORY AND WARNING SIGNS, AND POSTS AS DETAILED IN VTRANS STANDARDS. ALL ADJUSTING, RELOCATING, MAINTAINING, AND REMOVING OF THESE DEVICES AS DIRECTED BY THE OWNER'S REPRESENTATIVE SHALL ALSO BE INCLUDED. THE FOLLOWING ITEMS WILL BE PAID FOR SEPARATELY:
   646.602, 646.612, 646.682, 646.692, 646.702 AND 646.712 – TEMPORARY PAVEMENT MARKINGS
   630.10 AND 630.15 – UNIFORMED TRAFFIC OFFICERS AND FLAGGERS
   630.20 – FLAGGERS, RAILROAD
   621.90 – TEMPORARY TRAFFIC BARRIER
7. THE MUTCD 2009 SHALL BE THE STANDARD FOR ALL TRAFFIC CONTROL DEVICES. EXISTING SIGNS, SIGNALS AND MARKINGS SHALL BE VALID UNTIL SUCH TIME AS THEY ARE REPLACED OR RECONSTRUCTED. WHEN NEW TRAFFIC CONTROL DEVICES ARE ERECTED OR PLACED OR EXISTING TRAFFIC CONTROL DEVICES ARE REPLACED OR REPAIRED THE EQUIPMENT, DESIGN, METHOD OF INSTALLATION, PLACEMENT OR REPAIR SHALL CONFORM WITH THE MUTCD. WHERE VTRANS STANDARDS CONFLICT WITH THE MUTCD, THE MUTCD SHALL GOVERN.
8. NO CONSTRUCTION SIGNS SHALL BE INSTALLED AS TO INTERFERE OR OBSTRUCT THE VIEW OF EXISTING TRAFFIC CONTROL DEVICES, STOPPING SIGHT DISTANCE, AND CORNER SIGHT DISTANCE FROM DRIVES AND TOWN HIGHWAYS.
9. ALL SIGNS THAT ARE NOT BEING USED SHALL BE COVERED APPROPRIATELY. PAYMENT WILL BE CONSIDERED INCIDENTAL TO CONTRACT ITEM 641.10 "TRAFFIC CONTROL".
10. "WORK ZONE" PLAQUES (G20-5aP) SHALL BE INCLUDED ON TEMPORARY SPEED LIMIT SIGNS IN ACCORDANCE WITH MUTCD FIGURE 6F-3.
11. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY CONSTRUCTION SIGNS APPLICABLE TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED INCLUDING, BUT NOT LIMITED TO, SIGNAGE FOR EXPECTED LANE CLOSURES AND WORK ZONE SPEED REDUCTIONS. THE SIGNS SHALL BE IN COMPLIANCE WITH THE VTRANS STANDARDS AND THE MUTCD. PAYMENT SHALL NOT BE MADE SEPARATELY, BUT SHALL BE INCIDENTAL TO ITEM 641.10, "TRAFFIC CONTROL".
12. THE CONTRACTOR IS NOTIFIED THAT ALL ROADWAYS INCLUDED IN AND ASSOCIATED WITH THIS PROJECT ARE SUBJECT TO OCCASIONAL USE AND TRAVEL BY EMERGENCY RESPONSE VEHICLES. THE CONTRACTOR SHALL MAKE AND IMPLEMENT PLANS AND PROCEDURES DESIGNED TO ENSURE SWIFT AND UNIMPEDED TRAVEL OF EMERGENCY RESPONSE VEHICLES THROUGH CONSTRUCTION ZONES. ANY COSTS ASSOCIATED WITH SUCH PLANS AND PROCEDURES SHALL BE INCIDENTAL TO ITEM 641.10 "TRAFFIC CONTROL".

VILLAGE OF ESSEX JUNCTION STANDARDS:

D-1	STREET DETAIL: TYPICAL PLAN	11-24-2010
D-2	STREET DETAIL: TYPICAL SECTION	11-24-2010
D-4	STREET DETAIL: CURB AND CONCRETE SIDEWALK	11-24-2010
D-5	STREET DETAIL: RESIDENTIAL DRIVEWAY APRON	11-24-2010
D-6	STREET DETAIL: COMMERCIAL/INDUSTRIAL DRIVEWAY APRON	11-24-2010
D-7	STREET DETAIL: SIDEWALK RAMP	11-24-2010
D-8	WATER DISTRIBUTION DETAILS: MAINS & HYDRANTS	11-24-2010
D-9	SERVICE CONNECTION	11-24-2010
D-12	SANITARY SEWER DETAILS: MANHOLES	11-24-2010
D-15	WATER & SANITARY SEWER: SEPARATION AND CROSSING DETAIL	11-24-2010
D-16	TRENCH DETAIL: FLEXIBLE & RIGID PIPE	11-24-2010
D-17	STORM SEWER DETAIL: PRECAST CONCRETE CATCH BASIN	11-24-2010
D-18	STORM SEWER DETAIL: UNDERDRAIN DETAIL	11-24-2010
D-19	MAIL BOX POST DETAIL: MAIL BOX	09-06-2012
D-20	STREET LIGHTING DETAILS: LIGHT POLE, LIGHT BASE & LIGHT FIXTURE	

VAOT STANDARDS:

B-71	STANDARD FOR RESIDENTIAL AND COMMERCIAL DRIVES	07-08-2005
C-2A	PORTLAND CEMENT CONCRETE SIDEWALK DRIVE ENTRANCES WITH SIDEWALK ADJACENT TO CURB	10-14-2005
C-2B	PORTLAND CEMENT CONCRETE SIDEWALK DRIVE ENTRANCES WITH SIDEWALK AND GREEN STRIP	10-14-2005
C-3A	SIDEWALK RAMPS	03-10-2008
C-3B	SIDEWALK RAMPS AND MEDIAN ISLANDS	03-10-2008
C-10	CURBING	02-11-2008
D-1	PRECAST REINFORCED CONCRETE DROP INLET DETAILS	06-01-1994
D-10	REINFORCED CONCRETE DROP INLET TOP FOR BITUMINOUS CONCRETE CURB & GRANITE SLOPE EDGING	06-01-1994
D-11	STEEL OR IRON GRATES & COVERS (TYPE A)	06-01-1994
D-13	CONCRETE CATCH BASIN	01-03-2000
D-15	PRECAST REINF CONC. MH-GRATES, CAST IRON GRATE WITH FRAME, TYPE D & E	06-01-1994
D-22	SANITARY SEWER SYSTEMS	03-10-1995
E-119	UTILITY WORK ZONE	03-01-2004
E-121	STANDARD SIGN PLACEMENT – CONVENTIONAL ROAD	08-08-1995
E-123	GUIDE SIGN PLACEMENT – MISCELLANEOUS DETAILS	03-16-2004
E-127	ROUTE MARKINGS AT RURAL INTERSECTIONS	08-08-1995
E-128A	DETAILING VILLAGE SIGNS (A-W)	08-08-1995
E-128B	DETAILING VILLAGE SIGNS (N-W)	08-08-1995
E-136B	STATE ROUTE MARKER SIGN DETAILS	08-30-1996
E-140	REGULATORY SIGN DETAILS	09-20-1995
E-142	REGULATORY SIGN DETAILS	06-15-2004
E-143	REGULATORY SIGN DETAILS	03-15-2005
E-143B	REGULATORY SIGN DETAILS	12-23-1994
E-145A	REGULATORY SIGN DETAILS – LANE USE CONTROL SIGNS	09-20-1995
E-146	REGULATORY SIGN DETAILS	05-01-2004
E-150	WARNING SIGN DETAILS	05-01-2004
E-152	WARNING SIGN DETAILS	08-09-1995
E-171B	TRAFFIC CONTROL SIGNALS MISC. DETAILS	08-09-1995
E-171C	TRAFFIC CONTROL SIGNALS CANTILEVER MOUNTING DETAILS	06-08-2009
E-173	PULL BOXES AND JUNCTION BOXES	08-09-1995
E-175	POWER DROP STANCHIONS	08-09-1995
E-180A	STREET LIGHTING DETAILS	06-30-2003
E-180B	STREET LIGHTING DETAILS	02-01-1999
E-190	RAILROAD CROSSING SIGNS AND PAVEMENT MARKINGS	10-12-2000
E-191	PAVEMENT MARKING DETAILS	08-18-1995
E-192	PAVEMENT MARKING DETAILS	03-15-2005
E-193	PAVEMENT MARKING DETAILS	
E-194	BICYCLE LANE PAVEMENT MARKINGS AND SIGN LAYOUT	08-07-1995
J-3	MAIL BOX SUPPORT DETAILS	
RR-1	RAIL CROSSING HIGHWAY STANDARDS PAVED CROSSING FOR GRAVEL OR PAVED HIGHWAYS	06-01-1994
T-1	TRAFFIC CONTROL GENERAL NOTES	08-06-2012
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	08-06-2012
T-28	CONSTRUCTION SIGN DETAILS	08-06-2012
T-29	CONSTRUCTION SIGN DETAILS	08-06-2012
T-30	CONSTRUCTION SIGN DETAILS	08-06-2012
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013

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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION PRE-PRELIMINARY PLANS

NO.	DATE	DESCRIPTION	BY	CK'D

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

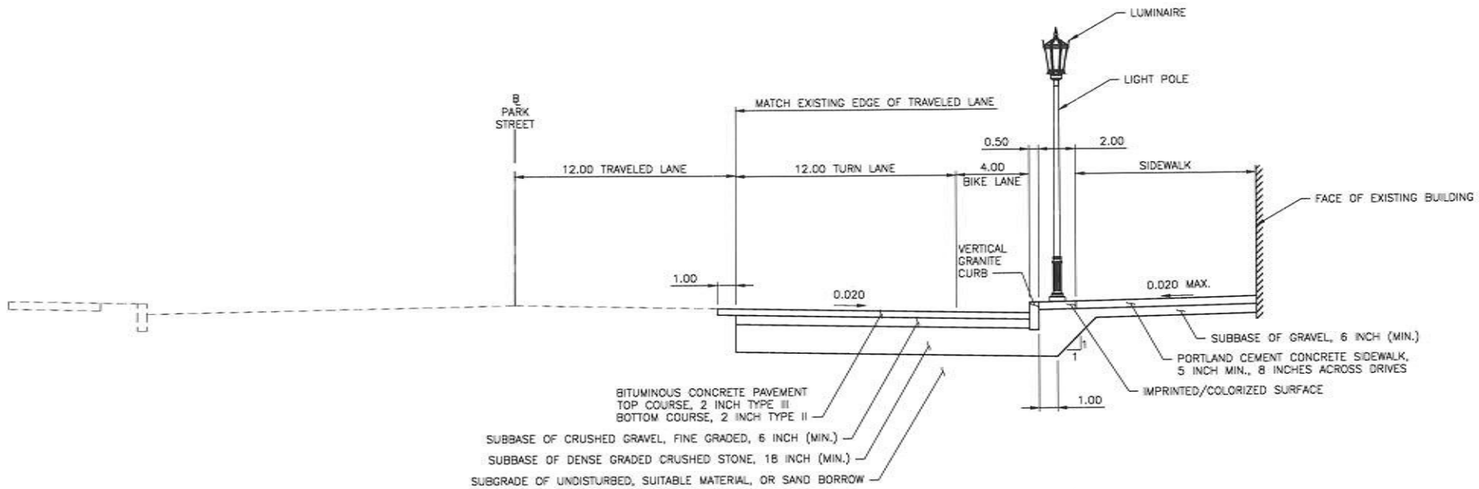
GENERAL NOTES

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SHEET NUMBER

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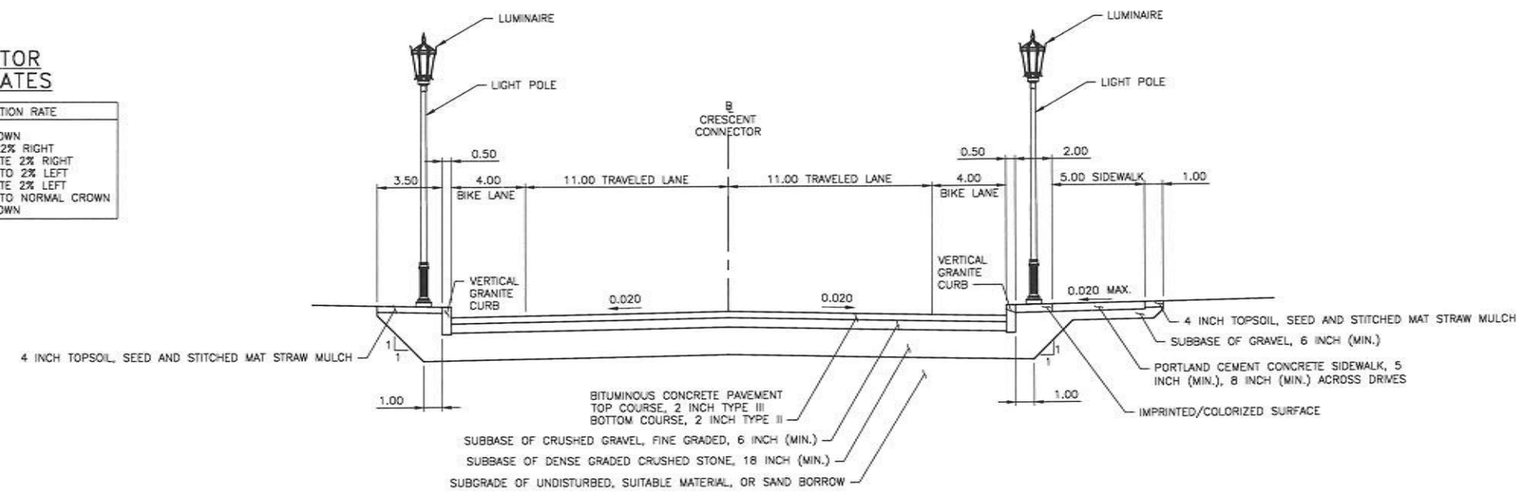


PARK STREET

FROM STATION 30+39.62 TO STATION 33+24

CRESCENT CONNECTOR SUPERELEVATION RATES

STA.			SUPERELEVATION RATE
BEGIN	–	12+30	NORMAL CROWN
12+30	–	13+30	TRANSITION 2% RIGHT
13+30	–	14+10	SUPERELEVATE 2% RIGHT
14+10	–	15+10	TRANSITION TO 2% LEFT
15+10	–	16+35	SUPERELEVATE 2% LEFT
16+35	–	17+35	TRANSITION TO NORMAL CROWN
17+35	–	END	NORMAL CROWN



CRESCENT CONNECTOR

FROM STATION 10+00 TO STATION 18+47.91

NOTE:

1. ALL DIMENSIONS ARE SHOWN IN FEET UNLESS OTHERWISE NOTED

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ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

TYPICAL SECTIONS SHEET 1

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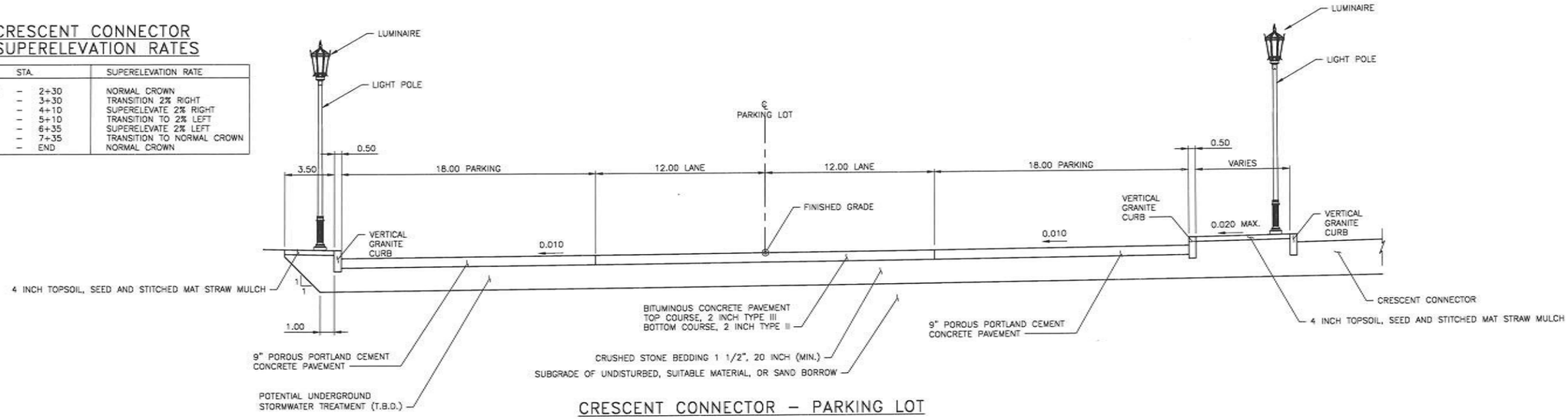
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SHEET 3 OF 33

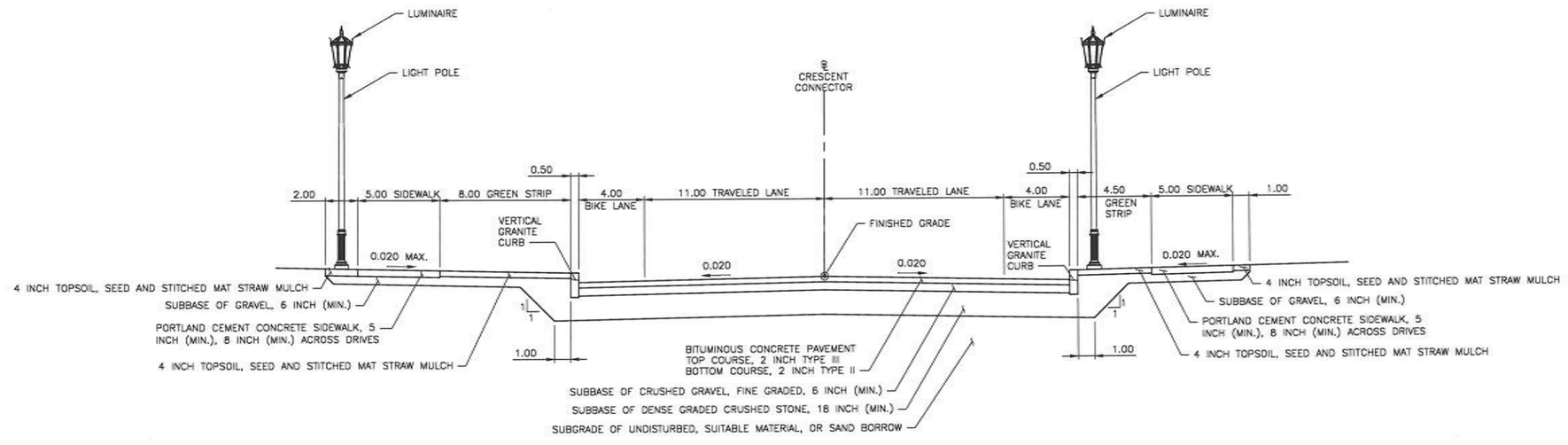
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CRESCENT CONNECTOR SUPERELEVATION RATES

STA.			SUPERELEVATION RATE
BEGIN	–	2+30	NORMAL CROWN
2+30	–	3+30	TRANSITION 2% RIGHT
3+30	–	4+10	SUPERELEVATE 2% RIGHT
4+10	–	5+10	TRANSITION TO 2% LEFT
5+10	–	6+35	SUPERELEVATE 2% LEFT
6+35	–	7+35	TRANSITION TO NORMAL CROWN
7+35	–	END	NORMAL CROWN



CRESCENT CONNECTOR – PARKING LOT



CRESCENT CONNECTOR RAILROAD STREET

FROM STATION 18+47.91 TO STATION 23+40.49
FROM STATION 18+47.91 TO STATION 23+40.49

NOTE:
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ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

TYPICAL SECTIONS SHEET 2

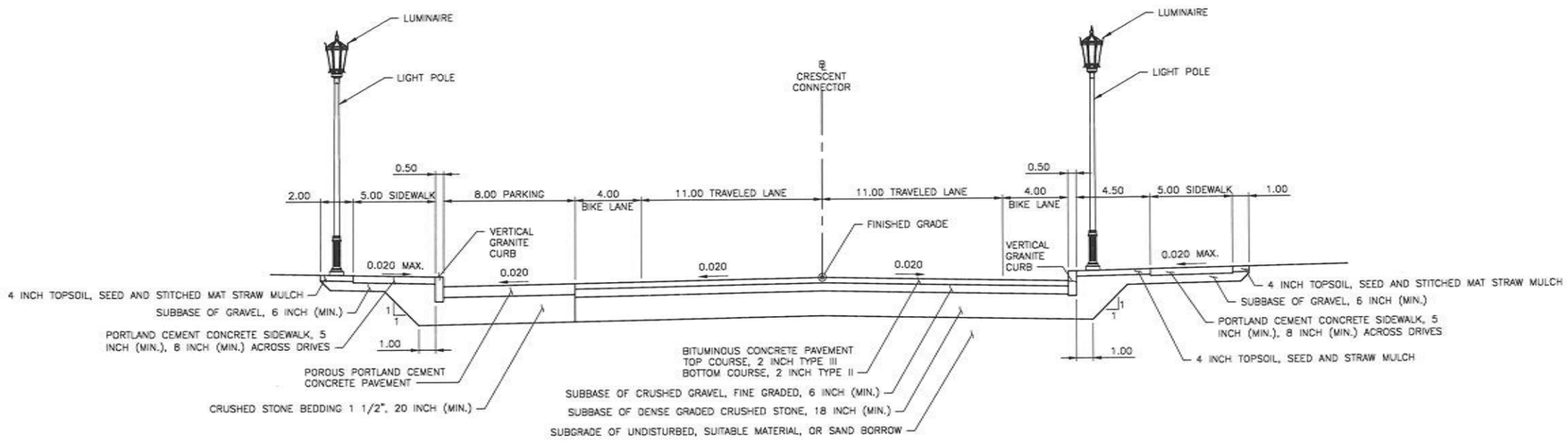
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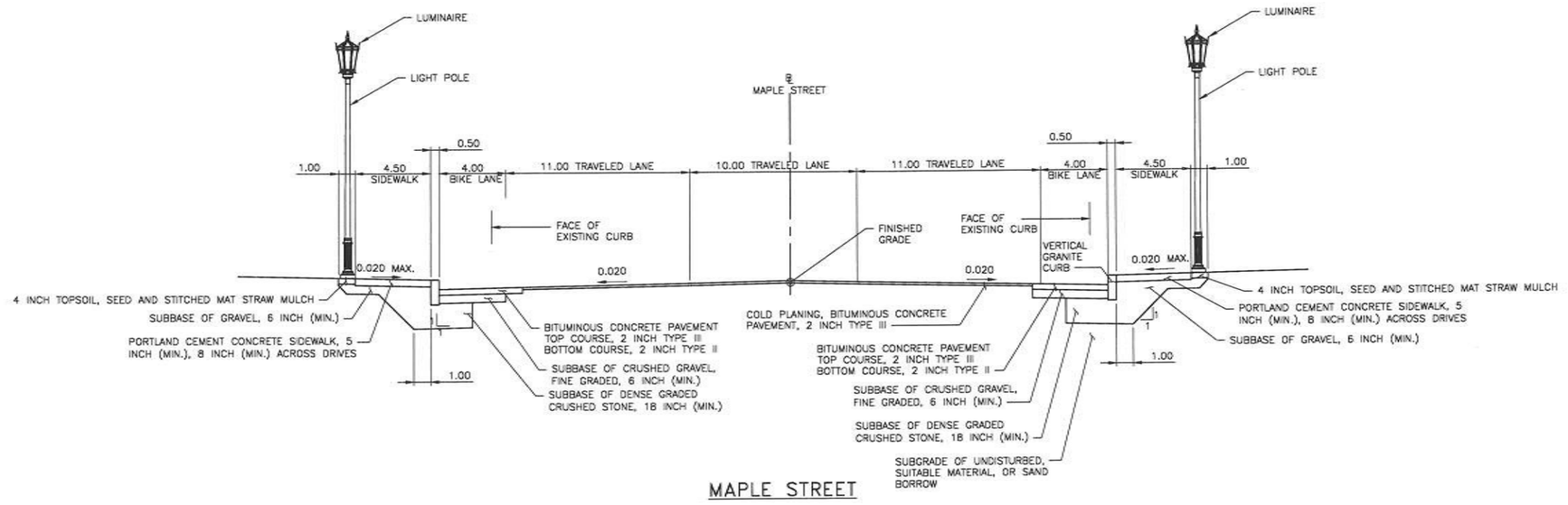
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SHEET 4 OF 33

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CRESCENT CONNECTOR RAILROAD STREET – PARKING LEFT



MAPLE STREET

NOTE:
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ESSEX JUNCTION,
VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

TYPICAL SECTIONS
SHEET 3

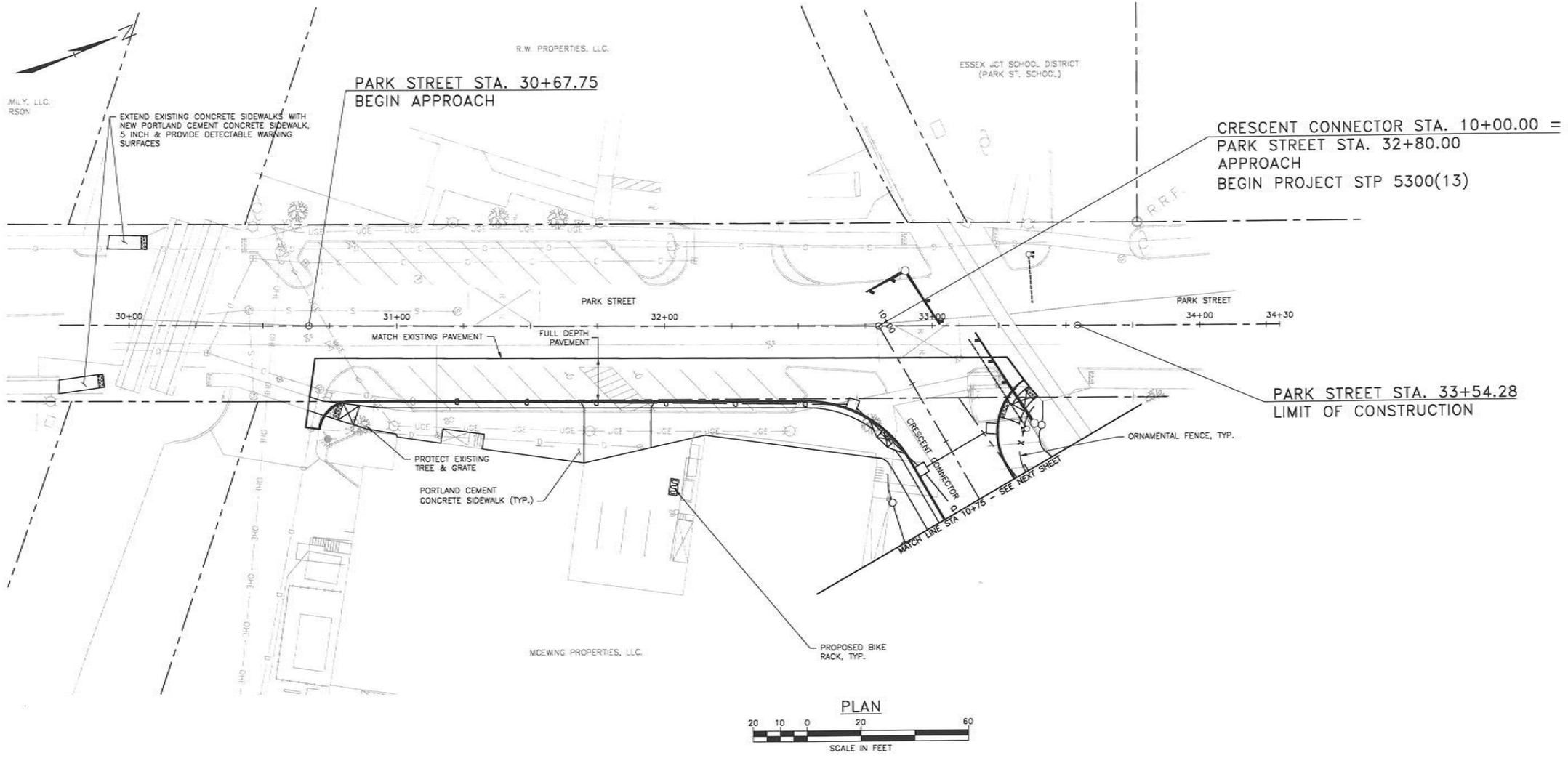
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SHEET NUMBER

5

SHEET 5 OF 33

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PLAN

20 10 0 20 60

SCALE IN FEET

VERTICAL GRANITE CURB
STA 30+67 RT – STA 10+75 RT
STA 10+45 LT –STA 10+75 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH
STA 30+74 RT – STA 10+75 RT
STA 10+48 LT – STA 10+58 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH
STA 30+67 RT – 30+79 RT
STA 31+70 RT – 31+95 RT

ORNAMENTAL FENCE
STA 10+53 LT – STA 10+75 LT

DETECTABLE WARNING SURFACE
STA 30+78 RT
STA 10+37 RT
STA 10+50 LT

BIKE RACK
STA 32+04 RT

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ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

PLAN AND PROFILE SHEET 1

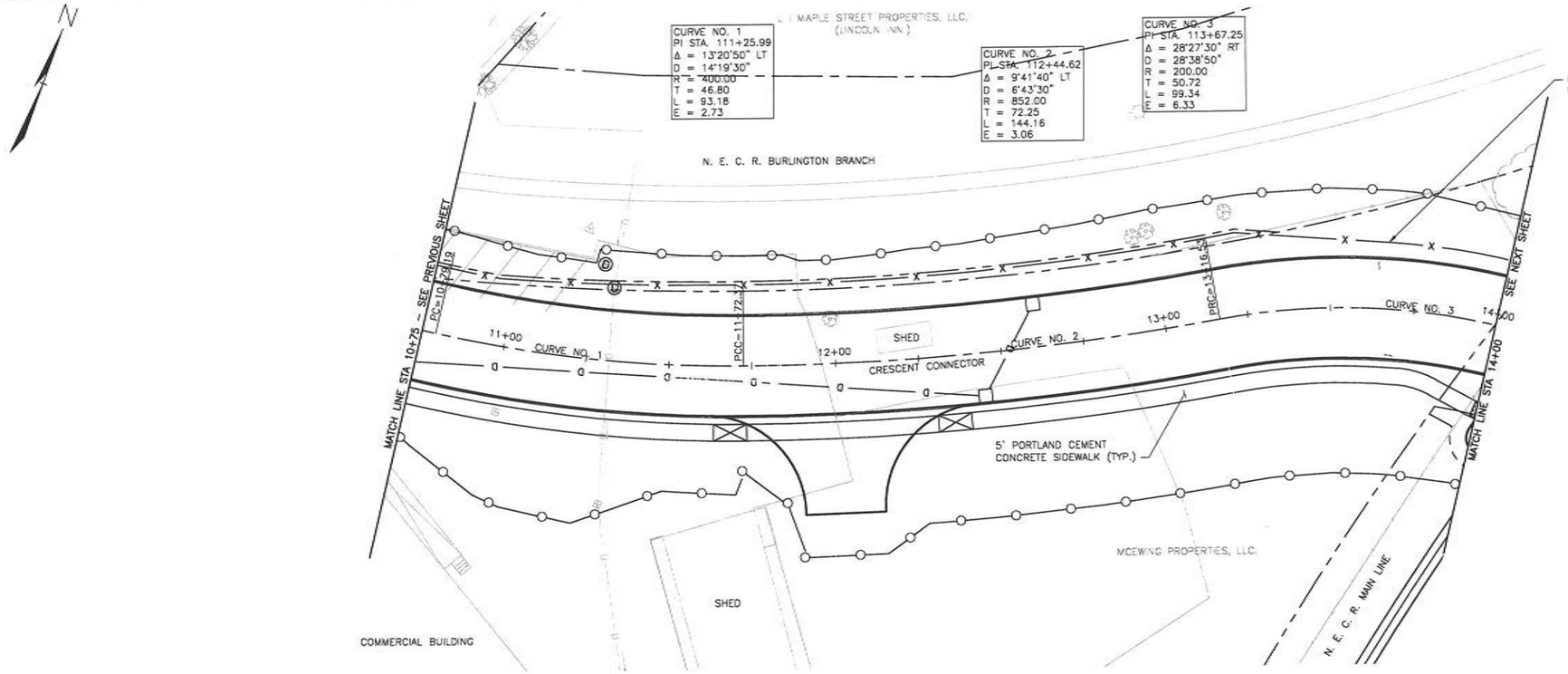
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SHEET 6 OF 33

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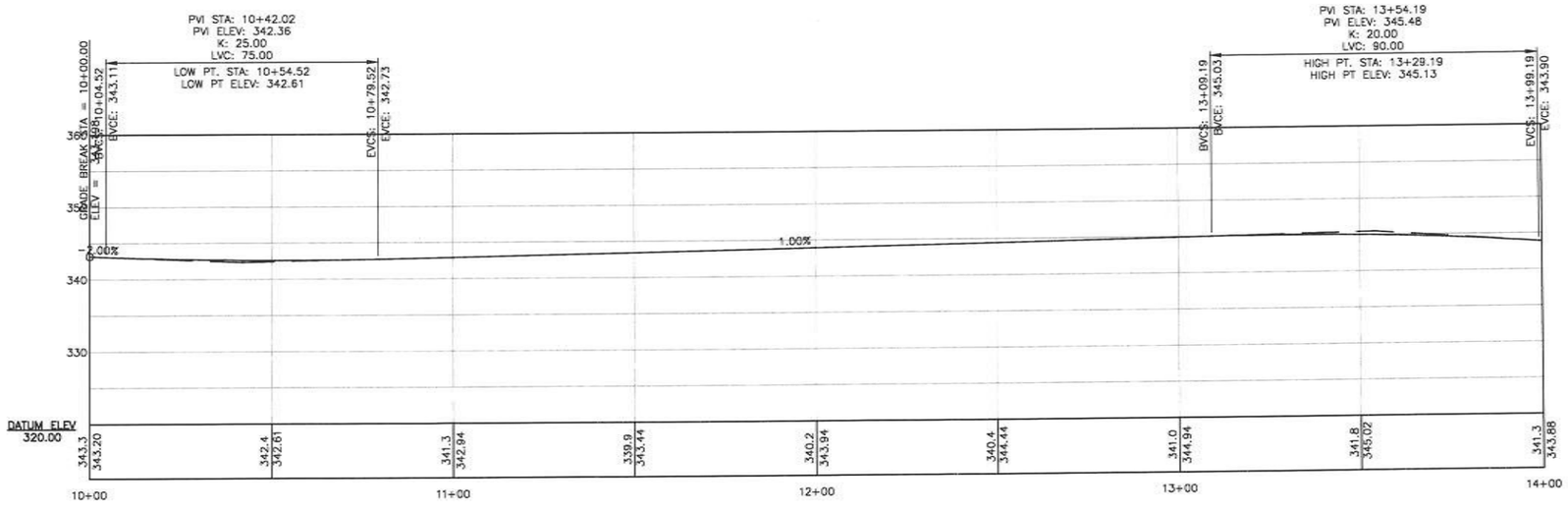
PLAN

SCALE IN FEET

VERTICAL GRANITE CURB
STA 10+75 RT – STA 14+00 RT
STA 10+75 LT – STA 14+00 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH
STA 10+75 RT – STA 11+73 RT
STA 12+22 RT – STA 14+00 RT

PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH
STA 11+73 RT – STA 12+22 RT



PROFILE – CRESCENT CONNECTOR

SCALE IN FEET

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PLAN AND PROFILE SHEET 2

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7

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CRESCENT CONNECTOR STA. 18+47.91 = MAPLE STREET STA. 50+99.60

MAPLE STREET STA. 50+40 LIMIT OF CONSTRUCTION

MATCH INTO EXISTING BITUMINOUS CONCRETE CROSSING

MATCH LINE STA 14+00 + SEE PREVIOUS SHEET

BITUMINOUS CONCRETE PAVEMENT IN TRAVEL LANES (SEE TYPICAL SECTION)

N. E. C. R. BURLINGTON BRANCH

N. E. C. R. MAIN LINE

CENTRAL VT RAILWAY (9936, 9954) C/O CANADIAN NATIONAL RAILWAY

PROPOSED ORNAMENTAL FENCE

POROUS PORTLAND CEMENT CONCRETE PAVEMENT IN PARKING AREAS (SEE TYPICAL SECTION)

PORTLAND CEMENT CONCRETE RAIL CROSSING (PER NECR PLANS)

PROPOSED BIKE LOCKERS

SIGNAL HOUSE – SEE NECR PLANS FOR LOCATION & DESIGN

GATE #2 – SEE NECR PLANS FOR LOCATION & DESIGN

CURVE NO. 5
PI STA. 116+52.37
Δ = 9°20'40" LT
D = 19°05'50"
R = 300.00
T = 24.52
L = 48.92
E = 1.00

CURVE NO. 4
PI STA. 115+48.20
Δ = 66°58'50" LT
D = 28°38'50"
R = 200.00
T = 132.32
L = 233.80
E = 39.81

CURVE NO. 4

CRESCENT CONNECTOR

SHED

2-STORY WOOD FRAME HOUSE

5' PORTLAND CEMENT CONCRETE SIDEWALK (TYP.)

MAPLE STREET

MATCH LINE STA 19+00

SEE SHEET 11

MATCH LINE STA. 51+75 – SEE NEXT SHEET

KALANGES, WILLIAM C.

LAND MARK ARCHITECTURALS, LLC

KALANGES, WILLIAM C.

VERTICAL GRANITE CURB
STA 14+00 RT – STA 14+07 RT
STA 14+36 RT – STA 18+26 RT
STA 51+49 RT – STA 51+75 RT
STA 18+61 RT – STA 19+00 RT
STA 51+50 LT – STA 51+75 LT
STA 14+00 LT – STA 14+19 LT
STA 14+52 LT – STA 18+29 LT
STA 18+73 LT – STA 19+00 LT
STA 50+40 RT – STA 50+49 RT
STA 50+40 LT – STA 50+48 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH
STA 14+00 RT – STA 16+12 RT
STA 16+56 RT – STA 18+24 RT
STA 51+49 RT – STA 51+75 RT
STA 18+64 RT – STA 18+94 RT
STA 17+78 LT – STA 18+29 LT
STA 18+73 LT – STA 19+00 LT
STA 50+40 RT – STA 50+49 RT
STA 50+40 LT – STA 50+48 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH
STA 16+12 RT – STA 16+56 RT
STA 18+94 RT – STA 19+00 RT

DETECTABLE WARNING SURFACE
STA 15+58 RT
STA 15+58 LT
STA 15+59 LT
STA 15+67 LT
STA 17+80 LT
STA 18+03 LT
STA 18+05 RT
STA 18+21 RT
STA 18+26 LT
STA 18+78 LT
STA 18+82 RT

ORNAMENTAL FENCE
STA 14+00 LT – STA 14+15 LT
STA 14+58 LT – STA 18+21 LT
STA 18+86 LT – STA 19+00 LT

PLAN

20 10 0 20 60
SCALE IN FEET

PVI STA: 15+32.58
PVI ELEV: 339.24
K: 25.39
LVC: 115.00
LOW PT. STA: 15+63.94
LOW PT ELEV: 339.69

BVCS: 14+75.08
BVCE: 341.25

EVCS: 15+90.08
EVCE: 339.83

GRADE BREAK STA = 18+13.27
ELEV = 342.126

-3.50%

1.03%

0.41%

360
350
340
330

DATUM ELEV 320.00

14+00	15+00	16+00	17+00	18+00	19+00
341.3 / 343.88	340.7 / 342.13	340.4 / 340.50	340.3 / 339.73	340.2 / 339.93	340.5 / 340.44	341.1 / 340.96	341.5 / 341.47	341.9 / 341.99	342.5 / 342.28	343.0 / 342.81

10 0 5 10

20 10 0 20 60
SCALE IN FEET

PROFILE – CRESCENT CONNECTOR

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PROFESSIONAL SEAL

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STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

PLAN AND PROFILE SHEET 3

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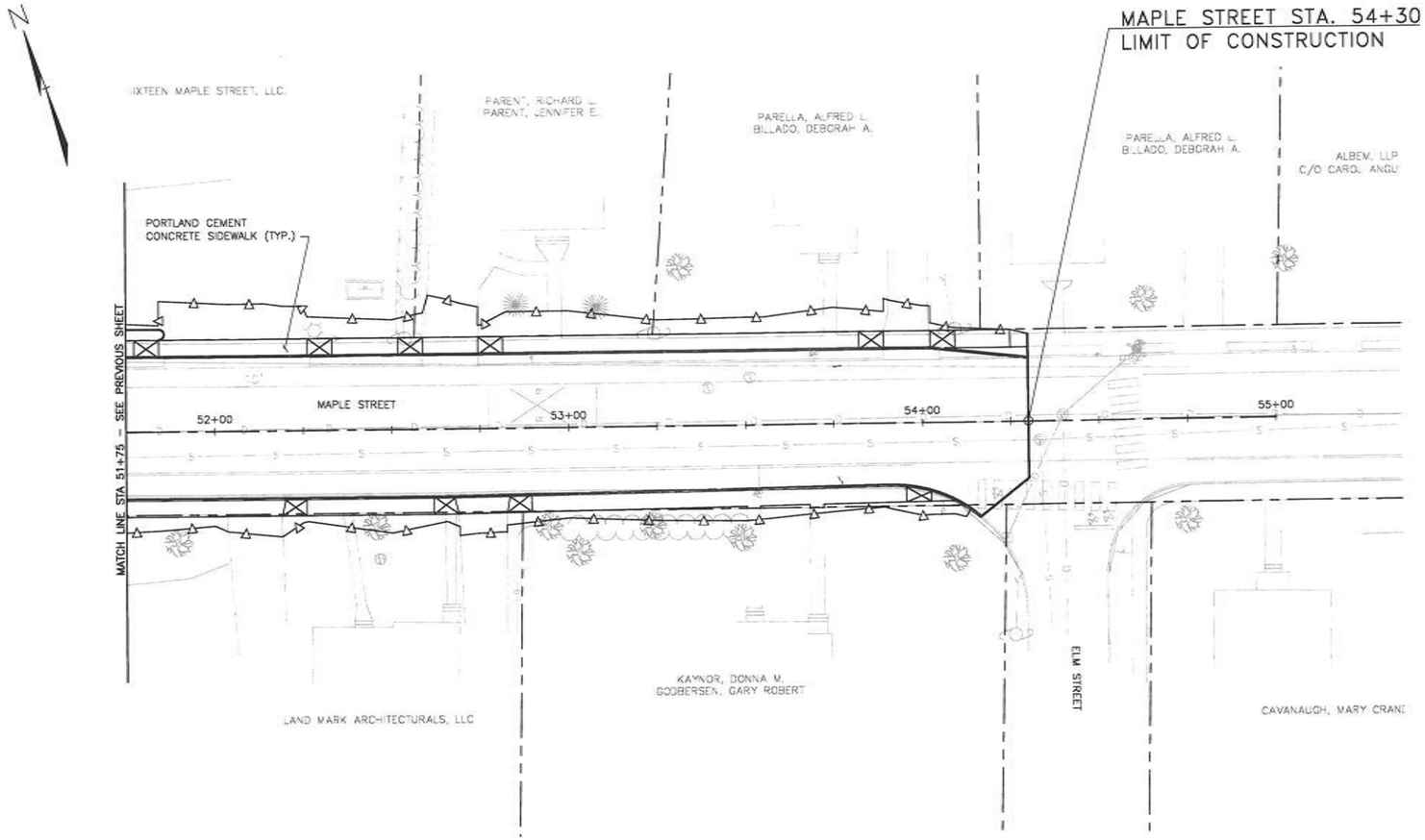
SHEET 8 OF 33

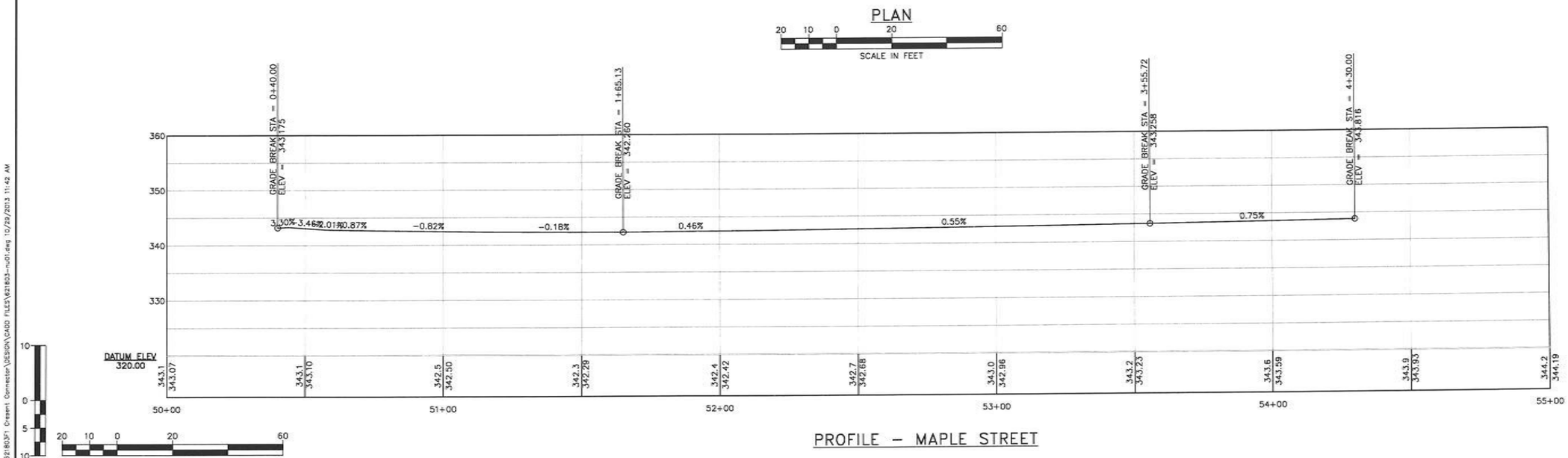
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VERTICAL GRANITE CURB
STA 51+75 RT – STA 54+13 RT
STA 51+75 LT – STA 54+30 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH
STA 51+75 RT – STA 54+12 RT
STA 51+75 LT – STA 51+84 LT
STA 52+26 LT – STA 54+30 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH
STA 51+84 LT – STA 52+26 LT





PROFILE – MAPLE STREET

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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION PRE-PRELIMINARY PLANS

NO.	DATE	DESCRIPTION	BY	CK'D

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

PLAN AND PROFILE SHEET 4

DRAWN BY	DATE
MAM	OCT 2013
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XXX	621803
PROJ. ENG.	D&K ARCHIVE #
EPD	

SHEET NUMBER

9

SHEET 9 OF 33

I:\621803\PT Crescent Connector\DESIGN\CADD FILES\621803-roo1.dwg 10/29/2013 11:42 AM

VERTICAL GRANITE CURB
STA 19+00 RT – STA 23+57.26 RT
STA 19+00 LT – STA 23+17 LT

PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH
STA 19+59 RT – STA 20+28 RT
STA 19+00 LT – STA 19+51 LT
STA 22+05 LT – STA 23+16 LT
STA 20+44 RT – STA 21+93 RT
STA 22+11 RT – STA 22+47 RT
STA 22+68 RT – STA 22+73 RT
STA 22+87 RT – STA 23+48 RT

PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH
STA 19+00 RT – STA 19+59 RT
STA 20+28 RT – STA 20+44 RT
STA 21+93 RT – STA 22+11 RT
STA 22+47 RT – STA 22+68 RT
STA 22+73 RT – STA 22+87 RT

DETECTABLE WARNING SURFACE
STA 23+15 LT
STA 23+35 RT

ORNAMENTAL FENCE
STA 19+00 LT – STA 23+10 LT

MAIN STREET STA. 70+77.59
LIMIT OF CONSTRUCTION

CRESCENT CONNECTOR STA. 23+57.26 =
MAIN STREET STA. 71+54.24

CURVE NO. 6
PI STA. 122+81.44
Δ = 33°40'00" LT
D = 114°35'30"
R = 50.00
T = 15.13
L = 29.38
E = 2.24

PROPOSED ORNAMENTAL FENCE

CENTRAL VT RAILWAY (10332)
C/O CANADIAN NATIONAL RAILWAY

N. E. C. R. MAIN LINE

PROVIDE BITUMINOUS CONCRETE TO TRANSITION NEW PORTLAND CEMENT CONCRETE SIDEWALK INTO EXISTING BIT. CONC. PED. CROSSING

DEMOLISH EXISTING ASPHALT SIDEWALK

PROTECT EXISTING LANDSCAPE PLANTINGS

DEMOLISH EXISTING CONCRETE SIDEWALK SECTION, INSTALL DETECTABLE WARNING SURFACE & REPLACE SIDEWALK W/ PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH (TYP. OF 3)

KALANGES, WILLIAM C.

LEASE LINE

PARKING (TYP.)

CRESCENT CONNECTOR

CURVE NO. 6

PC=22+66.31

PI=22+95.68

23+67.26

MAIN STREET

70+00

71+00

72+00

73+00

19+00

20+00

21+00

22+00

23+00

SEE NEXT SHEET

MATCH LINE STA 19+00

PROPOSED BIKE RACK

PROTECT EXISTING TREE

PORTLAND CEMENT CONCRETE SIDEWALK (TYP.)

16 RAILROAD ST. LLC.
C/O THOMAS P. DOWHAN

PLEASANT PROPERTIES, LLC.

SIEGRIEST, C. RONALD
SIEGRIEST, ALICE M.

SIEGRIEST, C. RONALD
SIEGRIEST, ALICE M.

BSA MANAGEMENT, INC.

HOLTON & HANDY, LLC.

CRESCENT CONNECTOR STA. 23+40.49
END PROJECT STP 5300(13)

MAIN STREET STA. 72+32.65
LIMIT OF CONSTRUCTION

PLAN

20 10 0 20 60
SCALE IN FEET

PVI STA: 21+87.08
PVI ELEV: 347.12
K: 24.00
LVC: 60.00

HIGH PT. STA: 21+93.08
HIGH PT ELEV: 346.94

PVI STA: 23+14.11
PVI ELEV: 345.85
K: 26.26
LVC: 25.00

BVCS: 21+57.08
BVCE: 346.67

EVCS: 22+17.08
EVCE: 346.82

BVCS: 23+01.61
BVCE: 345.97

EVCS: 23+26.61
EVCE: 345.84

1.50%

-1.00%

-0.05%

DATUM ELEV
320.00

360
350
340
330

19+00	20+00	21+00	22+00	23+00	23+56
343.0 / 342.81	343.7 / 343.56	344.4 / 344.31	344.9 / 345.06	345.3 / 345.81	345.7 / 346.58	345.8 / 346.93	345.6 / 346.49	345.6 / 345.99	345.8 / 345.83	345.9 / 345.83

10 0 5 10

20 10 0 20 60
SCALE IN FEET

PROFILE – CRESCENT CONNECTOR

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NO.	DATE	DESCRIPTION	BY	CK'D

VILLAGE OF
ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION,
VT 05452

CRESCENT
CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

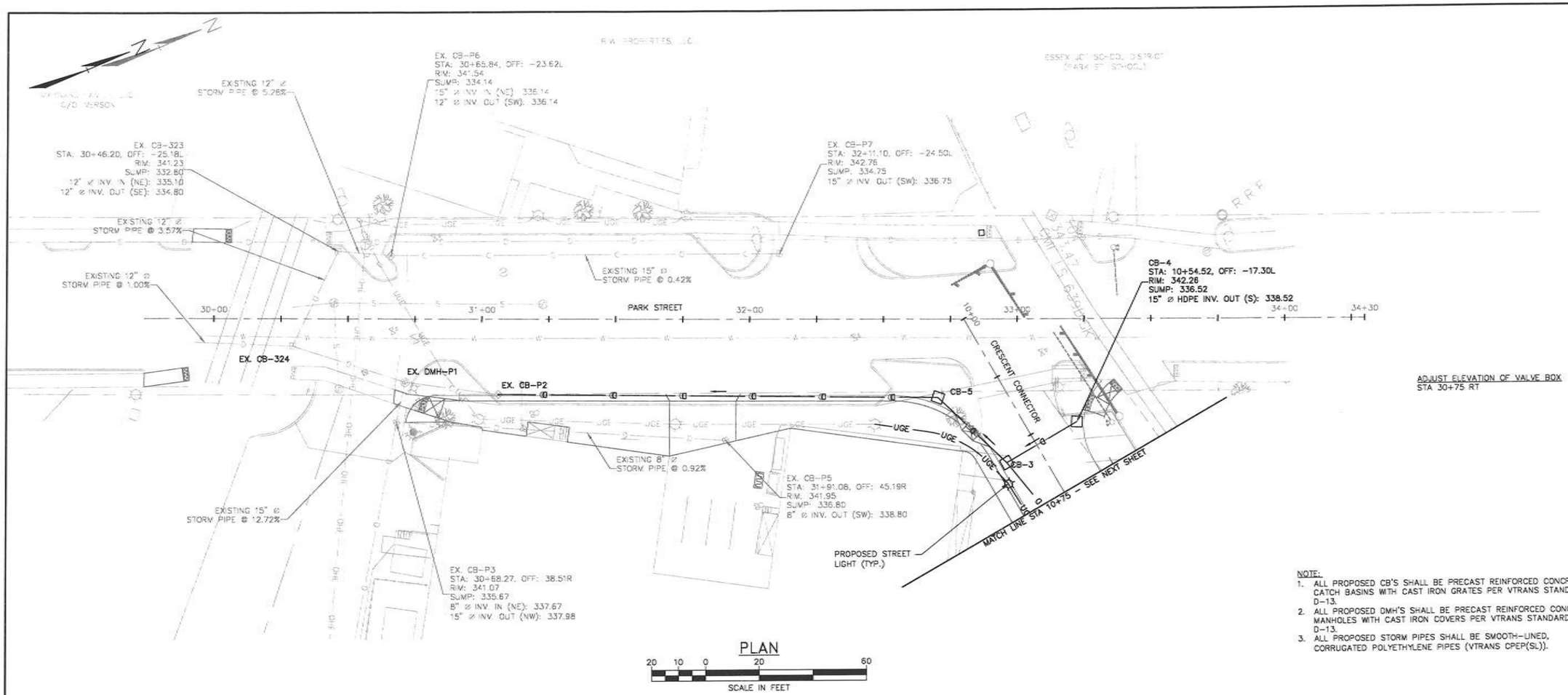
PLAN AND PROFILE
SHEET 5

DRAWN BY	DATE
MAM	OCT 2013
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XXX	621803
PROJ. ENG.	D&K ARCHIVE #
EPD	

SHEET NUMBER

10

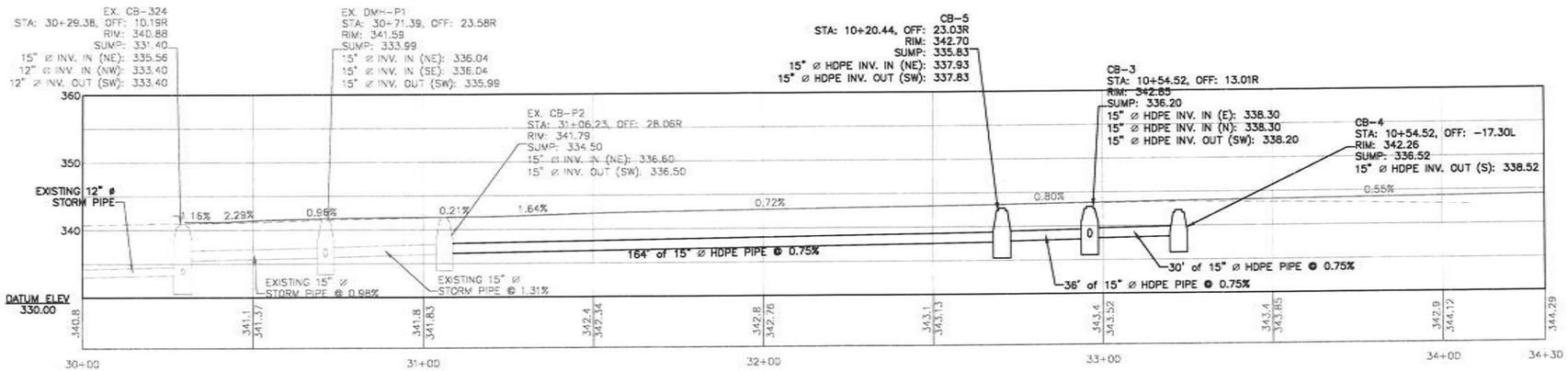
SHEET 10 OF 33

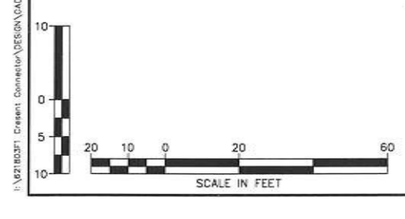


PLAN

20 10 0 20 60

SCALE IN FEET





NOTE:
1. ALL PROPOSED CB'S SHALL BE PRECAST REINFORCED CONCRETE CATCH BASINS WITH CAST IRON GRATES PER VTRANS STANDARD D-13.
2. ALL PROPOSED DMH'S SHALL BE PRECAST REINFORCED CONCRETE MANHOLES WITH CAST IRON COVERS PER VTRANS STANDARD D-13.
3. ALL PROPOSED STORM PIPES SHALL BE SMOOTH-LINED, CORRUGATED POLYETHYLENE PIPES (VTRANS CPEP(SL)).

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2 LINCOLN STREET
ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

UTLITY & LIGHTING PLAN SHEET 1

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EBS	OCT 2013
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XXX	621803
PROJ. ENG.	D&K ARCHIVE #
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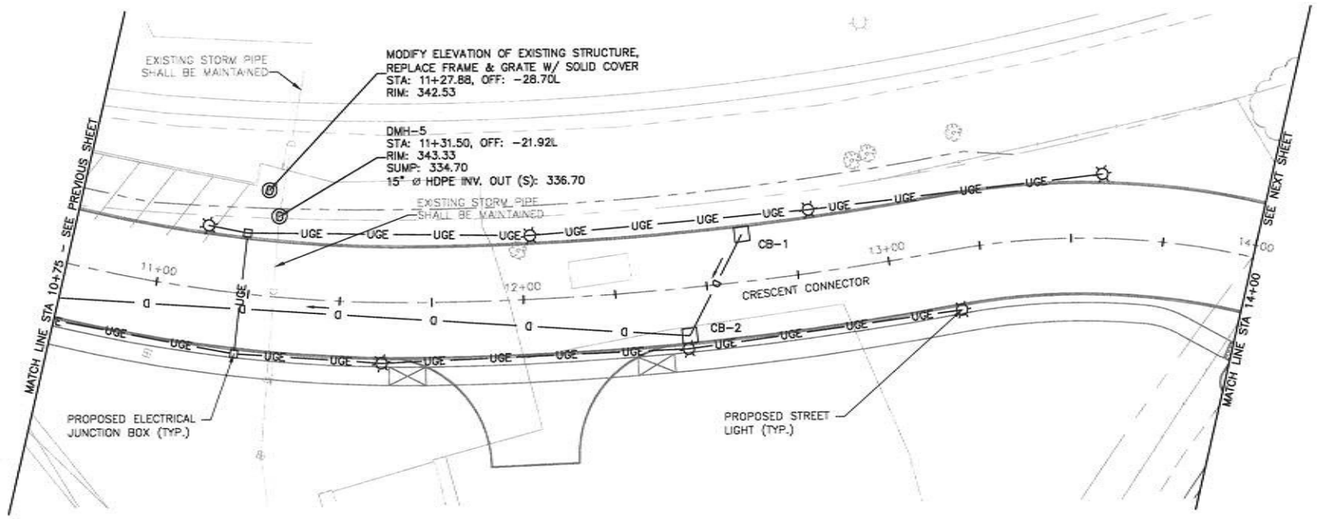
SHEET NUMBER

11

SHEET 11 OF 33

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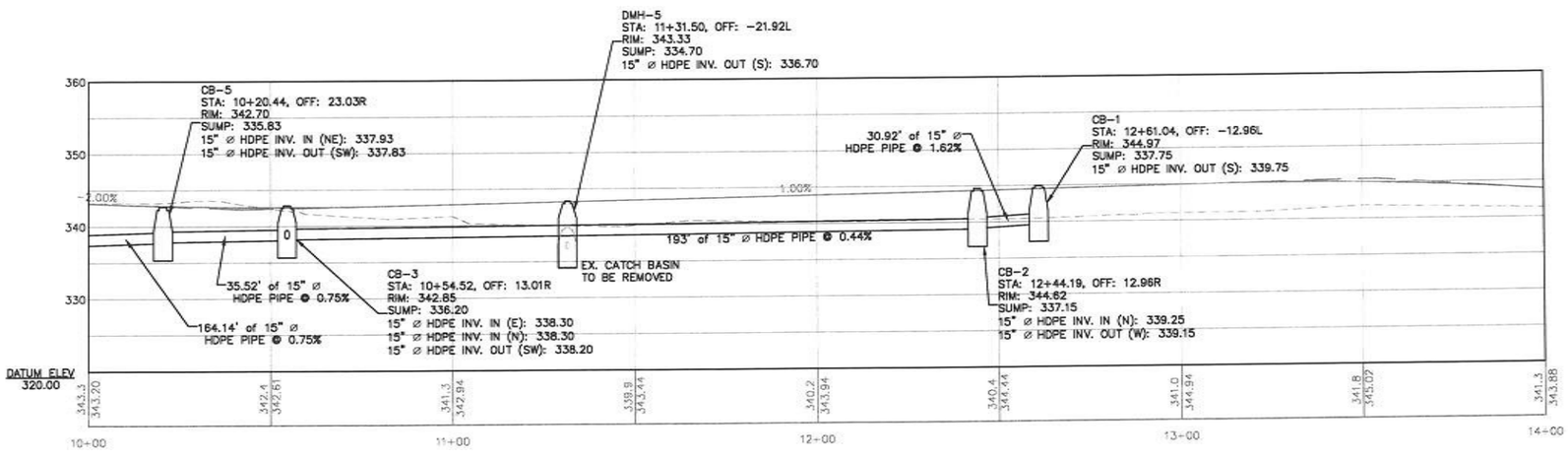


PLAN

20 10 0 20 60

SCALE IN FEET

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10 0 5 10

20 10 0 20 60

SCALE IN FEET

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ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

UTLITY & LIGHTING PLAN SHEET 2

DRAWN BY	DATE
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XXX	621803
PROJ. ENG.	D&K ARCHIVE #
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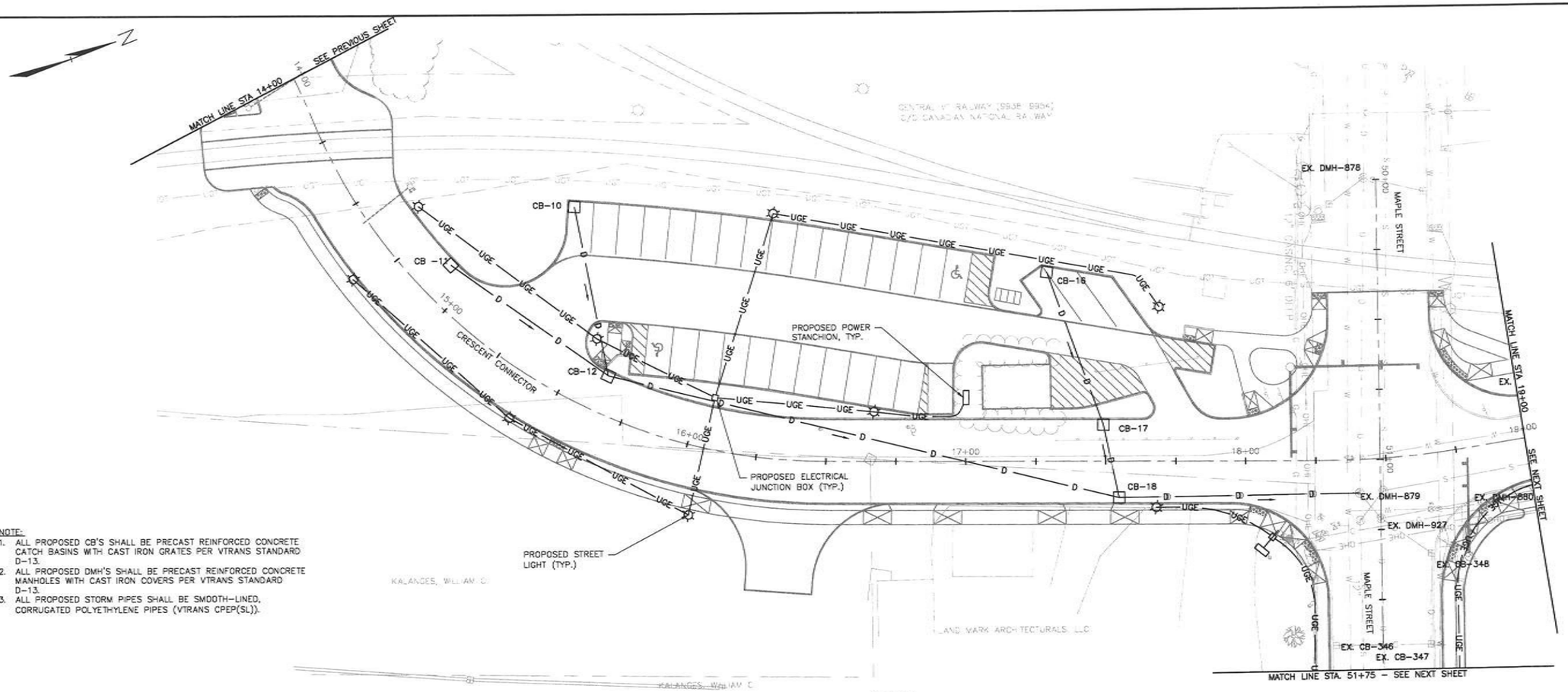
SHEET NUMBER

12

SHEET 12 OF 33

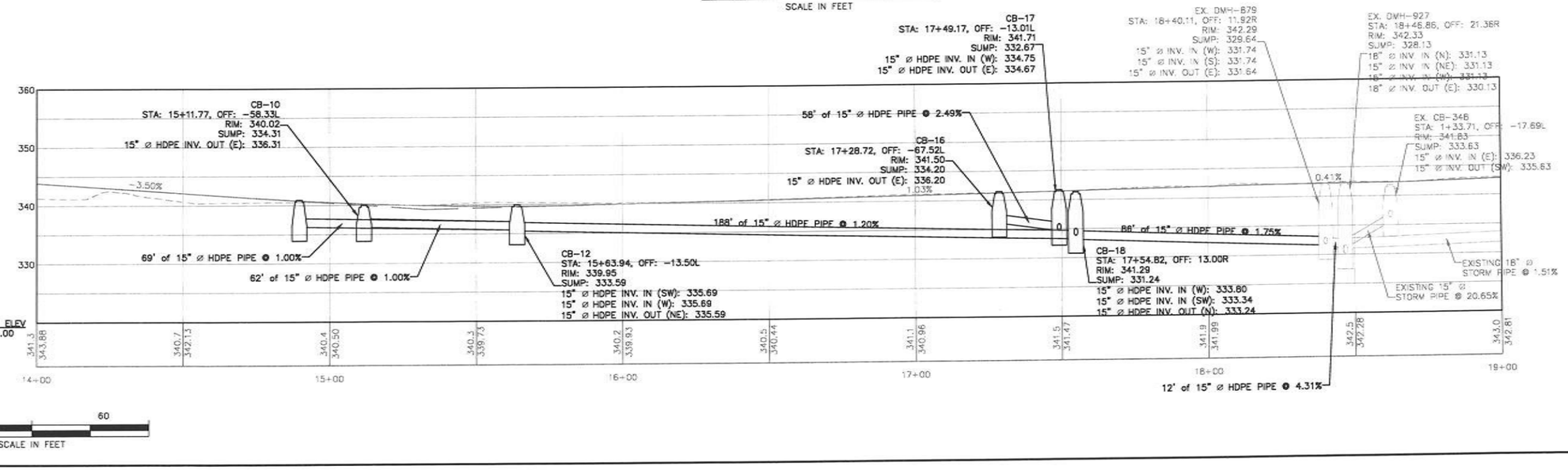
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NOTE:
1. ALL PROPOSED CB'S SHALL BE PRECAST REINFORCED CONCRETE CATCH BASINS WITH CAST IRON GRATES PER VTRANS STANDARD D-13.
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PLAN

20 10 0 20 60
SCALE IN FEET



10 5 0 5 10
20 0 10 20 60
SCALE IN FEET

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NO.	DATE	DESCRIPTION	BY	CK'D

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ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

UTLITY & LIGHTING PLAN SHEET 3

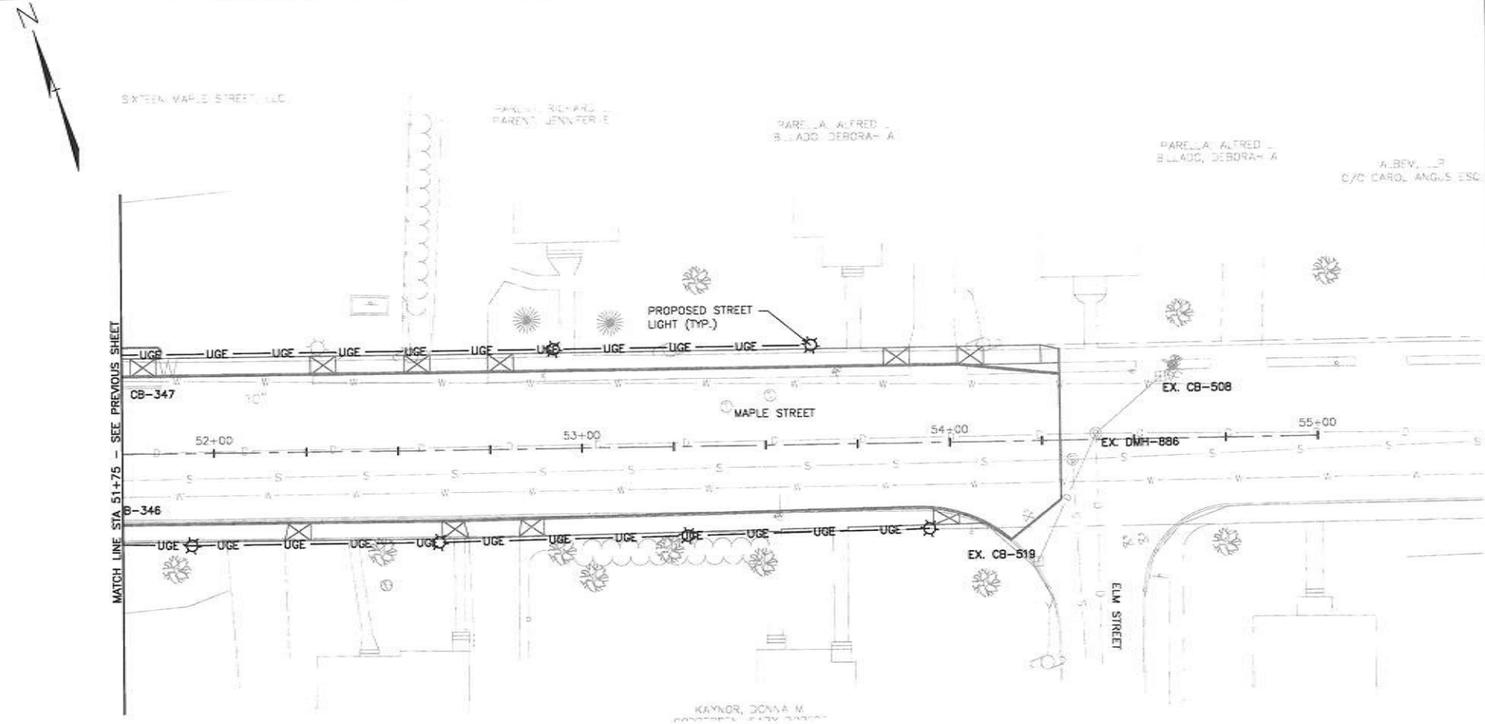
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SHEET NUMBER

13

SHEET 13 OF 33

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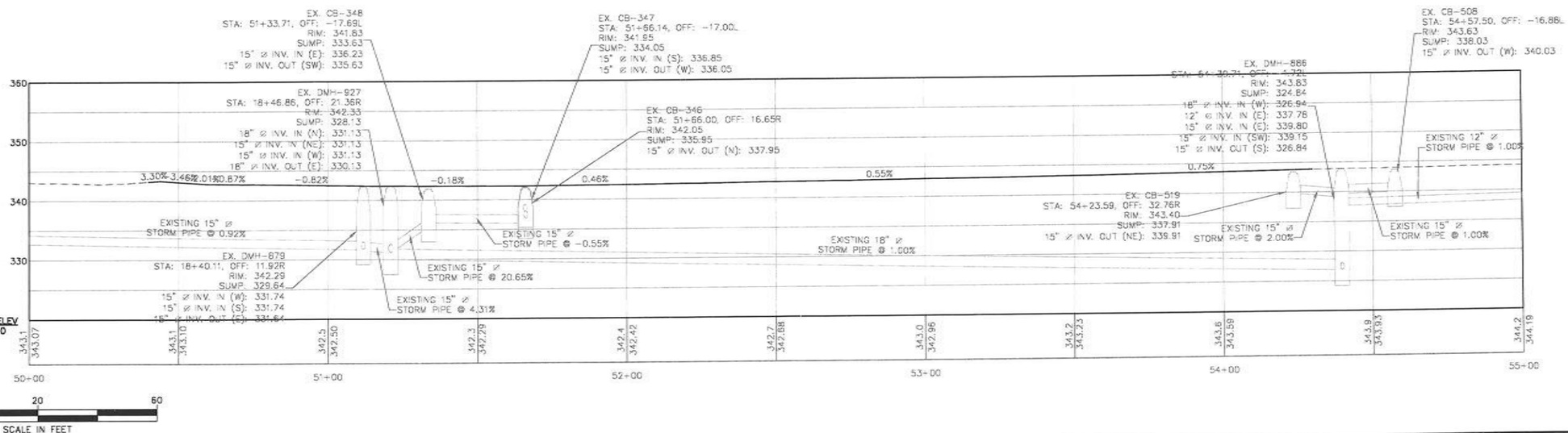


PLAN

20 10 0 20 60

SCALE IN FEET

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ESSEX JUNCTION,
VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

UTLITY & LIGHTING PLAN SHEET 4

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EPD	

SHEET NUMBER

14

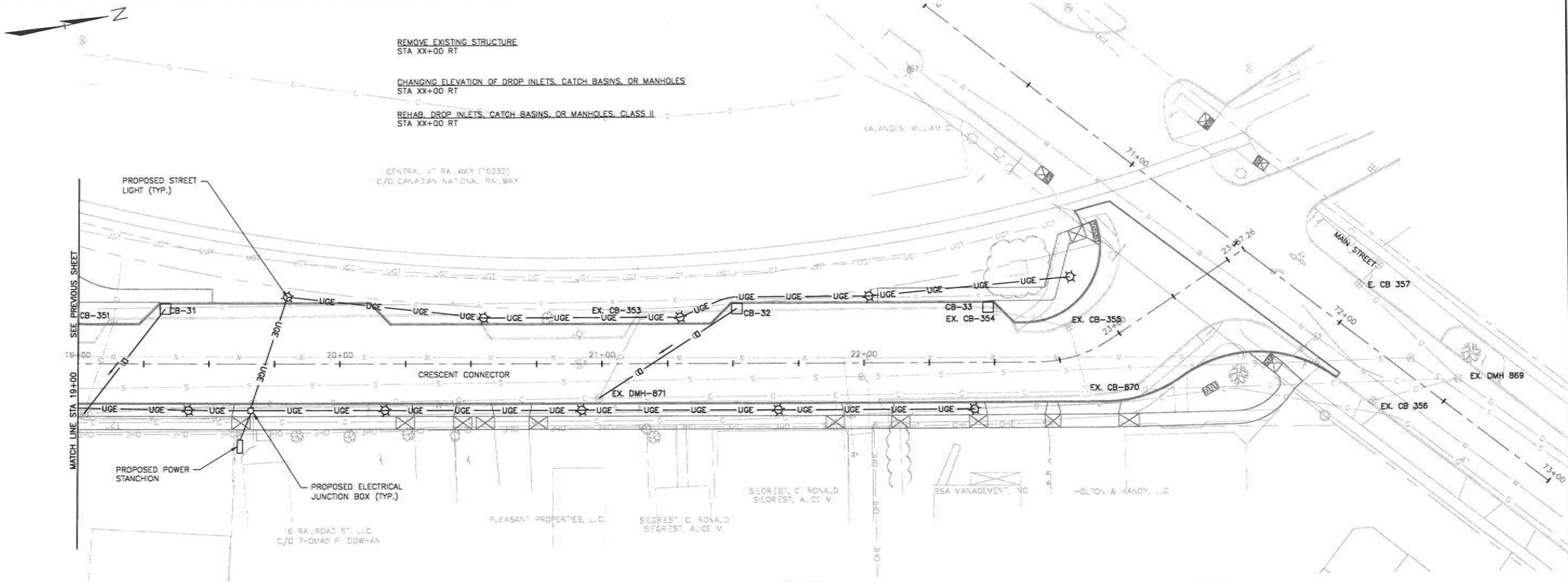
SHEET 14 OF 33

I:\621803\1 Crescent Connector\DESIGN\CADD FILES\621803-Utility_Lighting.dwg 10/29/2013 11:45 AM

REMOVE EXISTING STRUCTURE
STA XX+00 RT

CHANGING ELEVATION OF DROP INLETS, CATCH BASINS, OR MANHOLES
STA XX+00 RT

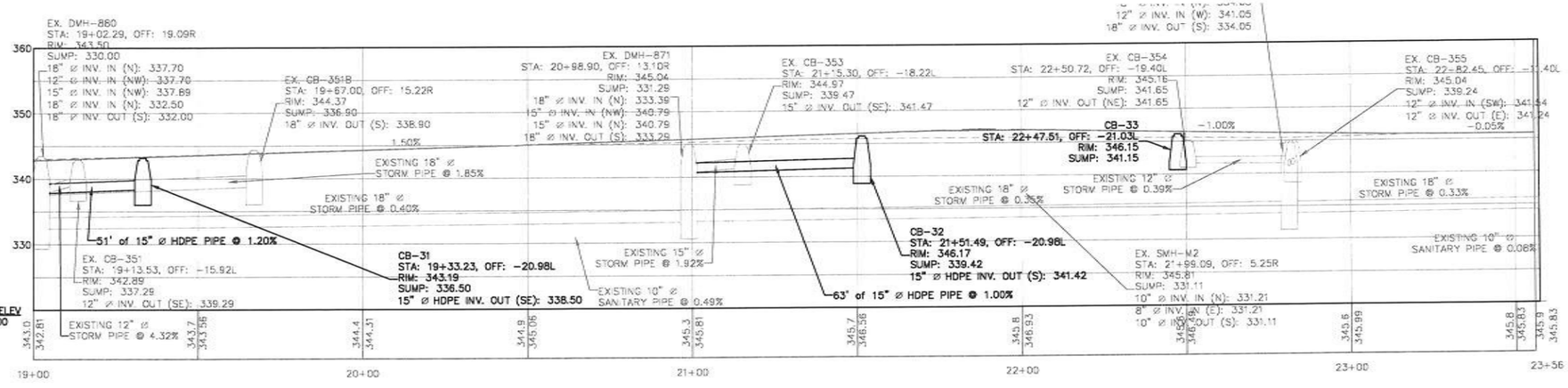
REHAB, DROP INLETS, CATCH BASINS, OR MANHOLES, CLASS II
STA XX+00 RT



PLAN

20 10 0 20 60
SCALE IN FEET

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10 5 0 5 10

20 10 0 20 60
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VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

UTLITY & LIGHTING PLAN SHEET 5

DRAWN BY	DATE
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XXX	621803
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SHEET NUMBER

15

SHEET 15 OF 33

I:\621803\F1 Crescent Connector\DESIGN\CADD FILES\621803-Utility_Lighting.dwg 10/29/2013 11:46 AM

STA. 30+16 LT
RAIL CROSSING ROAD R15-1 RET.
2 TRACKS R15-2P, M RET.
REPORT EMERGENCY OR PROBLEM TO 1-800-800-3490 CROSSING 247 727 B I-13, M N
RET.

STA. 29+87 RT
DO NOT STOP ON TRACKS R8-8 N
N

STA. 32+58 LT
R R W10-1 R
R

STA. 30+04 LT
REPORT EMERGENCY OR PROBLEM TO 1-800-800-3490 CROSSING 247 726 U I-13, M N
MOUNT TO SIGNAL CASE

STA. 32+72 RT
SPEED LIMIT 25 R2-1, 25 R&S
DO NOT BLOCK DRIVE VR-656 R
R

STA. 32+72 RT
SPEED LIMIT 25 R2-1, 25 S
N

STA. 32+65 LT
R R W10-1 N
N

STA. 33+36 LT
RAIL CROSSING ROAD R15-1 RET.
REPORT EMERGENCY OR PROBLEM TO 1-800-800-3490 CROSSING 247 726 U I-13, M N
MOUNT TO SIGNAL POST

APPROX. STA. 36+56 LT
R R W10-1 RET.
RET.

STA. 33+46 RT
ONLY R3-8b, M RET.
RET.

24" STOP BAR (TYP.)

EXISTING DOUBLE 4" YELLOW LINE

24" STOP BAR TO BE PLACED 8' IN ADVANCE OF ANY FLASHING LIGHT OR GATE (PER VTRANS STANDARD E-190) (TYP.)

EXISTING DOUBLE 4" YELLOW LINE

EXISTING DOUBLE 4" YELLOW LINE

STA. 33+20 RT
RAIL CROSSING ROAD R15-1 N
REPORT EMERGENCY OR PROBLEM TO 1-800-800-3490 CROSSING 247 726 U I-13, M N
MOUNT TO SIGNAL POST

30+00 PARK STREET 31+00 32+00 33+00 34+00 34+30 PARK STREET

4" DOTTED WHITE LINE

RIGHT ARROW (TYP.)

"ONLY" MARKING

12'

12'

100' MIN. TAPER LENGTH

4" WHITE LINE

STA. 29+71 RT
R R W10-1 R
BUS STOP R&S
R

STA. 29+71 RT
REPORT EMERGENCY OR PROBLEM TO 1-800-800-3490 CROSSING 247 727 B I-13, M N
ATTACH TO SIGNAL CASE

STA. 29+97 RT MOVED TO STA. 30+30 RT
DO NOT BLOCK DRIVE VR-656 R&S
R

STA. 30+62 RT
R R W10-1 R&S
R

STA. 32+85 RT
RAIL CROSSING ROAD R15-1 R
R

STA. 29+71 RT
RAIL CROSSING ROAD R15-1 RET.
2 TRACKS R15-2P, M RET.
REPORT EMERGENCY OR PROBLEM TO 1-800-800-3490 CROSSING 247 727 B I-13, M N
RET.

R R W10-1 N
BUS STOP S
N

STA. 30+30 RT
ONLY R3-8M N
DO NOT BLOCK DRIVE VR-656 S
N

R R W10-1 S
N

B' WIDE CROSSWALK

BIKE SYMBOL (TYP.)

11' (TYP.)

11' (TYP.)

4' (TYP.)

DOUBLE 4" YELLOW LINE (TYP.)

CRESCENT CONNECTOR

11' 30'

SEE NEXT SHEET

MATCH LINE STA 11+00

STA. 10+75 LT
M3-3 N
M6-5 N
M6-1R N
SOUTH VERMONT 2A
NORTH VERMONT 2A
M3-1 N
M6-5 N
M6-1R N
N N

NOTE: FOR ADDITIONAL SIGNING AT TRAFFIC SIGNALS, SEE TRAFFIC SIGNAL PLANS.

PLAN
20 10 0 20 60
SCALE IN FEET

REMOVAL OF EXISTING PAVEMENT MARKINGS
DOUBLE 4" YELLOW LINE STA 32+50 – STA 33+44

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PROFESSIONAL SEAL

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1	00-00-2011	INSERT TEXT	XXX	XXX

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

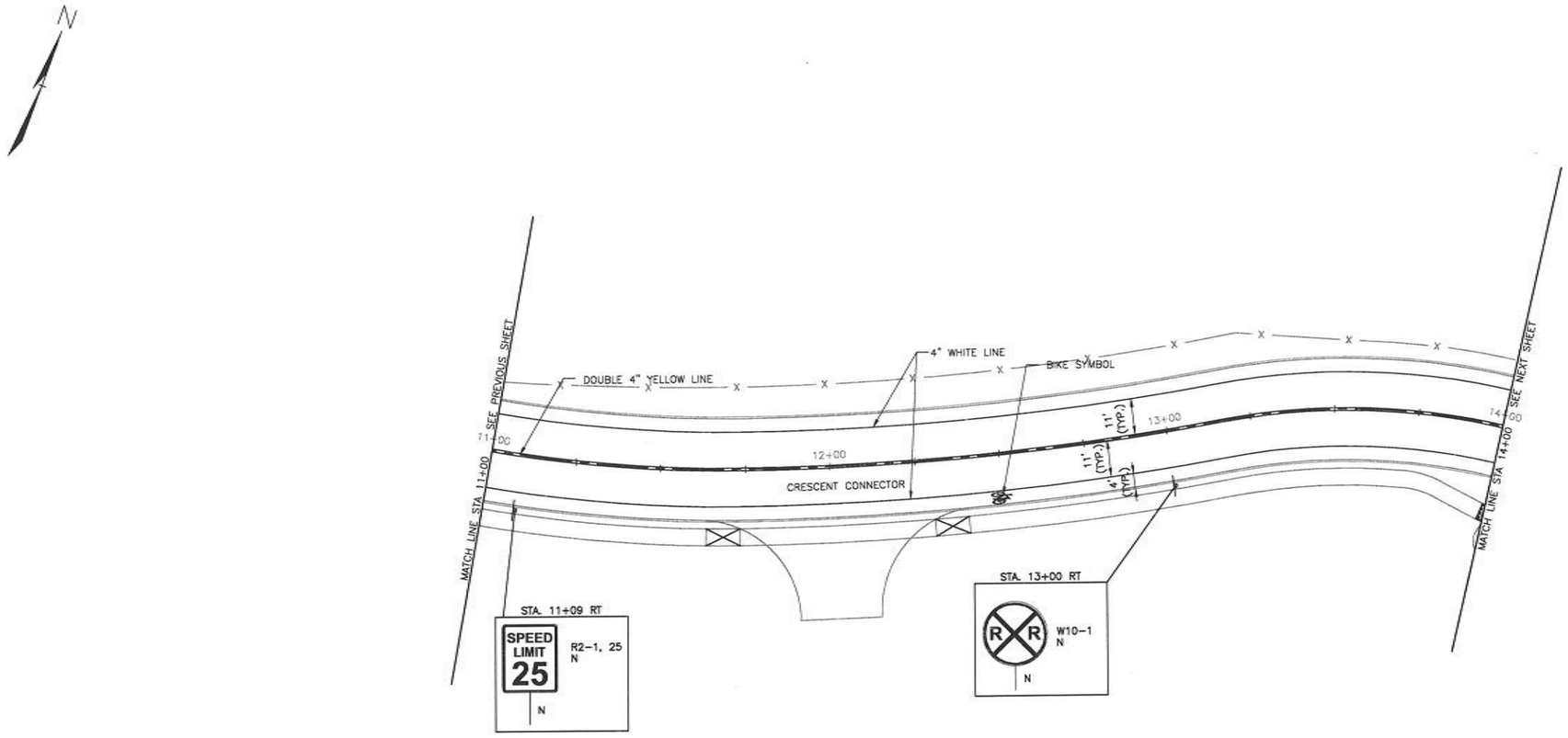
PAVEMENT MARKING & SIGNING PLAN SHEET 1

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XXX	621803
PROJ. ENG.	D&K ARCHIVE #
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16

SHEET 16 OF 33

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PLAN

20 10 0 20 60

SCALE IN FEET

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NOT FOR CONSTRUCTION PRE-PRELIMINARY PLANS

NO.	DATE	DESCRIPTION	BY	CK'D
1	00-00-2011	INSERT TEXT	XXX	XXX

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

PAVEMENT MARKING & SIGNING PLAN SHEET 2

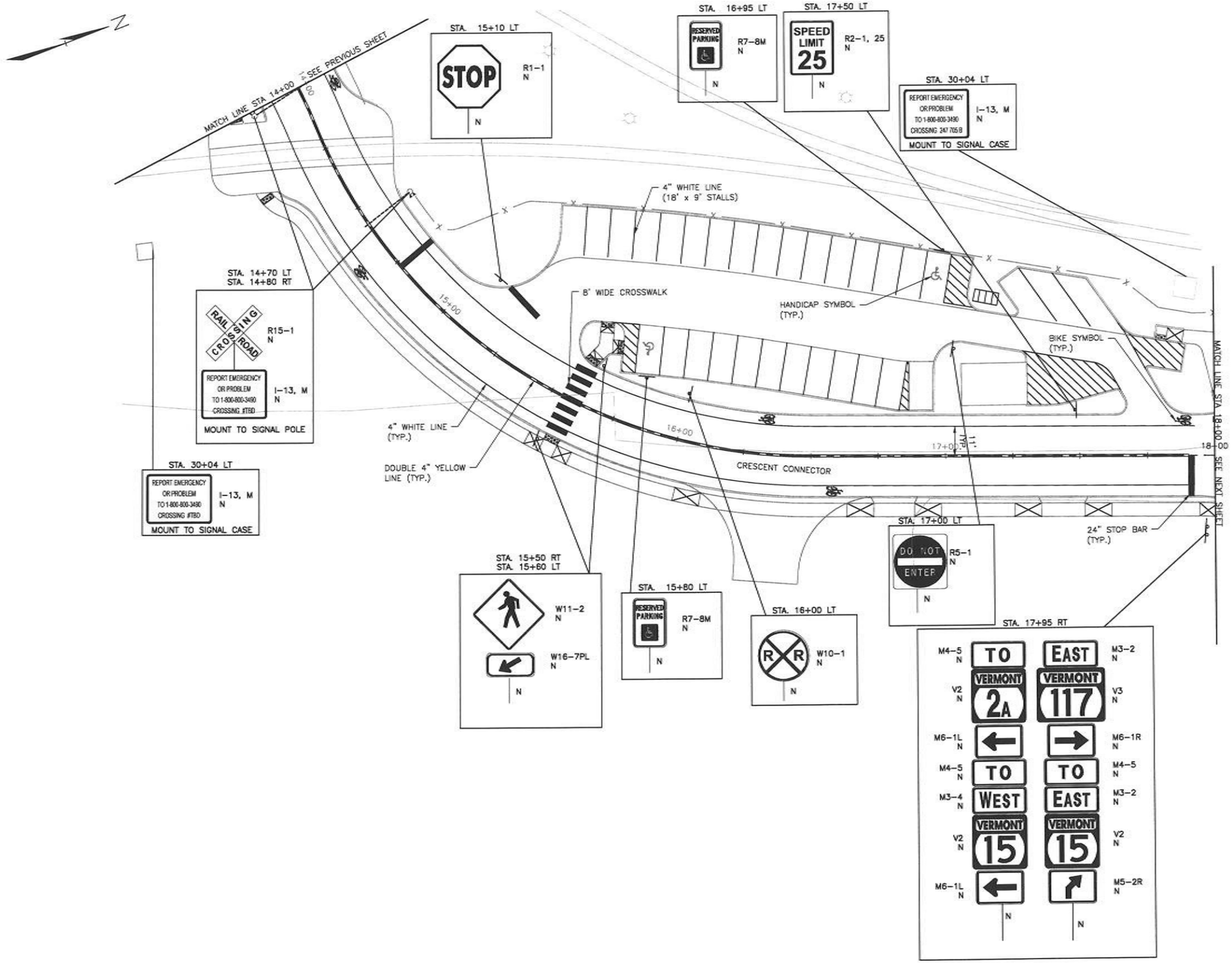
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MAM	OCT 2013
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XXX	621803
PROJ. ENG.	D&K ARCHIVE #
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SHEET NUMBER

17

SHEET 17 OF 33

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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION PRE-PRELIMINARY PLANS

NO.	DATE	DESCRIPTION	BY	CK'D
-	00-00-2011	INSERT TEXT	XXX	XXX

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION,
VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

PAVEMENT MARKING & SIGNING PLAN SHEET 3

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SHEET NUMBER

18

SHEET 18 OF 33

I:\621803\Crescent Connector\DESIGN\CADD FILES\621803-pm.dwg 10/29/2013 11:46 AM

N

STA. 50+47 LT
RAIL ROAD CROSSING R15-1 RET.
DO NOT STOP ON TRACKS R8-8 RET.
REPORT EMERGENCY OR PROBLEM TO 1-800-800-3480 CROSSING 247 705 B I-13, M N
MOUNT TO SIGNAL POLE

STA. 50+10 RT
DO NOT STOP ON TRACKS R8-8 N

STA. 50+11 RT
RAIL ROAD CROSSING R15-1 RET.
REPORT EMERGENCY OR PROBLEM TO 1-800-800-3480 CROSSING 247 705 B I-13, M N

STA. 18+87 LT
MAPLE ST D3-1 R
90°
RAILROAD ST D3-1 R
90°
STOP R1-1 R

STA. 51+29 LT
DO NOT BLOCK INTERSECTION R10-7 R&S
R&S

STA. 51+66 LT
LANE ENDS R3-16S
BUS STOP S

STA. 51+86 LT
LANE ENDS R3-16 R&S
BUS STOP R&S
R

STA. 52+90 LT
R R W10-1 N
N

STA. 52+90 LT
R R W10-1 R
R

STA. 53+70 LT
ONLY R3-8M N
N

MATCH LINE STA 19+00 SEE NEXT SHEET

24" STOP BAR (TYP.)

4" WHITE LINE

4" DOTTED WHITE LINE

BIKE MARKING (TYP.)

EXISTING CROSSWALK

EXISTING 4" WHITE LINE

"ONLY" MARKING (TYP.)

MAPLE STREET

50+00 51+00 52+00 53+00 54+00 55+00

DOUBLE 4" YELLOW LINE

DOUBLE 4" YELLOW LINE

8' CROSSWALK (TYP.)

LEFT ARROW (TYP.)

8" YELLOW LINE @ 45°, 5' O.C.

EXISTING DOUBLE YELLOW LINE

STA. 50+67 RT
LANE AHEAD R3-16 RET.
RET.

STA. 18+21 LT
117 M1-5 R
M6-4 R
R

MATCH LINE STA. 18+00 SEE PREVIOUS SHEET

STA. 51+37 RT
RIGHT LANE ONLY R3-17 R&S
R7-9A R&S
R

STA. 51+50 RT
RIGHT LANE ONLY R3-17 S
R7-9A S
N

STA. 54+03 RT RELOCATE TO STA. 54+65 RT
W11-2 R&S
W16-7PL R&S
R

W11-2 S
W16-7PL S
N
STA. 54+65 RT

STA. 54+56 RT
STOP R1-1 RET.
RET.

APPROX. STA. 48+15 RT
R R W10-1 RET.
RET. (MOUNTED TO LIGHT POLE)

PLAN
20 10 0 20 60
SCALE IN FEET

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1	00-00-2011	INSERT TEXT	XXX	XXX

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION,
VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

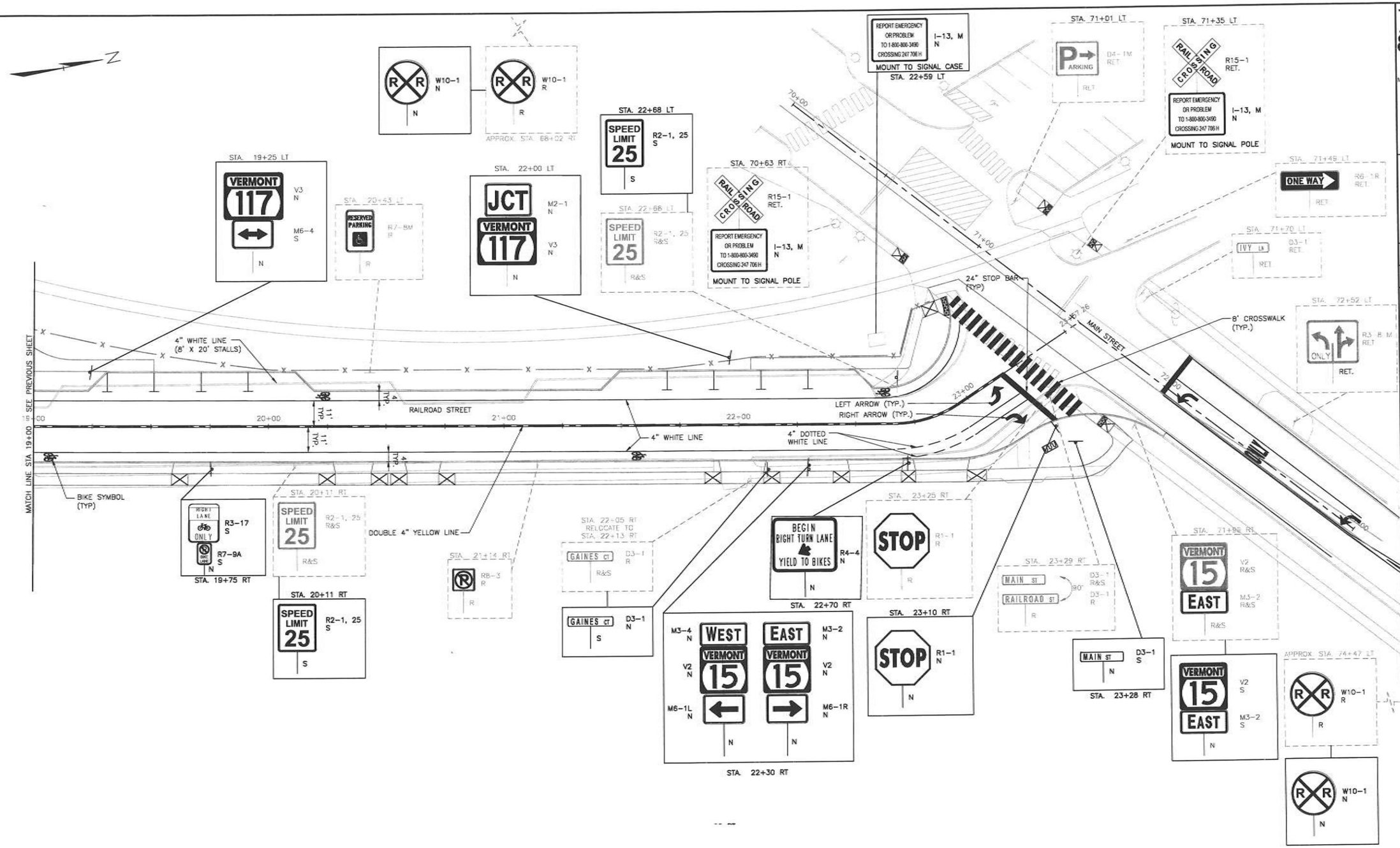
PAVEMENT MARKING & SIGNING PLAN SHEET 4

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SHEET NUMBER

19

SHEET 19 OF 33



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NO.	DATE	DESCRIPTION	BY	CK'D
1	00-00-2011	INSERT TEXT	XXX	XXX

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION,
VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

PAVEMENT MARKING & SIGNING PLAN SHEET 5

DRAWN BY	DATE
MAM	OCT 2013
CHECKED BY	D&K PROJECT #
XXX	621803
PROJ. ENG.	D&K ARCHIVE #
EPD	

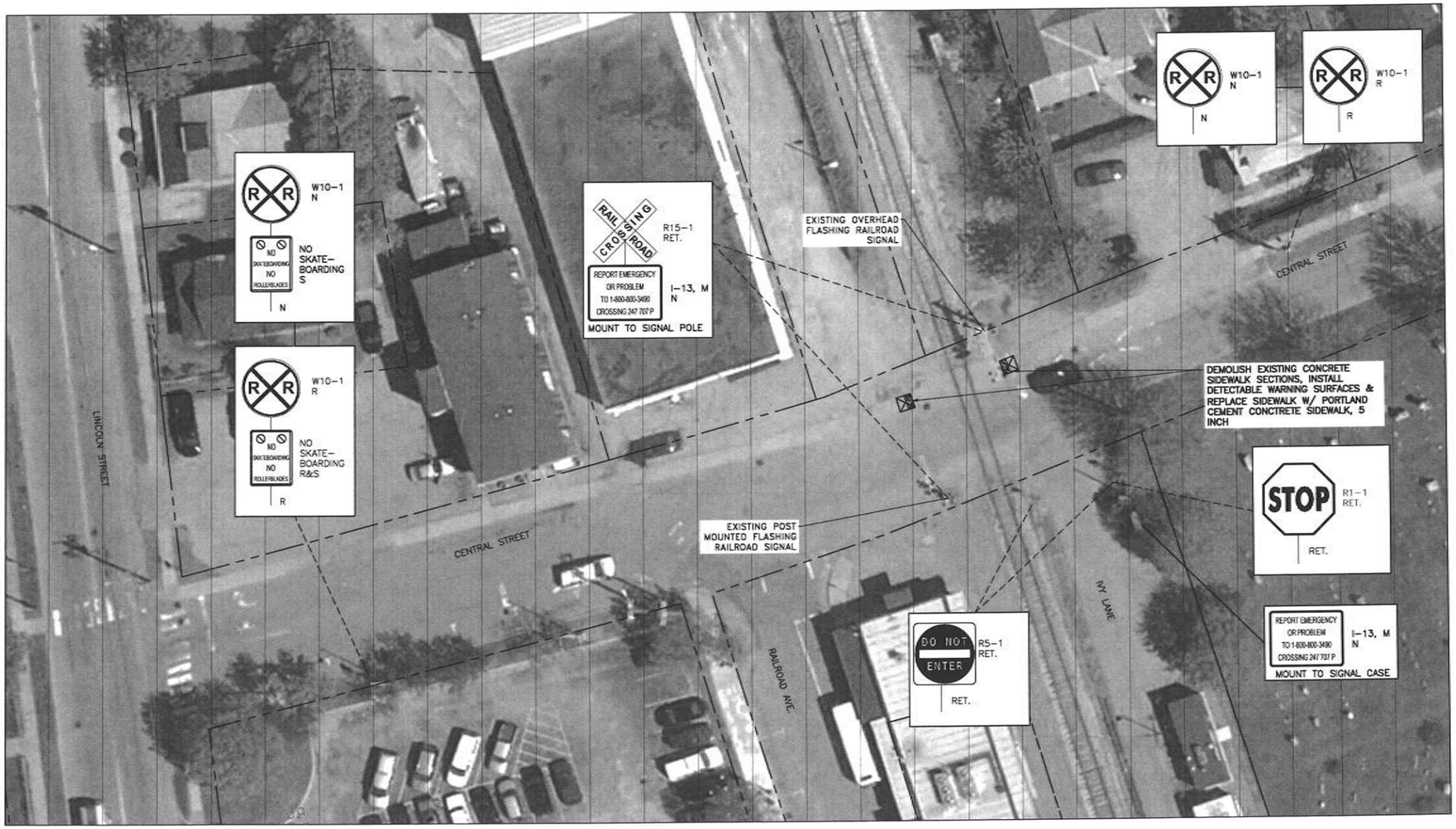
SHEET NUMBER

20

SHEET 20 OF 33

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N



20 10 0 20 60
SCALE IN FEET

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PROFESSIONAL SEAL

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NO.	DATE	DESCRIPTION	BY	CK'D

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION,
VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

PAVEMENT MARKING & SIGNING PLAN SHEET 6

DRAWN BY	DATE
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XXX	621803
PROJ. ENG.	D&K ARCHIVE #
EPD	

SHEET NUMBER

21

SHEET 21 OF 33

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STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILE MARKER, STATION OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS			NEW AND SALVAGED SIGNS				EXIST POST		NEW SIGN POSTS																			REMARKS	SIGN DETAIL (SHS = STANDARD HIGHWAY SIGNS BOOK)	
		EACH	WIDTH (in)	HEIGHT (in)	"A"	"B"	SALV SIGN	SALV TIS	RETAIN	SALVAGE	NO OF POST	FLANGED CHANNEL (LB/FT)			SQUARE STEEL (in) (LB/FT)			ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) (LB/FT)			FOUNDATION	TUBULAR STEEL Ø (in) (LB/FT)				W-SHAPE STEEL FTG. SIZE		WEIGHT	POST SIZE	SIGN FRAME REQUIRED		DETAIL ON SHEET NUMBER	STANDARD SHEET NUMBER
												1.12	2.00	3.00	1.88	2.42	3.35			3.00	4.00	4.00 MOD 1.30	1.70	1.70		3.00	3.50	4.00	5.00 7.60	9.00	10.80	14.60	24"	30"					
OPTION ITEMS																																					
STA. 29+97 RT	DO NOT BLOCK DRIVE	1																																R&S MOVE TO STA. 30+30 RT		
STA. 30+30 RT	ONLY DO NOT BLOCK DRIVE	1 1	30	30	6.25		1				1						X		X															R3-8 M VR-656, RELOCATED FROM STA. 29+97 RT		SHS
STA. 30+92 RT	R X R	1																																REMOVE		
STA. 31+00 RT	R BEGIN	1 1	24 24	24 12	4.00 2.00						1						X		X															R8-3 M4-14		SHS SHS
STA. 32+72 RT	SPEED LIMIT 25 DO NOT BLOCK DRIVE	1 1																																R&S, R2-1 REMOVE		
STA. 32+72 RT	SPEED LIMIT 25	1					1				1						X		X															R2-1		
STA. 32+85 RT	RAIL ROAD CROSSING	1																																REMOVE		
STA. 33+20 RT	RAIL ROAD CROSSING	1	48	9	6.00																													R2-1, MOUNT ON RAIL SIGNAL POLE		SHS
STA. 10+75 LT	SOUTH VERMONT 2A NORTH VERMONT 2A	2 2 2	24 24 21	12 24 15	4 8 4.375						2						X		X														X	M3-3 V2 M6-1L M3-1 V2 M6-1R		SHS E136B SHS SHS E136B SHS
STA. 11+09 RT	SPEED LIMIT 25	1	24	30	5.00						1						X		X															R2-1		
STA. 14+70 LT	RAIL ROAD CROSSING	1	48	9	6.00																													R2-1, MOUNT ON RAIL SIGNAL POLE		SHS
STA. 14+80 RT	RAIL ROAD CROSSING	1	48	9	6.00																													R2-1, MOUNT ON RAIL SIGNAL POLE		SHS
STA. 15+10 LT	STOP	1	30	30	6.25						1						X		X															R1-1		SHS
												FT	FT	FT	FT	FT 105	FT		EA	LB	LB	LB		LB	LB	LB	LB								
	TOTALS				SF 57.875	SF	EA. 2	SF				FT			FT 105					LB			EA.	LB				EA.	EA.	LB					

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE VTRANS "SIGN POST DESIGN GUIDELINE."

PROJECT NAME:
PROJECT NUMBER:
FILE NAME:
PROJECT MANAGER:
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PROFESSIONAL SEAL

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NO.	DATE	DESCRIPTION	BY	CK'D
1	00--00--2011	INSERT TEXT	XXX	XXX

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

TRAFFIC SIGN SUMMARY SHEET 1
SHEET 1

DRAWN BY	DATE
EBS	OCT 2013
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XXX	621803
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SHEET NUMBER

22

SHEET 22 OF 33

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STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILE MARKER, STATION OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS: EACH	SIGN DIMENSIONS: WIDTH (in)	SIGN DIMENSIONS: HEIGHT (in)	NEW AND SALVAGED SIGNS: "A"	"B"	SALV SIGN	SALV TIS	EXIST POST: RETAIN	EXIST POST: SALVAGE	NEW SIGN POSTS: NO OF POST	FLANGED CHANNEL (LB/FT): 1.12	2.00	3.00	SQUARE STEEL (in) (LB/FT): 1.88	1.75 2.00 2.50	2.42	3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) (LB/FT): 1.30	3.00	4.00	4.00 MOD	1.70	1.70	FOUNDATION	TUBULAR STEEL Ø (in) (LB/FT): 7.60	3.00	3.50	4.00	5.00	9.00	10.80	14.60	W-SHAPE STEEL FTG. SIZE: 24"	30"	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL: DETAIL ON SHEET NUMBER	STANDARD SHEET NUMBER
OPTION ITEMS																																										
STA. 15+50 RT		1	30	30	6.25						1					X		X																			W11-2 W16-7PL		SHS SHS
		1	24	12	2																																				
STA. 15+60 LT		1	30	30	6.25						1					X		X																							W11-2 W16-7PL		SHS SHS
		1	24	12	2																																				
STA. 15+80 LT STA. 16+95 LT		1	12	18	1.5																																		R7-8M R7-8M		SHS SHS
		1	12	18	1.5																																				
STA. 17+00 LT		1	30	30	6.25						1					X		X																							R5-1		SHS
STA. 17+50 LT	SPEED LIMIT 25	1	24	30	5.00						1					X		X																							R2-1		SHS
STA. 17+95 RT	TO VERMONT 2A EAST VERMONT 117	2	24	12	4.00						2					X		X																						X	M4-5 / M3-2		SHS/SHS
		2	24	24 / 30	9.00																																			V2/V2		E136B/E136B
		2	21	15	4.375																																			M6-1 (L) / M5-1 (R)		SHS/SHS
	TO WEST VERMONT 15 TO EAST VERMONT 15	2	24	12	4.00																																			M4-5 (2)		SHS/SHS
		2	24	12	4.00																																			M3-4 / M3-2		SHS/SHS
		2	24	24	8.00																																			M1-5 (2)		E136B/E136B
		2	21	15	4.375																																			M6-1 (L) / M5-2 (R)		SHS/SHS
STA. 50+10 RT	DO NOT STOP ON TRACKS	1	24	30	5.00						1					X		X																							R8-8		SHS
STA.18+21 LT	117	1																																						REMOVE		
		1																																						REMOVE		
STA. 18+87 LT	STOP MAPLE ST RAILROAD ST	1																																						REMOVE		
		1																																						REMOVE		
		1																																						REMOVE		
STA. 51+29 LT	DO NOT BLOCK INTERSECTION	1																																						R10-7, REMOVE		
STA. 51+37 RT	RIGHT LANE ONLY BIKE LANE	1																																						R7-8M , REMOVE AND SALVAGE. MOVE TO STA. 51+50 RT		
		1																																						R7-8a, REMOVE AND SALVAGE. MOVE TO STA. 51+50 RT		
STA. 51+50 RT	RIGHT LANE ONLY BIKE LANE	1				1																																		R7-8M , MOVED FROM STA. 51+37 RT		
		1				1					1					X		X																						R7-8a, MOVED FROM STA. 51+37 RT		
STA. 51+66 LT	BIKE LANE ENDS BUS STOP	1																																						R3-16 , REMOVE AND SALVAGE. MOVE TO STA. 51+66 LT		
		1																																						BUS STOP, REMOVE AND SALVAGE. MOVE TO STA. 51+66 LT		
												FT	FT	FT	FT	FT 135	FT		EA	LB	LB	LB		LB	LB	LB	LB														
TOTALS					SF 73.5	SF	EA. 4	SF				FT			FT 135					LB		EA.		LB				EA.	EA.	LB													

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE VTRANS "SIGN POST DESIGN GUIDELINE."

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PROJECT NUMBER:
FILE NAME:
PROJECT MANAGER:
DESIGNED BY:
TRAFFIC SIGN SUMMARY SHEET
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–	00-00-2011	INSERT TEXT	XXX	XXX

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

TRAFFIC SIGN SUMMARY SHEET 2
SHEET 2

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EBS	OCT 2013
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XXX	621803
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SHEET NUMBER

23

SHEET 23 OF 33

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STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILE MARKER, STATION OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS			NEW AND SALVAGED SIGNS				EXIST POST		NEW SIGN POSTS																							REMARKS	SIGN DETAIL	
		EACH	WIDTH (in)	HEIGHT (in)	"A"	"B"	SALV SIGN	SALV TIS	RETAIN	SALVAGE	NO. OF POST	FLANGED CHANNEL (LB/FT) 1.12	FLANGED CHANNEL (LB/FT) 2.00	FLANGED CHANNEL (LB/FT) 3.00	SQUARE STEEL (in) 1.75 (LB/FT) 1.88	SQUARE STEEL (in) 2.00 (LB/FT) 2.42	SQUARE STEEL (in) 2.50 (LB/FT) 3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.00 (LB/FT) 1.30	TUBULAR ALUMINUM Ø (in) 4.00 (LB/FT) 1.70	TUBULAR ALUMINUM Ø (in) 4.00 MOD (LB/FT) 1.70	FOUNDATION	TUBULAR STEEL Ø (in) 3.00 (LB/FT) 7.60	TUBULAR STEEL Ø (in) 3.50 (LB/FT) 9.00	TUBULAR STEEL Ø (in) 4.00 (LB/FT) 10.80	TUBULAR STEEL Ø (in) 5.00 (LB/FT) 14.60	W-SHAPE STEEL FTG. SIZE 24"	W-SHAPE STEEL FTG. SIZE 30"	W-SHAPE STEEL WEIGHT	W-SHAPE STEEL POST SIZE	SIGN FRAME REQUIRED		DETAIL ON SHEET NUMBER	STANDARD SHEET NUMBER
STA. 51+66 LT	A.S.E. ENDS / BUS STOP	1 1					1 1				1					X		X															R3-16 , MOVED FROM STA. 51+66 LT BUS STOP, MOVED FROM STA. 51+66 LT		
STA. 52+90 LT	R R	1																														REMOVE		
STA. 53+70 LT	ONLY	1	24	30	5.00						1					X		X															R3-8		SHS
STA. 54+03 RT		1 1	30 24	30 12	6.25 2						1					X		X															W11-2, REMOVE AND SALVAGED. MOVE TO STA. 54+65 RT W16-7PL, REMOVE AND SALVAGED. MOVE TO STA. 54+65 RT		SHS SHS
STA. 54+65 RT		1 1	30 24	30 12	6.25 2						1					X		X															W11-2 , RELOCATED FROM STA. 54+03 RT W16-7PL , RELOCATED FROM STA. 54+03 RT		SHS
STA. 19+25 LT	VERMONT 117		24 21	24 15	4.00 2.187						1					X		X															V3 M6-4		E136B SHS
STA. 19+75 RT	RIGHT LANE ONLY / BIKE LANE	1 1	12 12	18 6	1.5 0.5						1					X		X															R7-8M R7-8a		
STA. 20+11 RT	SPEED LIMIT 25	1									1					X		X															R2-1, REMOVE AND SALVAGE. MOVE TO STA. 20+11 RT		
STA. 20+11 RT	SPEED LIMIT 25	1					1				1					X		X															R2-1 , MOVED FROM STA. 20+11 RT		SHS
STA. 20+43 LT	RESERVED PARKING	1	12	18	1.5						1					X		X															R7-8M		
STA. 20+43 LT																																	R7-8M		
STA. 22+00 LT	JCT VERMONT 117	1 1	21 24	15 24	2.187 2.00						1					X		X															M2-1 V3		SHS E136B
STA. 22+05 RT	GAINES CT																																R7-8M		
STA. 22+13 RT	GAINES CT	1	30	12	2.50						1					X		X															R7-8M	X	E136B/E136B
STA. 22+30 RT	WEST VERMONT 15 / EAST VERMONT 15	2 2 2	24 24 21	12 24 15	4.00 8.00 4.375						2					X		X													X		M3-4 / M3-2 V2/V2 M6-1 (L) / M6-1 (R)		SHS/SHS SHS/SHS
TOTALS					SF 55.249	SF	EA. 1	SF				FT	FT	FT	FT	150 FT	FT		EA.	LB	LB	LB		LB	LB	LB	LB	EA.	EA.	LB					
																150																				

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE VTRANS "SIGN POST DESIGN GUIDELINE."

PROJECT NAME:
PROJECT NUMBER:
FILE NAME:
PROJECT MANAGER:
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TRAFFIC SIGN SUMMARY SHEET
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PROFESSIONAL SEAL

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NO.	DATE	DESCRIPTION	BY	CK'D
-	00-00-2011	INSERT TEXT	XXX	XXX

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION,
VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

TRAFFIC SIGN SUMMARY SHEET 3
SHEET 3

DRAWN BY	DATE
EBS	OCT 2013
CHECKED BY	D&K PROJECT #
XXX	621803
PROJ. ENG.	D&K ARCHIVE #
EPD	

SHEET NUMBER

24

SHEET 24 OF 33

I:\621803\Fl_Crescent Connector\DESIGN\CADD FILES\621803-pm.dwg 10/29/2013 11:49 AM

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILE MARKER, STATION OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS			NEW AND SALVAGED SIGNS				EXIST POST		NEW SIGN POSTS																								REMARKS	SIGN DETAIL	
		EACH	WIDTH (in)	HEIGHT (in)	"A"	"B"	SALV SIGN	SALV TIS	RETAIN	SALVAGE	NO. OF POST	FLANGED CHANNEL (LB/FT)			SQUARE STEEL (in) (LB/FT)			ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) (LB/FT)			FOUNDATION	TUBULAR STEEL Ø (in) (LB/FT)				W-SHAPE STEEL FTG. SIZE		WEIGHT	POST SIZE	SIGN FRAME REQUIRED			DETAIL ON SHEET NUMBER	STANDARD SHEET NUMBER
												1.12	2.00	3.00	1.88	2.42	3.35			1.30	1.70	1.70		7.60	9.00	10.80	14.60	24"	30"							
STA. 22+68 LT	SPEED LIMIT 25	1																															R2-1, REMOVE AND SALVAGE. MOVE TO STA. 22+638 LT		
STA. 22+68 LT	SPEED LIMIT 25	1					1				1					X		X															R2-1 , MOVED FROM STA. 22+68 LT		
STA. 22+70 RT	BEGIN RIGHT TURN LANE YIELD TO BIKES	1	12	18	1.5						1					X		X															R4-4		SHS
STA. 23+10 RT	STOP	1					1				1					X		X															R1-1 , MOVED FROM STA. 23+25 RT		
STA. 23+25 RT	STOP	1																															R1-1, REMOVE AND SALVAGE. MOVE TO STA. 23+10 RT		
STA. 23+29 RT	MAIN ST / RAILROAD ST	1 1																															D3-1, REMOVE AND SALVAGE. MOVE TO STA. 23+28 RT D3-1, REMOVE		
STA. 23+28 RT	MAIN ST	1					1				1					X		X															D3-1, RELOCATED FROM STA. 23+29 RT		
STA. 71+99 RT	VERMONT 15 EAST	1 1																															V2, REMOVE AND SALVAGE, MOVE TO 71+99 RT M3-2, REMOVE AND SALVAGE, MOVE TO 71+99 RT		
STA. 71+99 RT	VERMONT 15 EAST	1 1					1 1				1					X		X															V2, MOVED FROM 71+99 RT M3-2, MOVED FROM 71+99 RT		
												FT	FT	FT	FT	FT 75	FT		EA	LB	LB	LB		LB	LB	LB	LB									
	TOTALS				SF 1.50	SF	EA. 5	SF								FT 75				LB		EA.		LB				EA.	EA.	LB						
	TSS SHEET 1				57.875		2									105																				
	TSS SHEET 2				73.5		4									135																				
	TSS SHEET 3				55.249		1									150																				
	TSS SHEET 4				1.50		5									75																				
												FT	FT	FT	FT	FT	FT		EA	LB	LB	LB		LB	LB	LB	LB									
	TOTALS				SF 188.124	SF	EA. 12	SF								FT 465				LB		EA.		LB				EA.	EA.	LB						

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE VTRANS "SIGN POST DESIGN GUIDELINE."

PROJECT NAME:
PROJECT NUMBER:
FILE NAME:
PROJECT MANAGER:
DESIGNED BY:
TRAFFIC SIGN SUMMARY SHEET
PLOT DATE:
DRAWN BY:
CHECKED BY:
SHEET OF

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PROFESSIONAL SEAL

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NO.	DATE	DESCRIPTION	BY	CK'D
1	00--00--2011	INSERT TEXT	XXX	XXX

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

TRAFFIC SIGN SUMMARY SHEET 4
SHEET 4

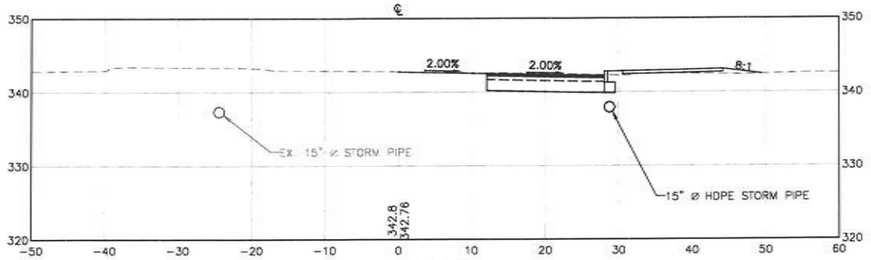
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EBS	OCT 2013
CHECKED BY	D&K PROJECT #
XXX	621803
PROJ. ENG.	D&K ARCHIVE #
EPD	

SHEET NUMBER

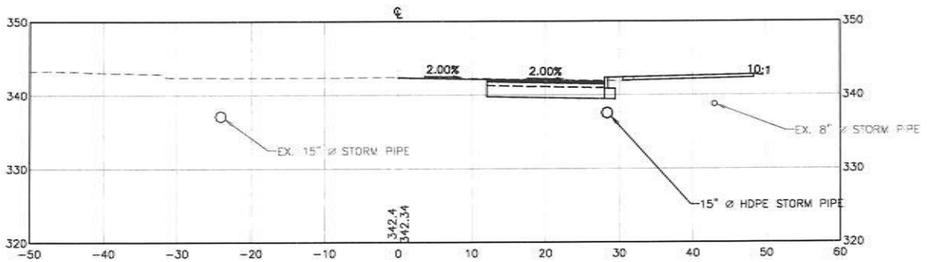
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SHEET 25 OF 33

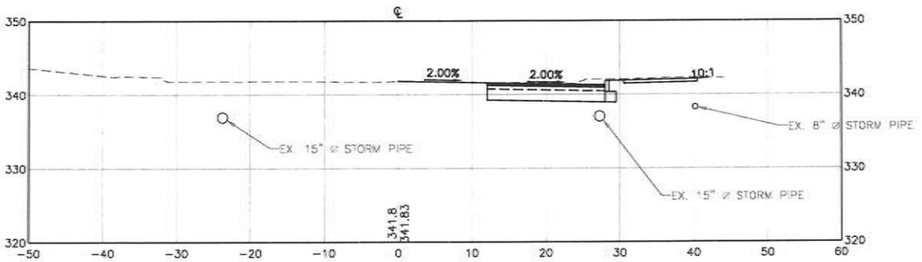
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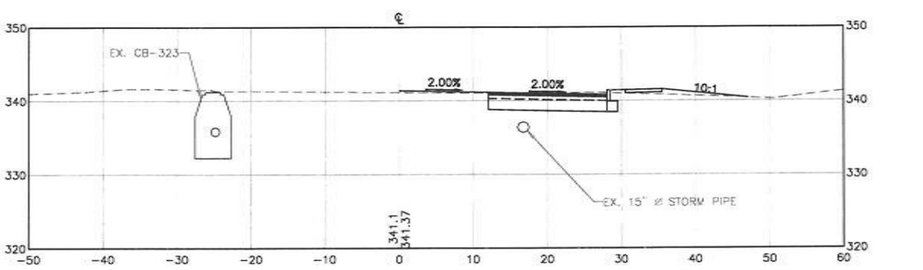
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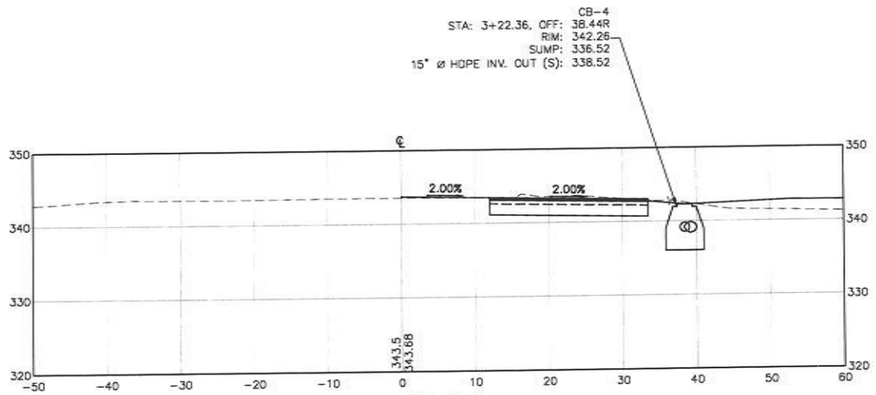
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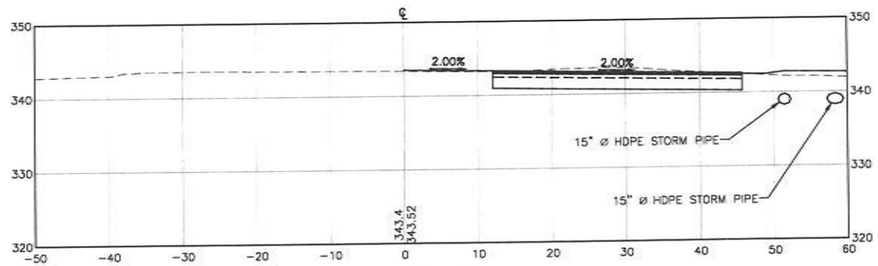
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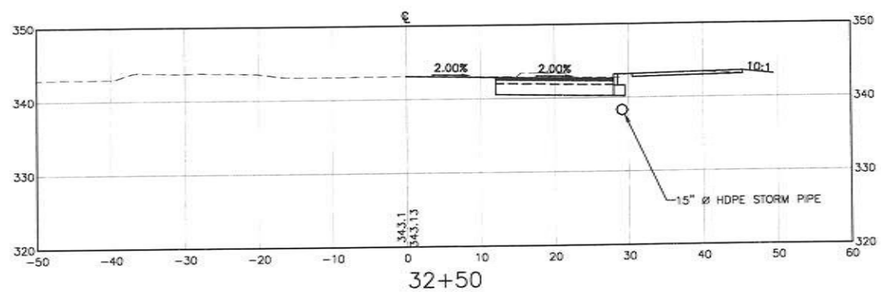
30+50



33+21



33+00



32+50

PARK STREET SECTIONS

10 5 0 10 30

SCALE IN FEET

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PROFESSIONAL SEAL

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NO.	DATE	DESCRIPTION	BY	CK'D

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

CROSS SECTIONS SHEET 1

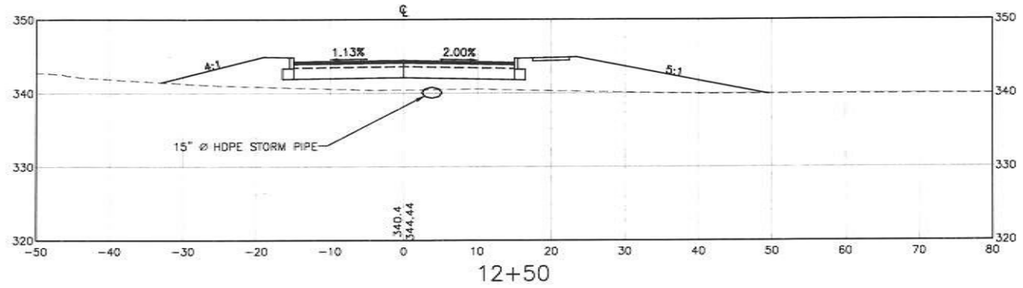
DRAWN BY	DATE
MAM	OCT 2013
CHECKED BY	D&K PROJECT #
XXX	621803
PROJ. ENG.	D&K ARCHIVE #
EPD	

SHEET NUMBER

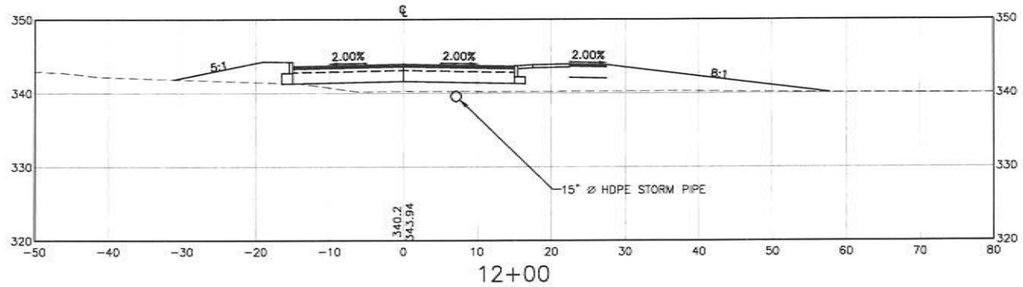
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SHEET 26 OF 33

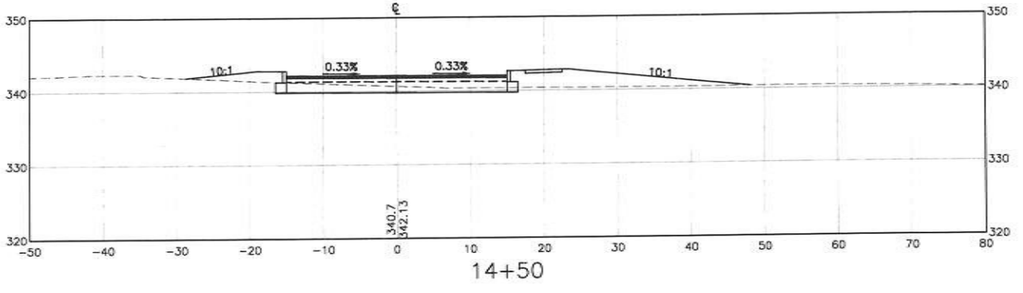
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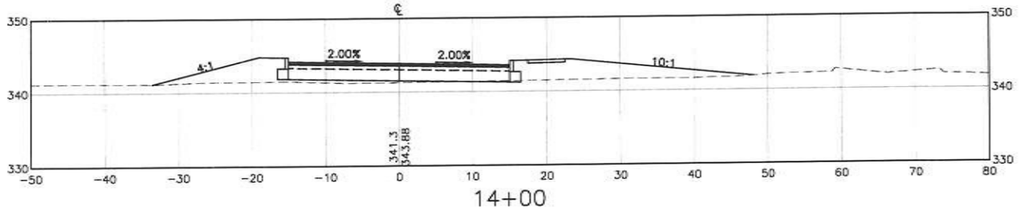
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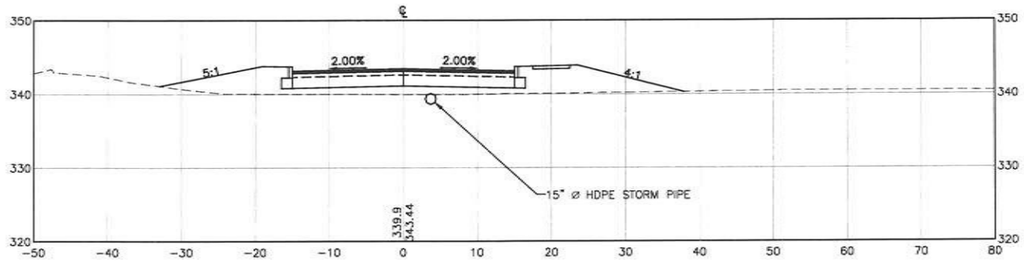
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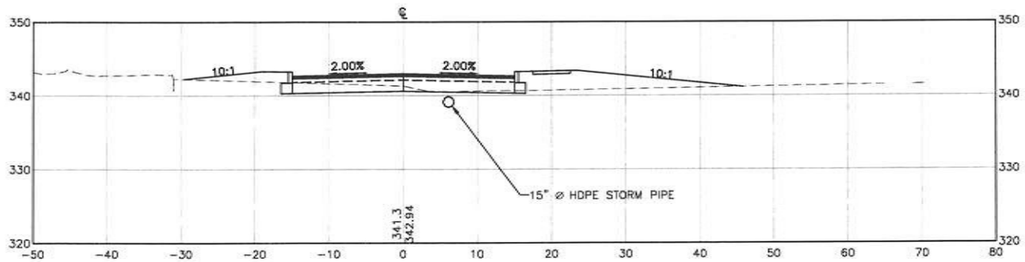
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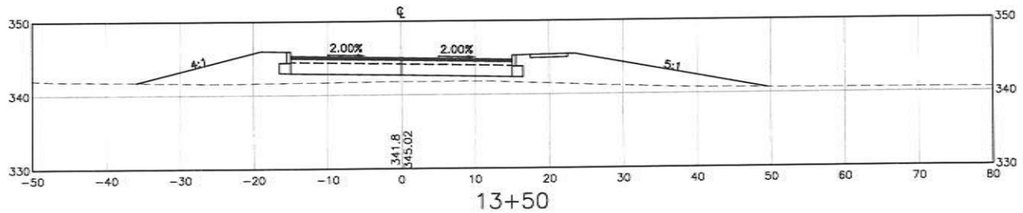
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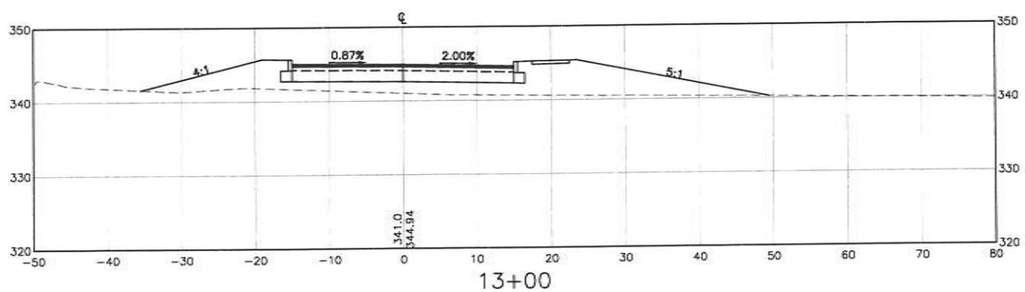
11+50



11+00



13+50



13+00

CRESCENT CONNECTOR SECTIONS

10 5 0 10 30

SCALE IN FEET

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PROFESSIONAL SEAL

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NO.	DATE	DESCRIPTION	BY	CK'D

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

CROSS SECTIONS SHEET 2

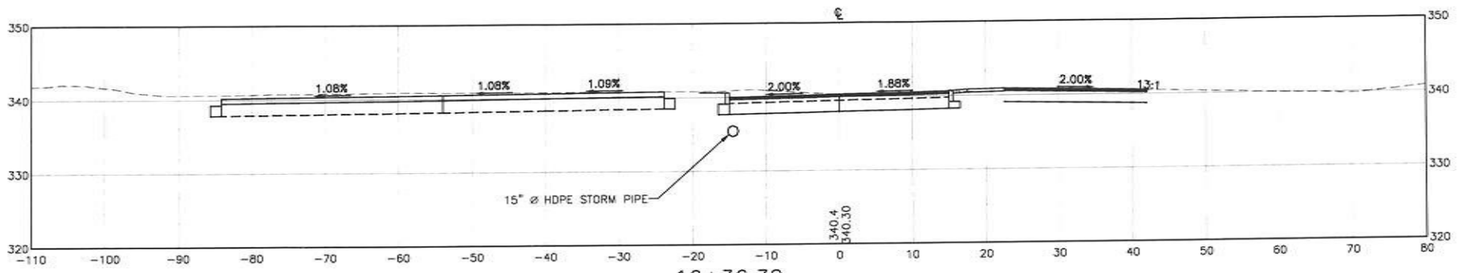
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XXX	621803
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EPD	

SHEET NUMBER

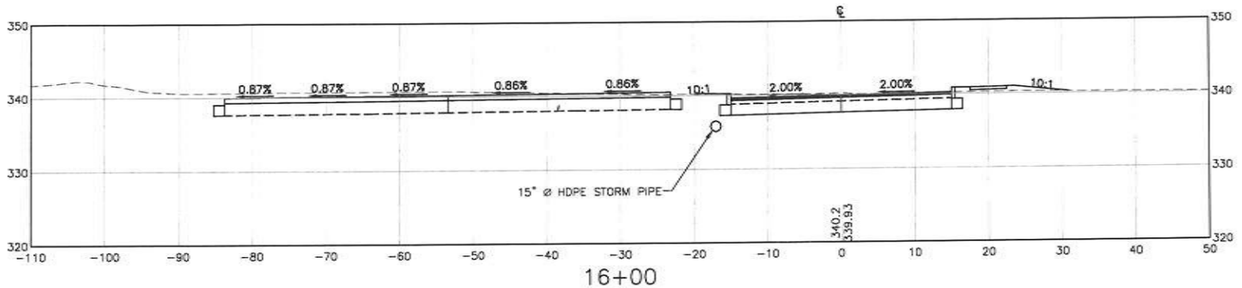
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SHEET 27 OF 33

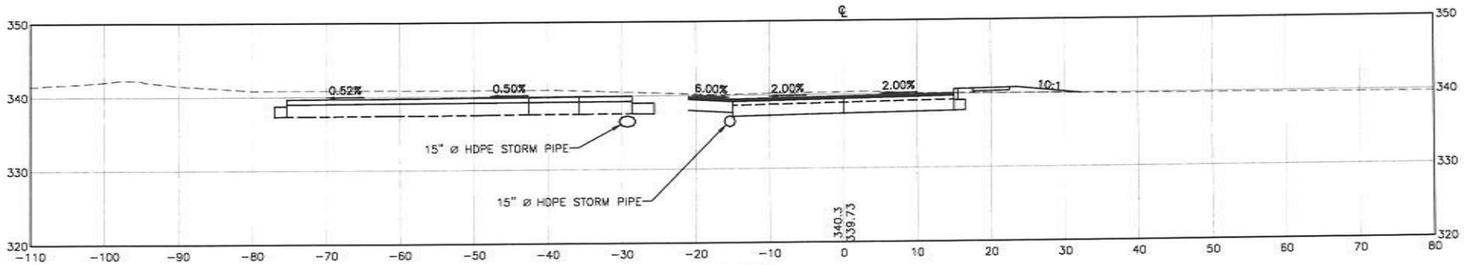
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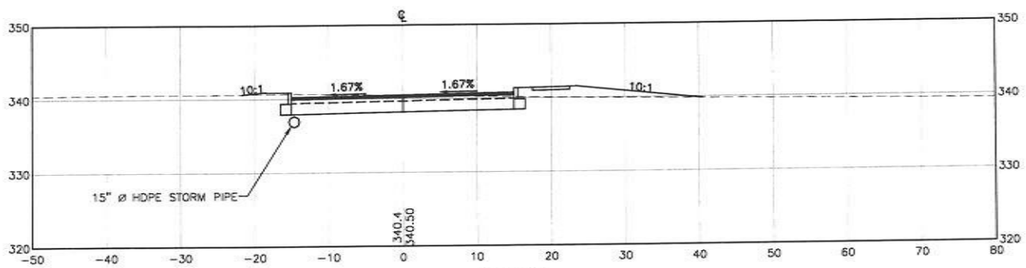
16+36.32



16+00



15+50



15+00

CRESCENT CONNECTOR SECTIONS

10 5 0 10 30

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VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION,
VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

CROSS SECTIONS SHEET 3

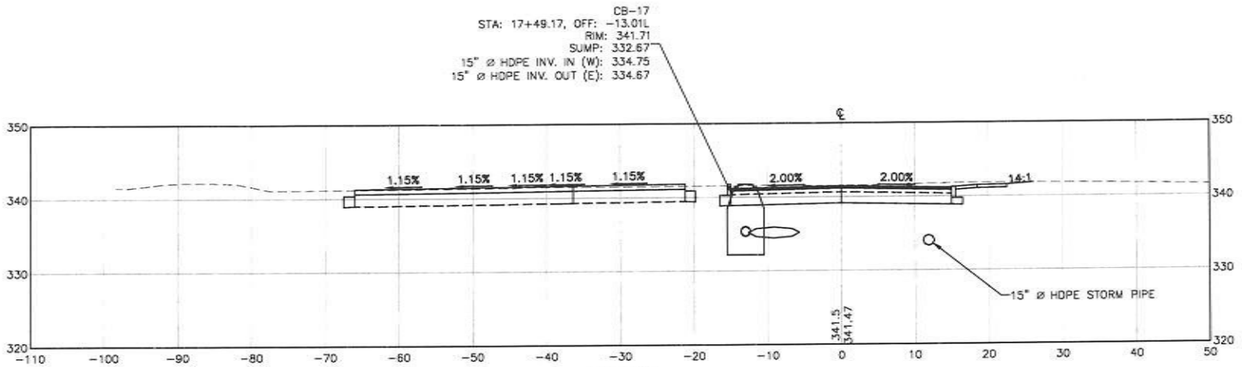
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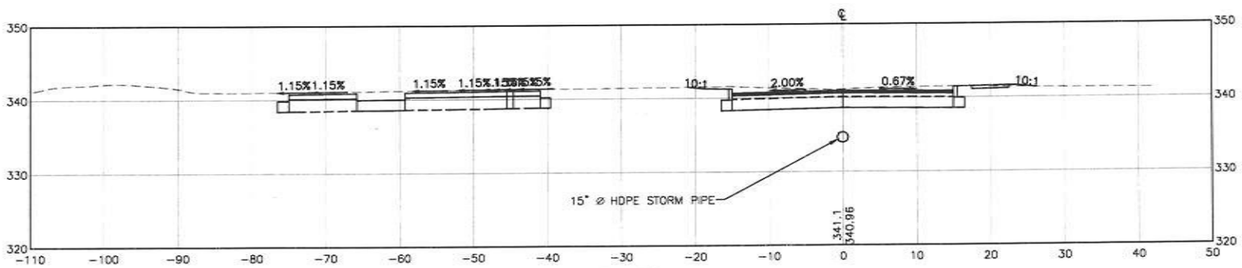
28

SHEET 28 OF 33

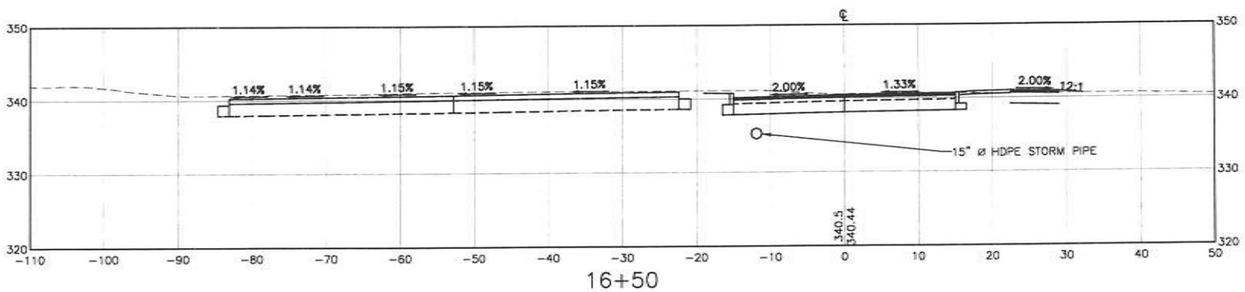
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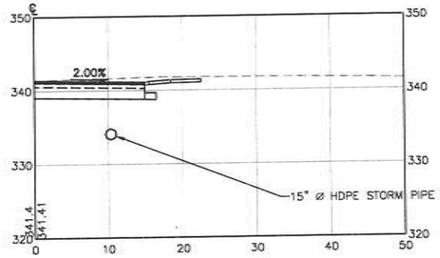
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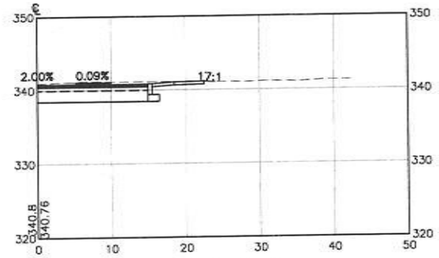
17+00



16+50



17+43.79



16+81.03

CRESCENT CONNECTOR SECTIONS

10 5 0 10 30

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NO.	DATE	DESCRIPTION	BY	CK'D

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

CROSS SECTIONS SHEET 4

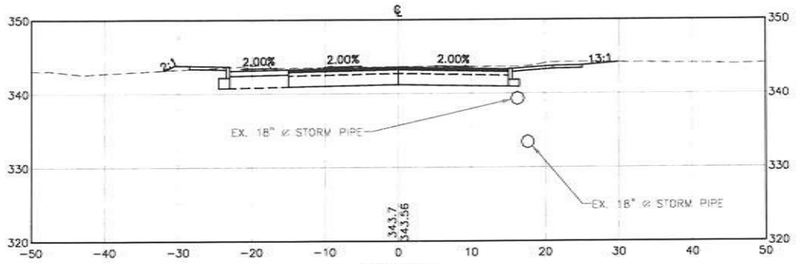
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XXX	621803
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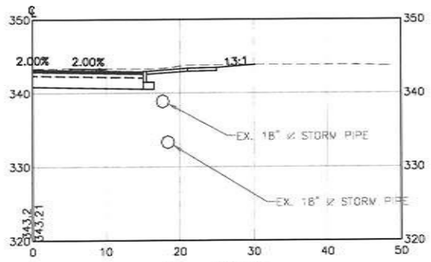
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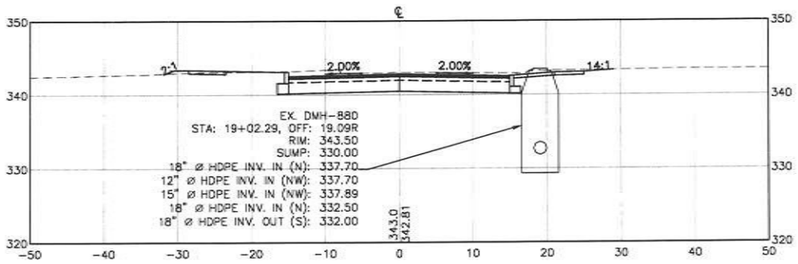
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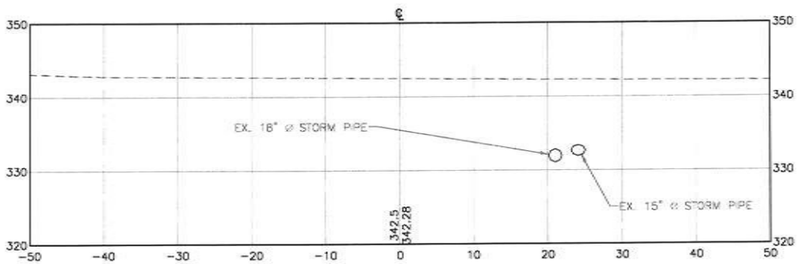
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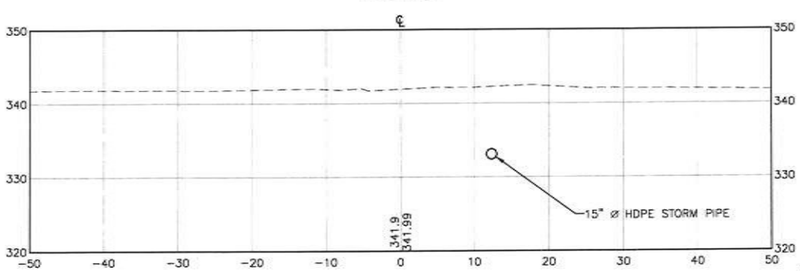
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19+00



18+50

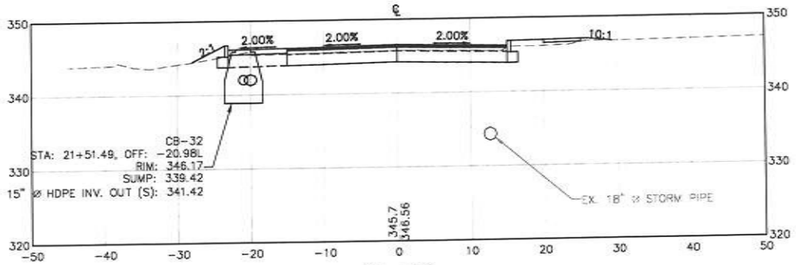


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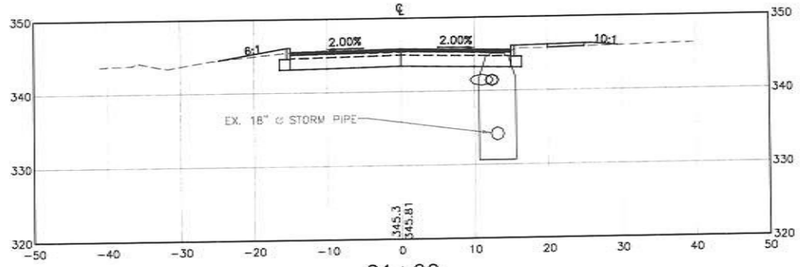
CRESCENT CONNECTOR SECTIONS

10 5 0 10 30

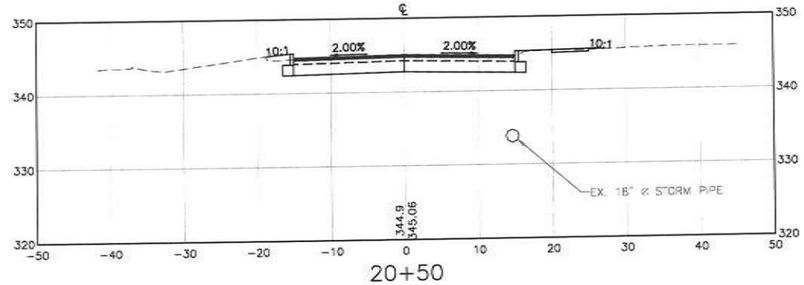
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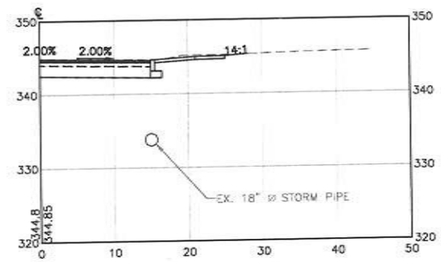
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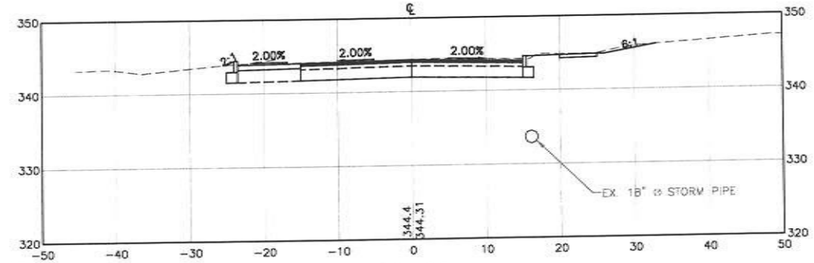
21+00



20+50



20+36.03



20+00

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PROFESSIONAL SEAL

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NO.	DATE	DESCRIPTION	BY	CK'D

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION,
VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

CROSS SECTIONS
SHEET 5

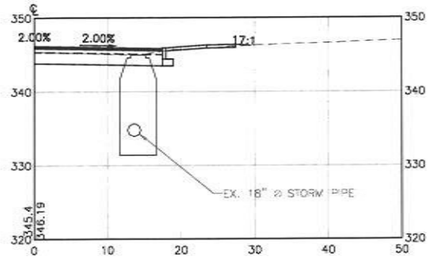
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XXX	621803
PROJ. ENG.	D&K ARCHIVE #
EPD	

SHEET NUMBER

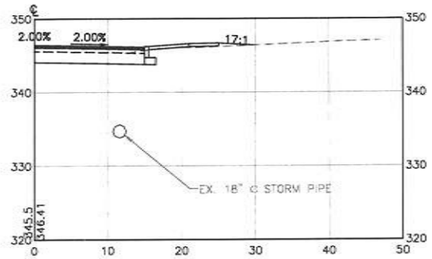
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SHEET 30 OF 33

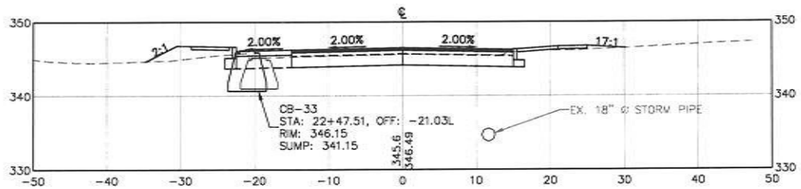
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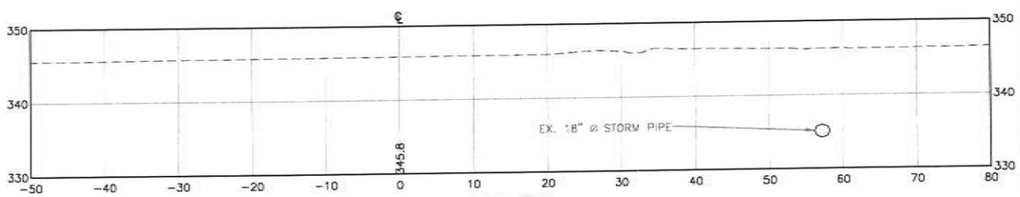
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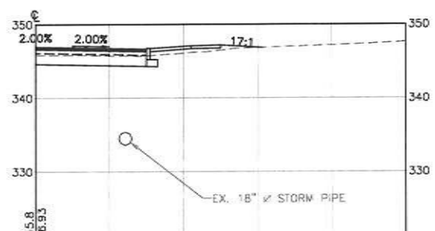
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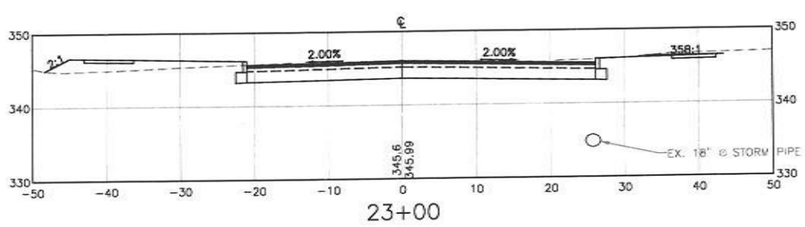
22+50



23+50



21+98.36



23+00

CRESCENT CONNECTOR SECTIONS

10 5 0 10 30

SCALE IN FEET

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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION PRE-PRELIMINARY PLANS

NO.	DATE	DESCRIPTION	BY	CK'D

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2 LINCOLN STREET
ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

CROSS SECTIONS SHEET 6

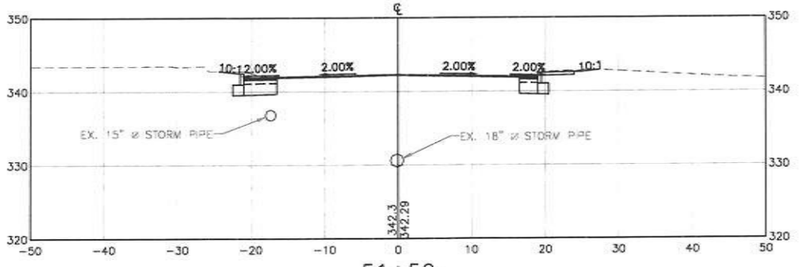
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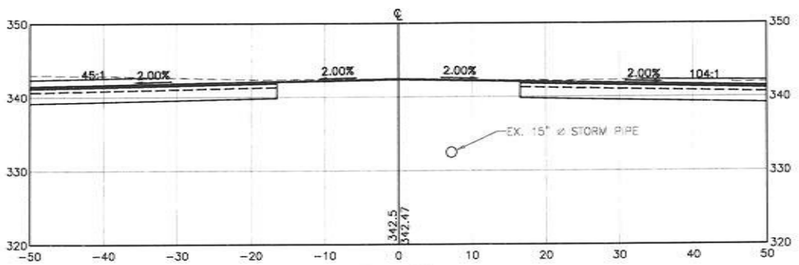
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SHEET 31 OF 33

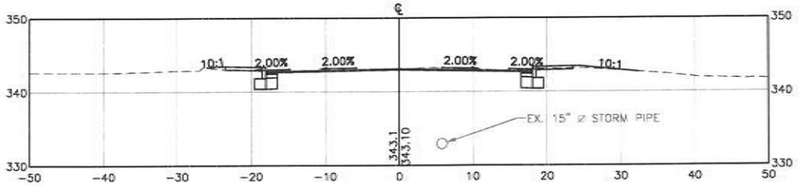
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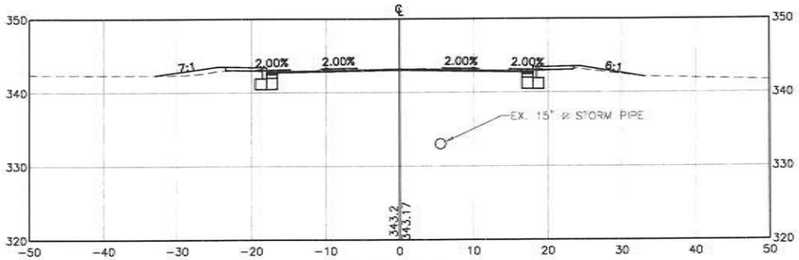
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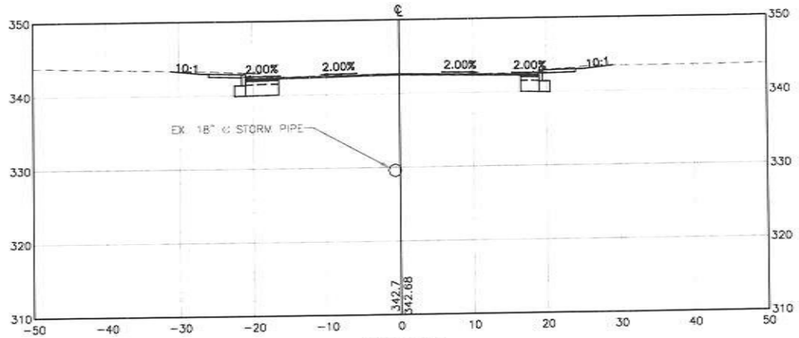
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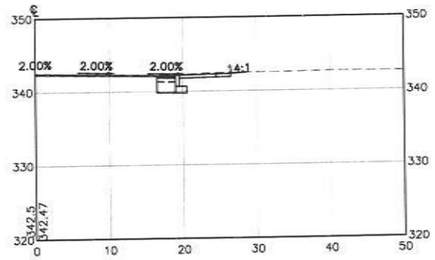
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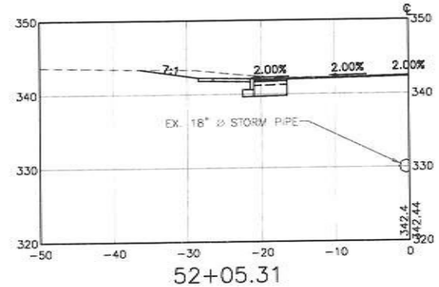
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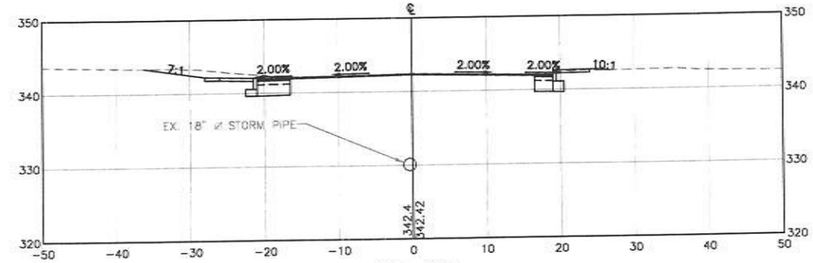
52+50



52+11.36



52+05.31



52+00

MAPLE STREET SECTIONS

10 5 0 10 30

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NOT FOR CONSTRUCTION PRE-PRELIMINARY PLANS

NO.	DATE	DESCRIPTION	BY	CK'D

VILLAGE OF ESSEX JUNCTION
2 LINCOLN STREET
ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

CROSS SECTIONS SHEET 7

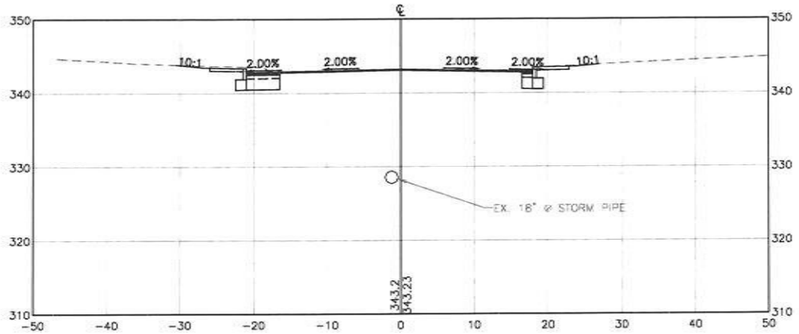
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XXX	621803
PROJ. ENG.	D&K ARCHIVE #
EPD	

SHEET NUMBER

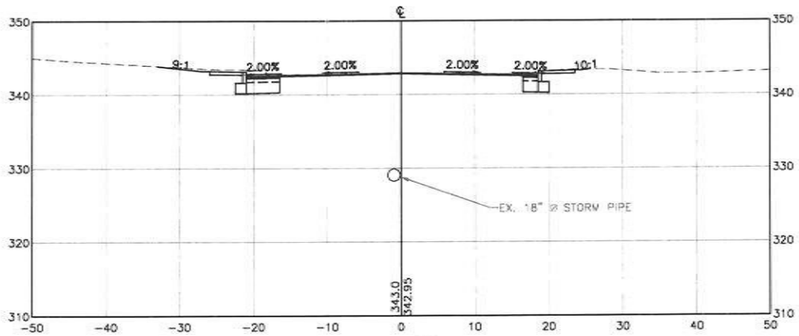
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SHEET 32 OF 33

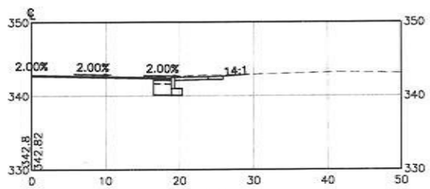
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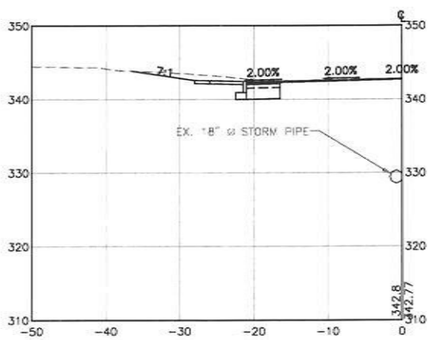
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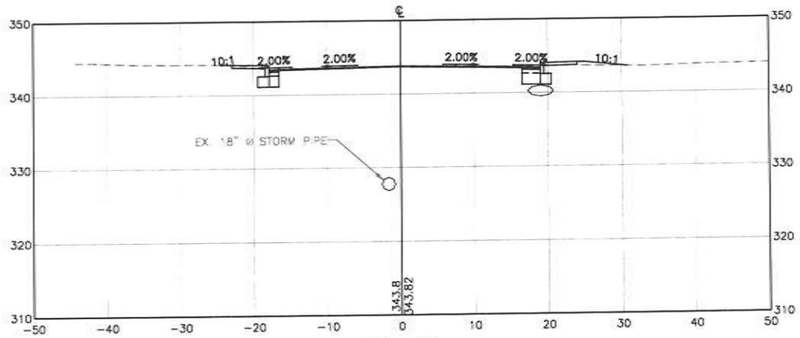
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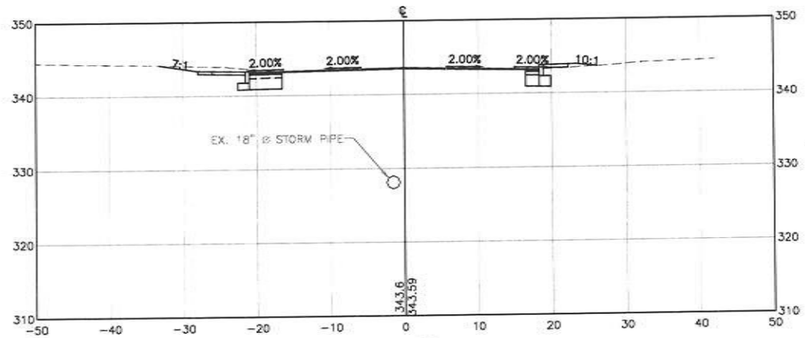
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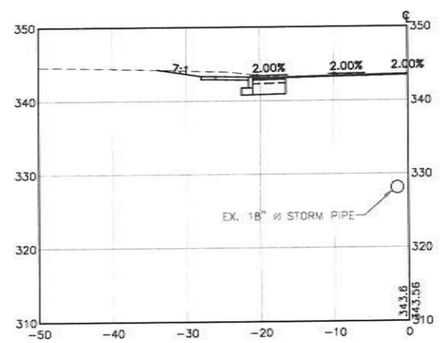
52+66.67



54+30



54+00



53+95.82

MAPLE STREET SECTIONS

10 5 0 10 30

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ESSEX JUNCTION, VT 05452

CRESCENT CONNECTOR
STP 5300 (13)

ESSEX JUNCTION

SHEET TITLE

CROSS SECTIONS SHEET 8

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SHEET NUMBER

33

SHEET 33 OF 33

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