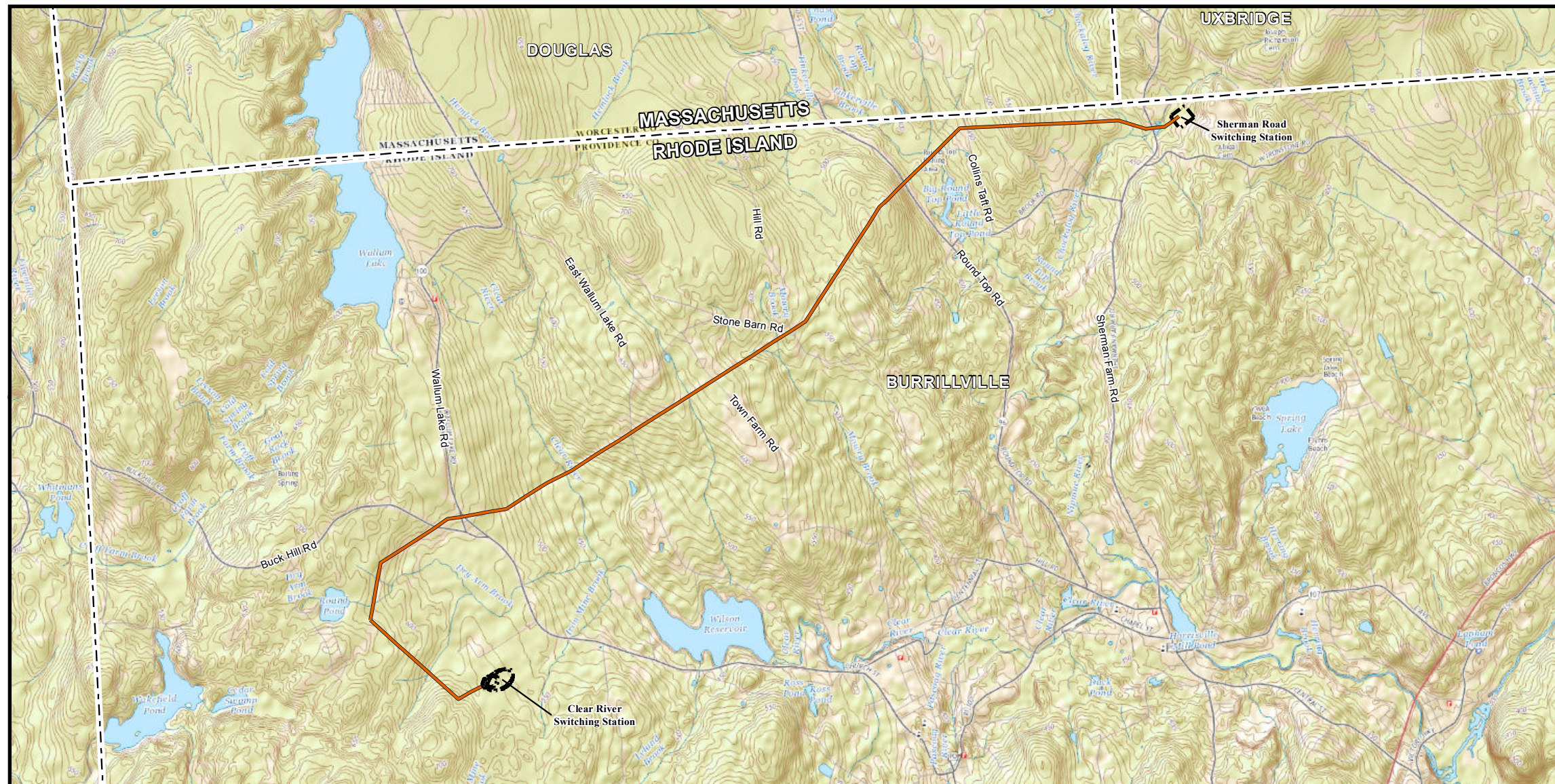


Burrillville Interconnection Project

Burrillville, Rhode Island

Mapping - Volume 2



1" = 4,000 Feet

Prepared For:

The Narragansett Electric Company
280 Melrose Street
Providence, RI 02907

Clear River Energy, LLC
One South Wacker Drive
Suite 1800
Chicago, IL 60606

Compiled By:

POWER Engineers, Inc
100 John L. Dietsch Square
North Attleboro, MA 02763

January 2017

This document has been reviewed for Critical Energy Infrastructure Information (CEII). [January 2017]

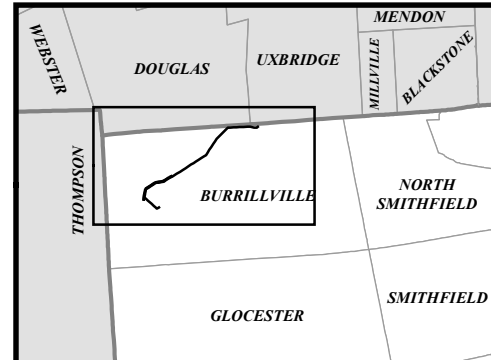
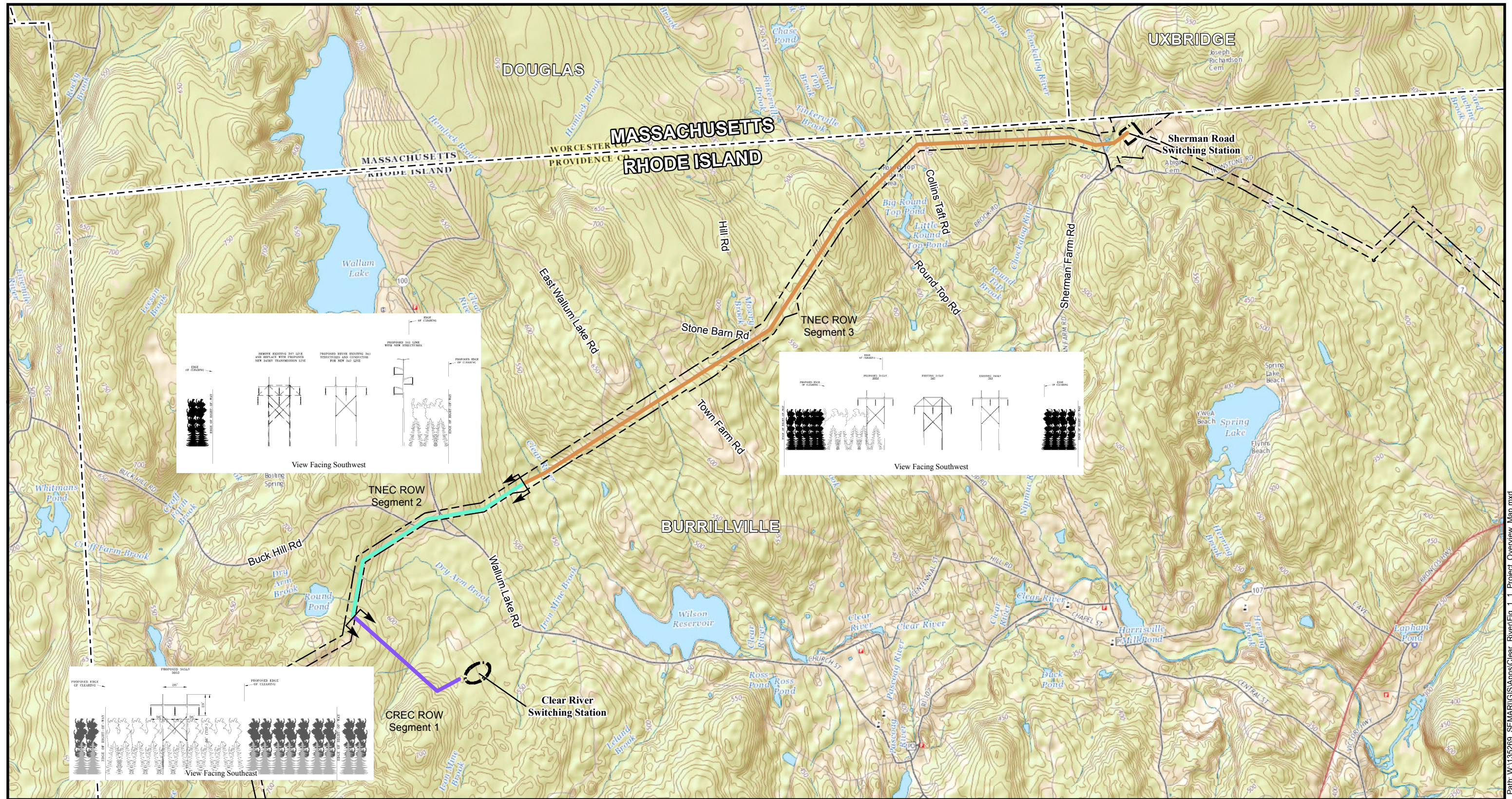
Burrillville Interconnection Project

Burrillville, Rhode Island

Mapping - Volume 2

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Legend

- 3052 - New ROW Route
- 3052 - Replace Existing Line
- 3052 - New Route in Existing ROW
- Existing or Proposed Power Facility
- Existing Right-of-Way Edge
- Town Boundary

Burrillville Interconnection Project

Figure 1-1:
Project Overview Map

N
W E
S

0 1,000 2,000 3,000 4,000 5,000 6,000 Feet

Date: 1/10/2017 1" = 3,000' Author: TDH

The State of Rhode Island

Providence County:
Town of Burrillville

NAD 1983 UTM Zone 18N USFt
Foot US
Transverse Mercator
North American 1983

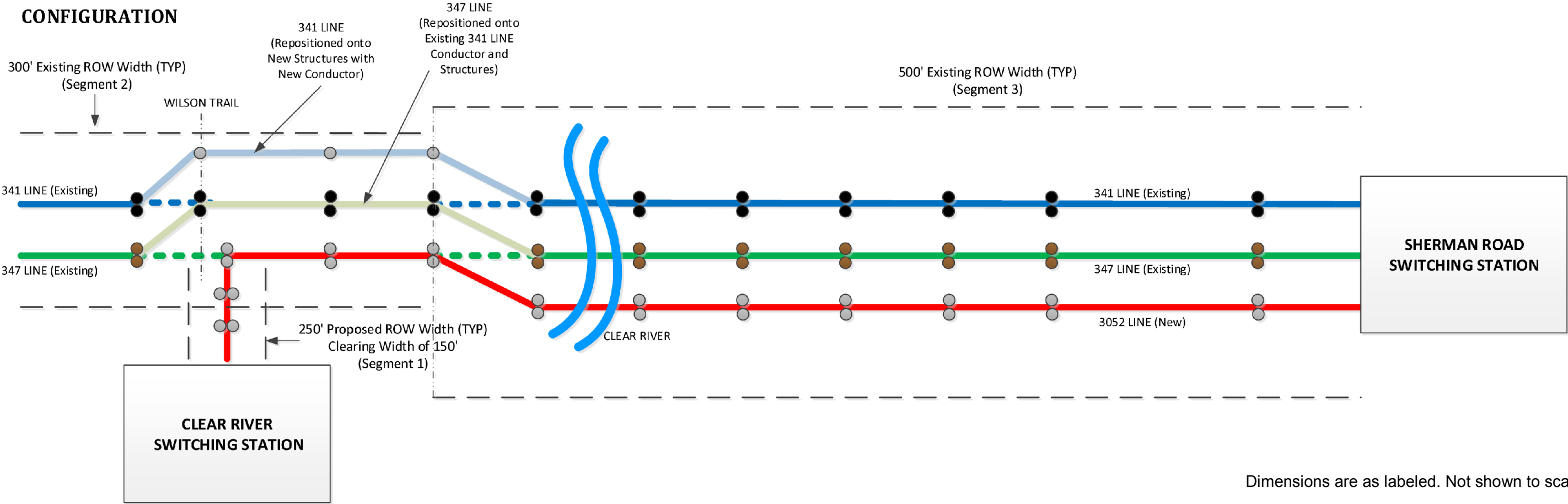
POWER ENGINEERS

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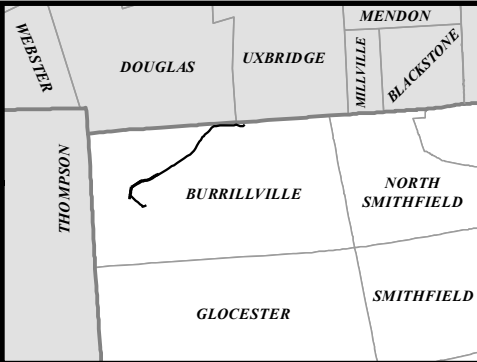
**EXISTING
CONFIGURATION**



**ULTIMATE
CONFIGURATION**



Dimensions are as labeled. Not shown to scale.



- Legend**
- Existing Steel H-frame Structures (TYP)
 - Existing Wood H-frame Structures (TYP)
 - Proposed Steel H-frame Structures (TYP)
 - Proposed Steel Monopole Structures (TYP)

Burrillville Interconnection Project

Figure 2-1:
Schematic Representation of the ROW
Configuration with the new 3052 Line

Date: 1/31/2017

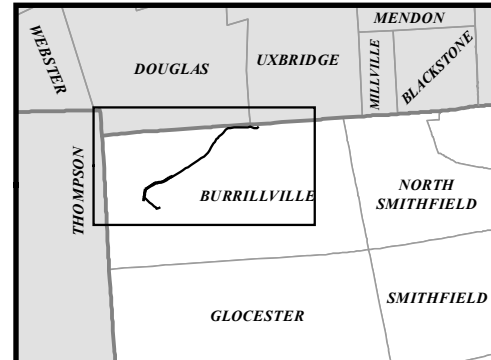
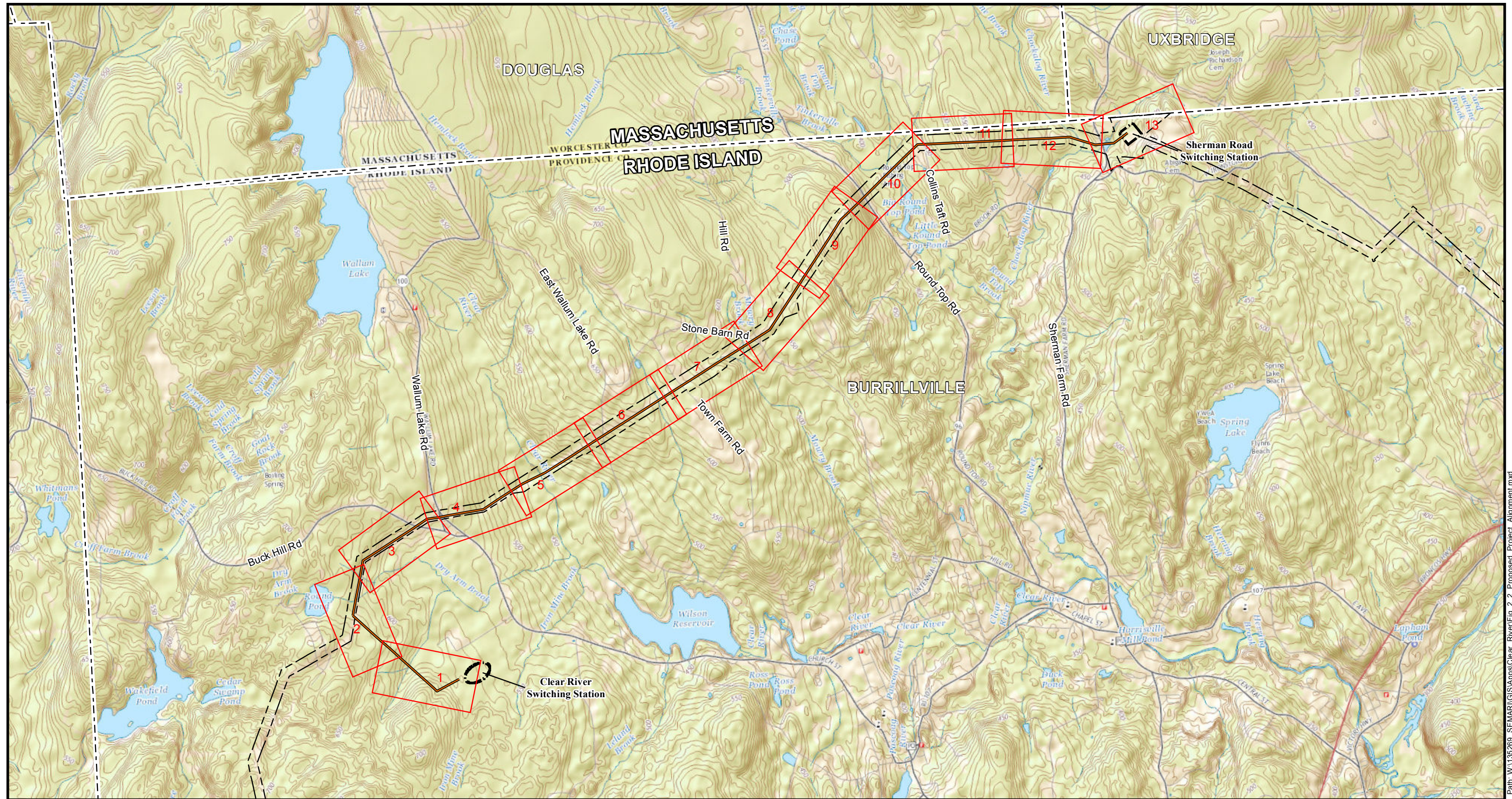
Author: TDH

The State of Rhode Island

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Town of Burrillville

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Foot US
Transverse Mercator
North American 1983





Legend

- Proposed 345 kV Transmission Line
- Existing Right-of-Way Edge
- Town Boundary

Burrillville Interconnection Project

Figure 2-2:
Proposed Project Alignment Index

N
W E
S

0 1,000 2,000 3,000 4,000 5,000 6,000 Feet

Date: 1/10/2017 1" = 3,000' Author: TDH

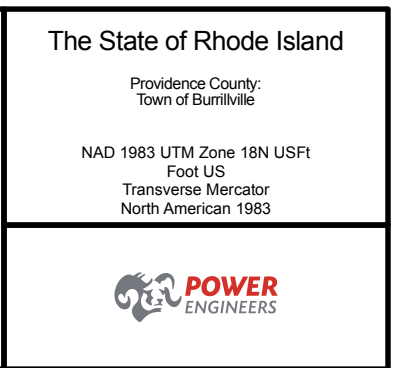
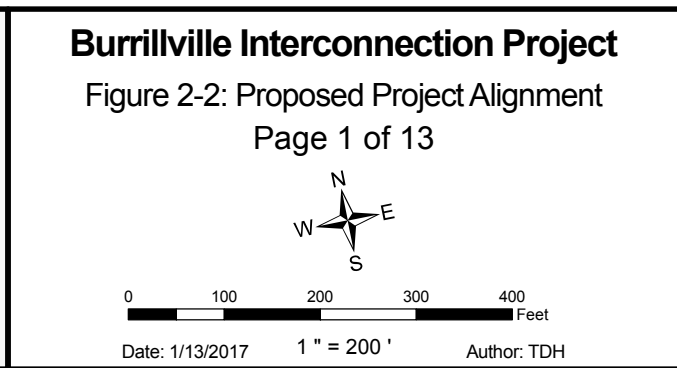
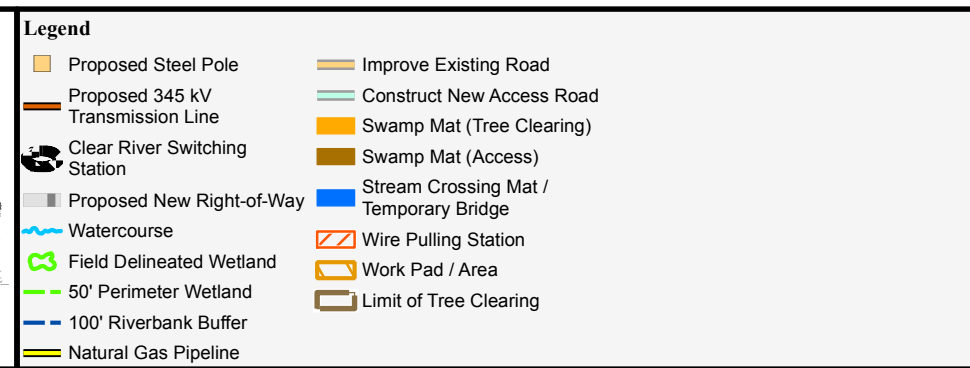
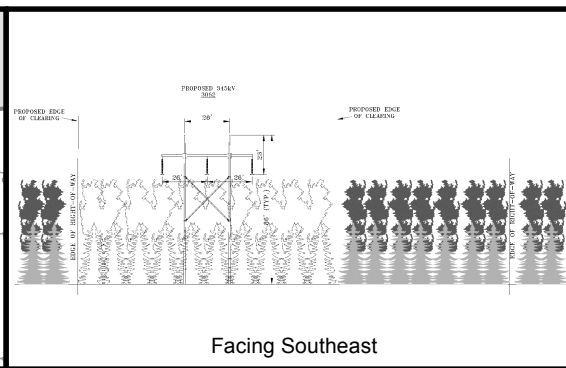
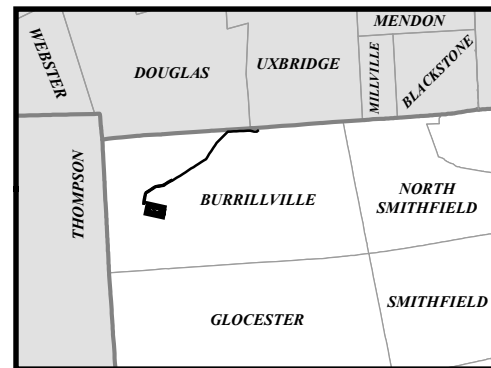
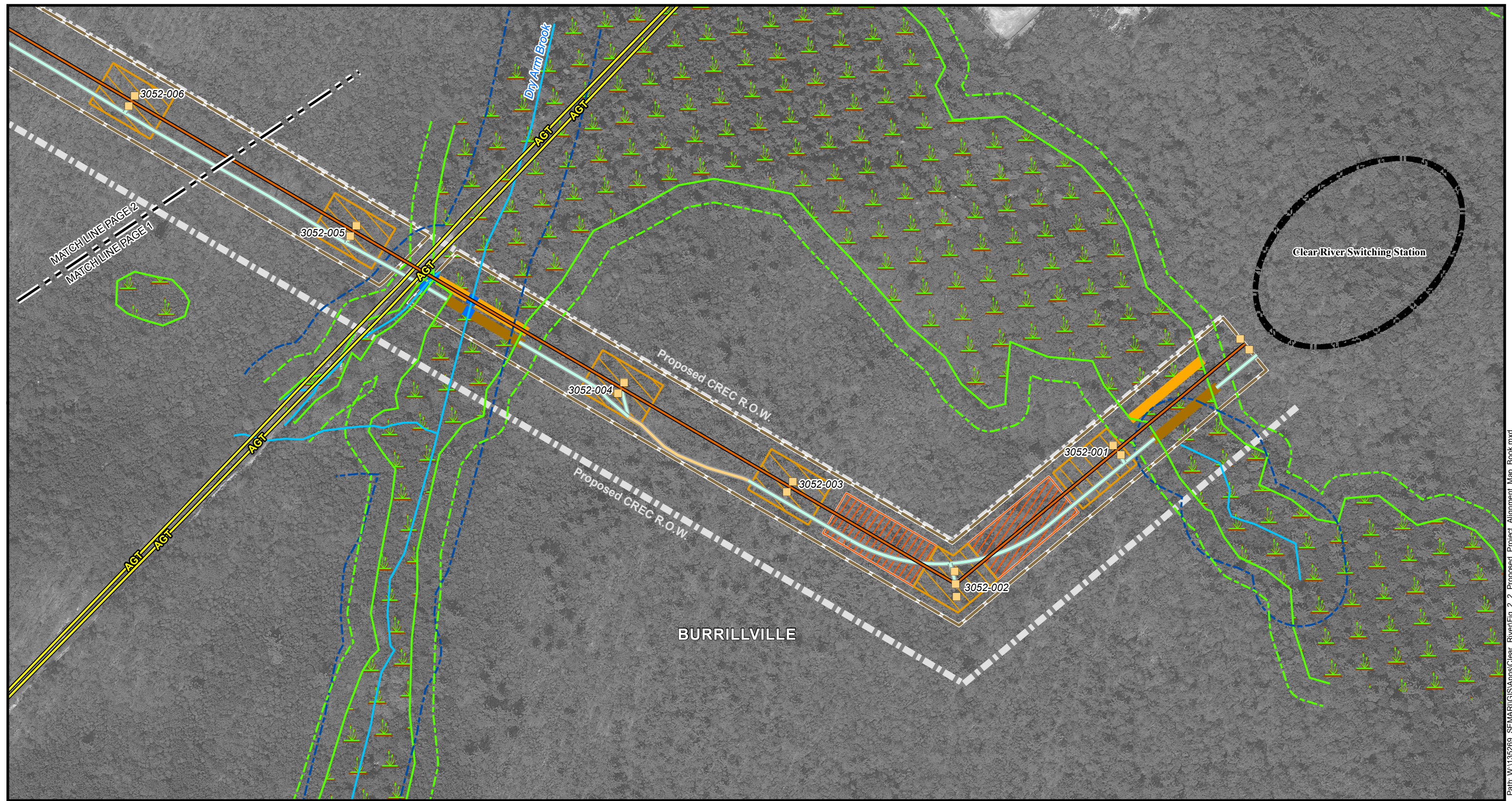
The State of Rhode Island

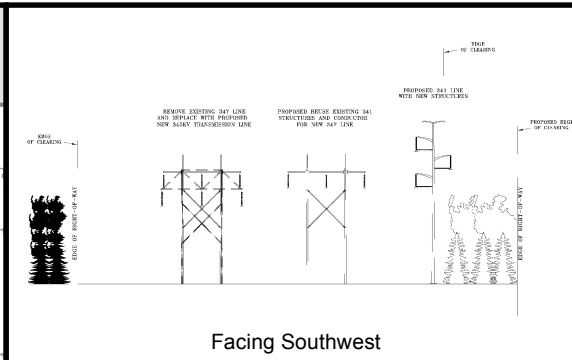
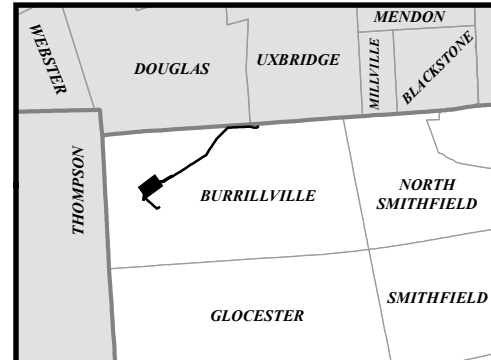
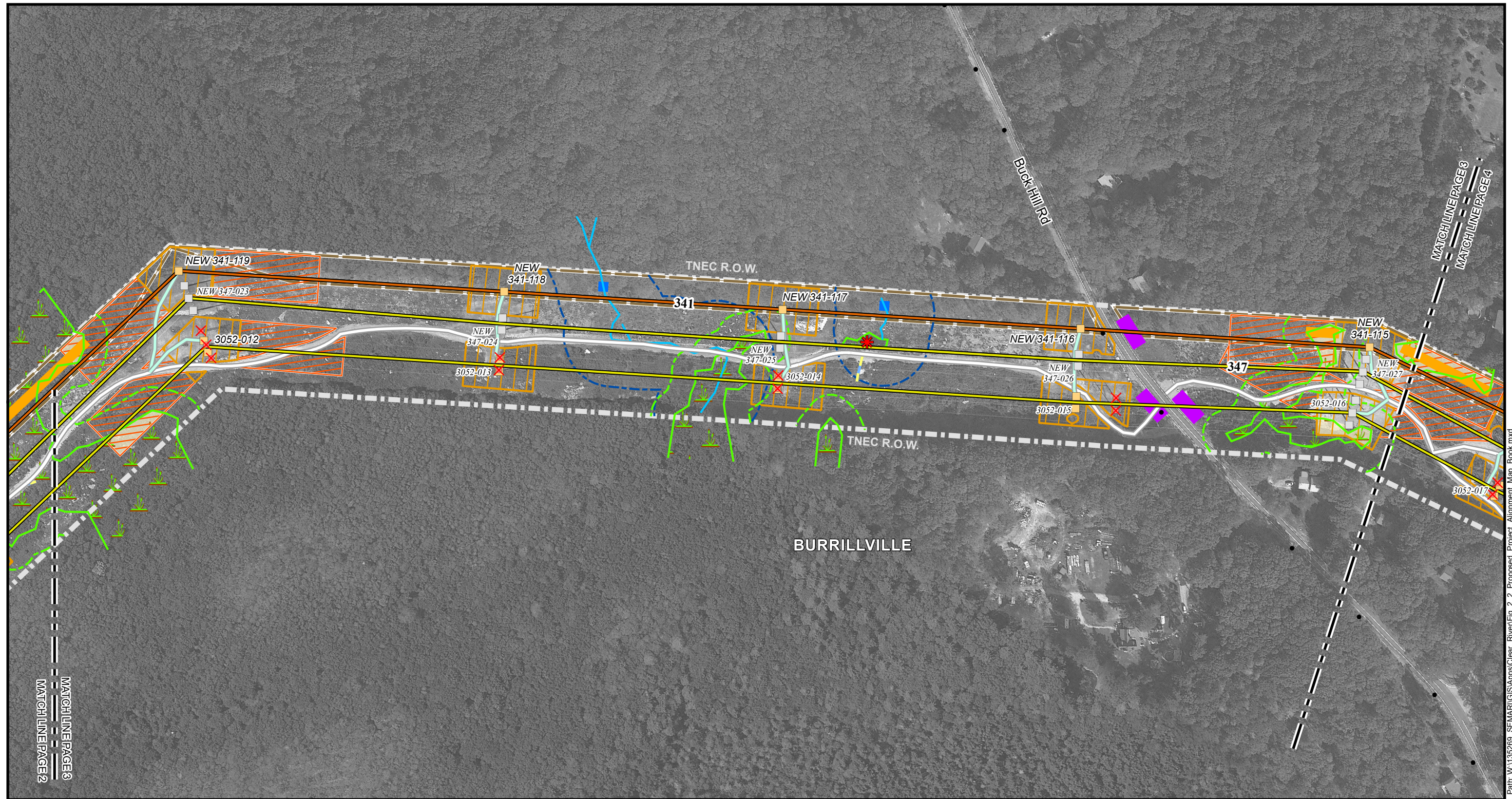
Providence County:
Town of Burrillville

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Foot US
Transverse Mercator
North American 1983

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Legend

Proposed Steel Pole	Vernal Pool	Swamp Mat (Tree Clearing)
Reused Steel Pole	Watercourse	Stream Crossing Mat / Temporary Bridge
Wood Pole to be Removed	Area Subject to Storm Flowage (ASSF)	Guard Structure
Wood Distribution Pole	Field Delineated Wetland	Wire Pulling Station
Proposed 345 kV Transmission Line	50' Perimeter Wetland	Work Pad / Area
Rebuilt 345 kV Transmission Line	100' Riverbank Buffer	Limit of Tree Clearing
Existing 345 kV Transmission Line	Use Existing Access Road	
Existing Right of Way	Construct New Access Road	
	Swamp Mat (Construction)	

Burrillville Interconnection Project
Figure 2-2: Proposed Project Alignment
Page 3 of 13

0 100 200 300 400 Feet

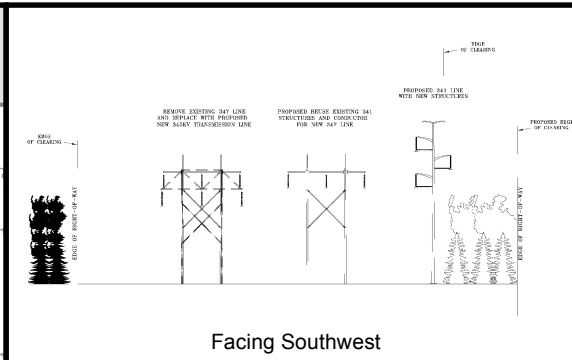
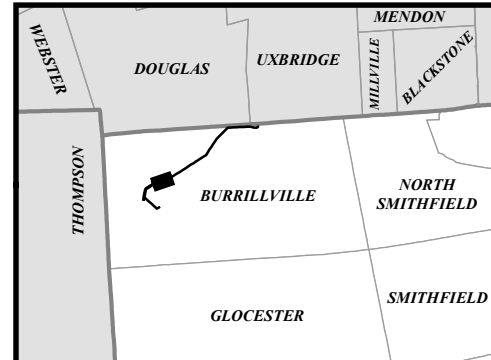
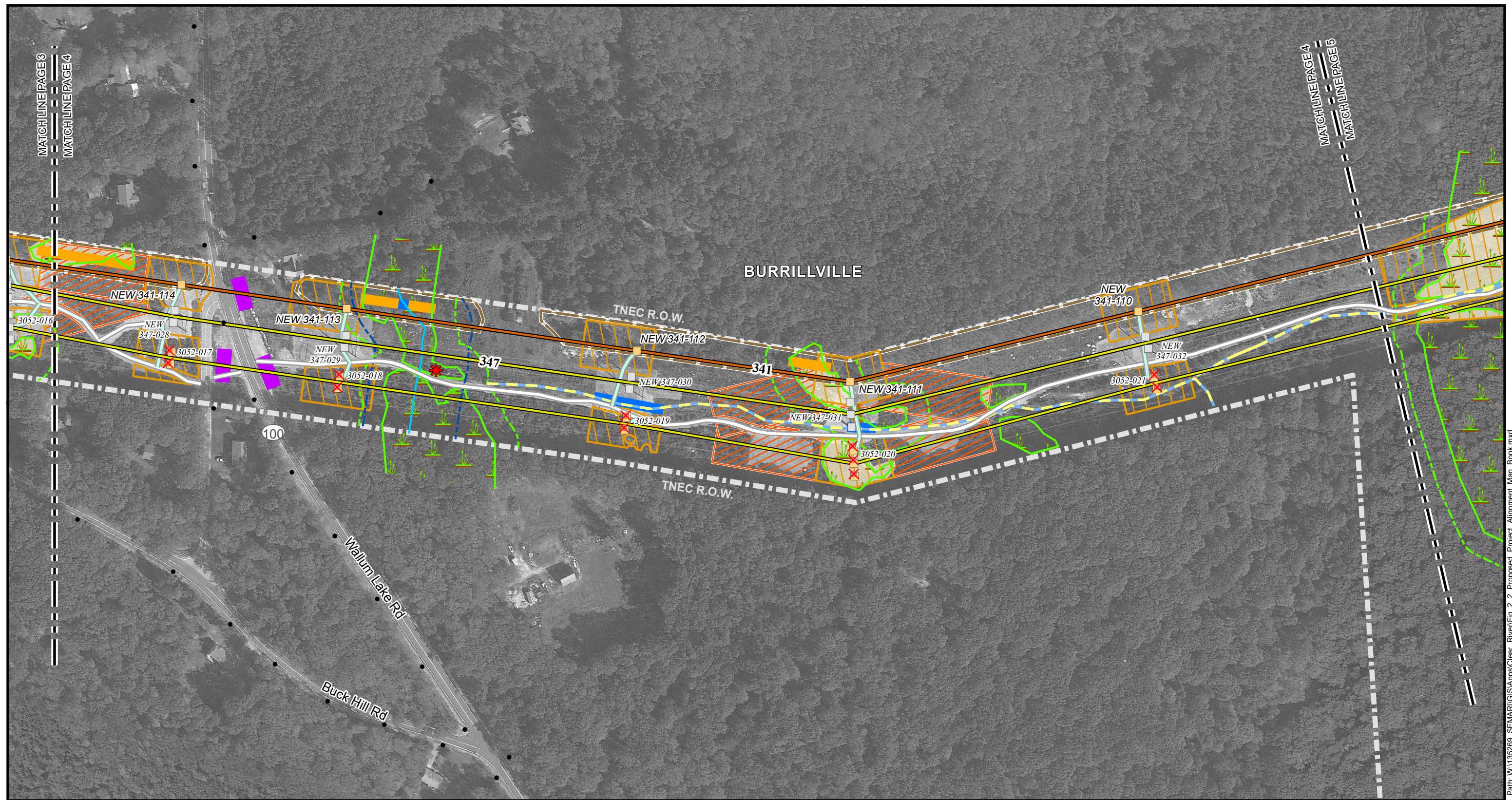
1" = 200'

Date: 1/10/2017 Author: TDH

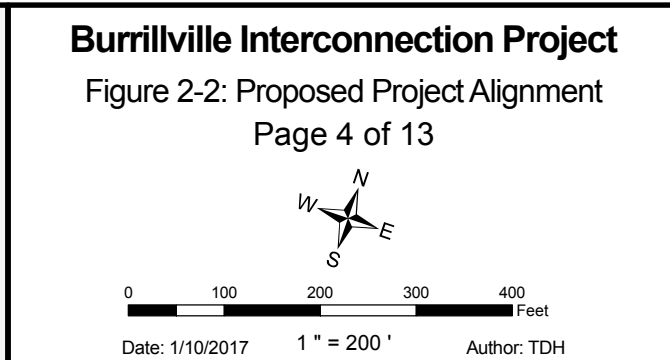
The State of Rhode Island
Providence County:
Town of Burrillville

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Foot US
Transverse Mercator
North American 1983

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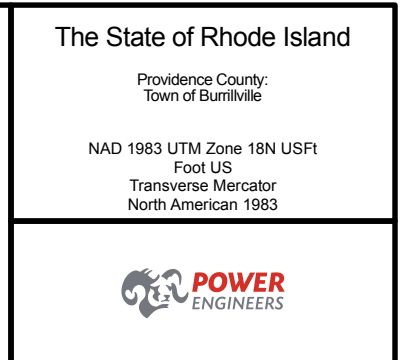
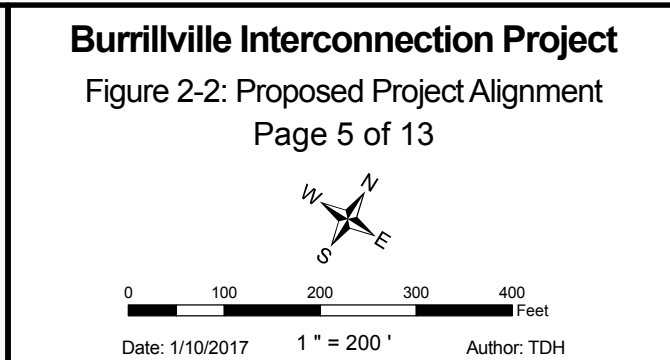
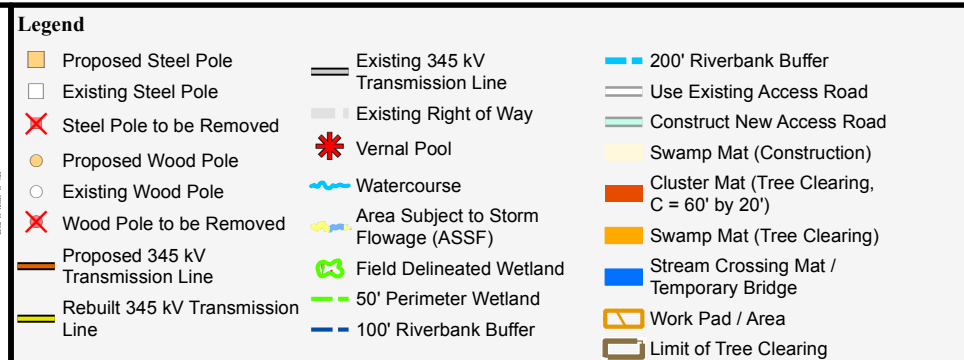
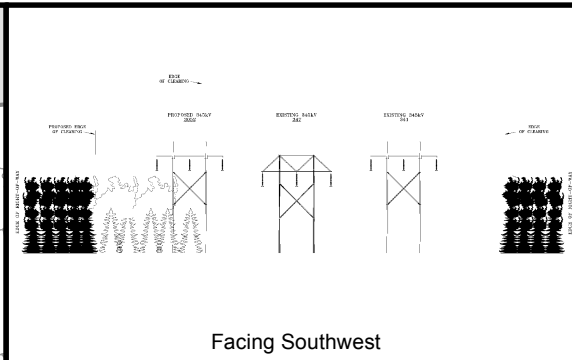
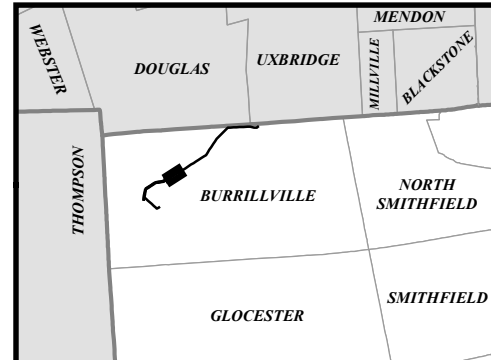
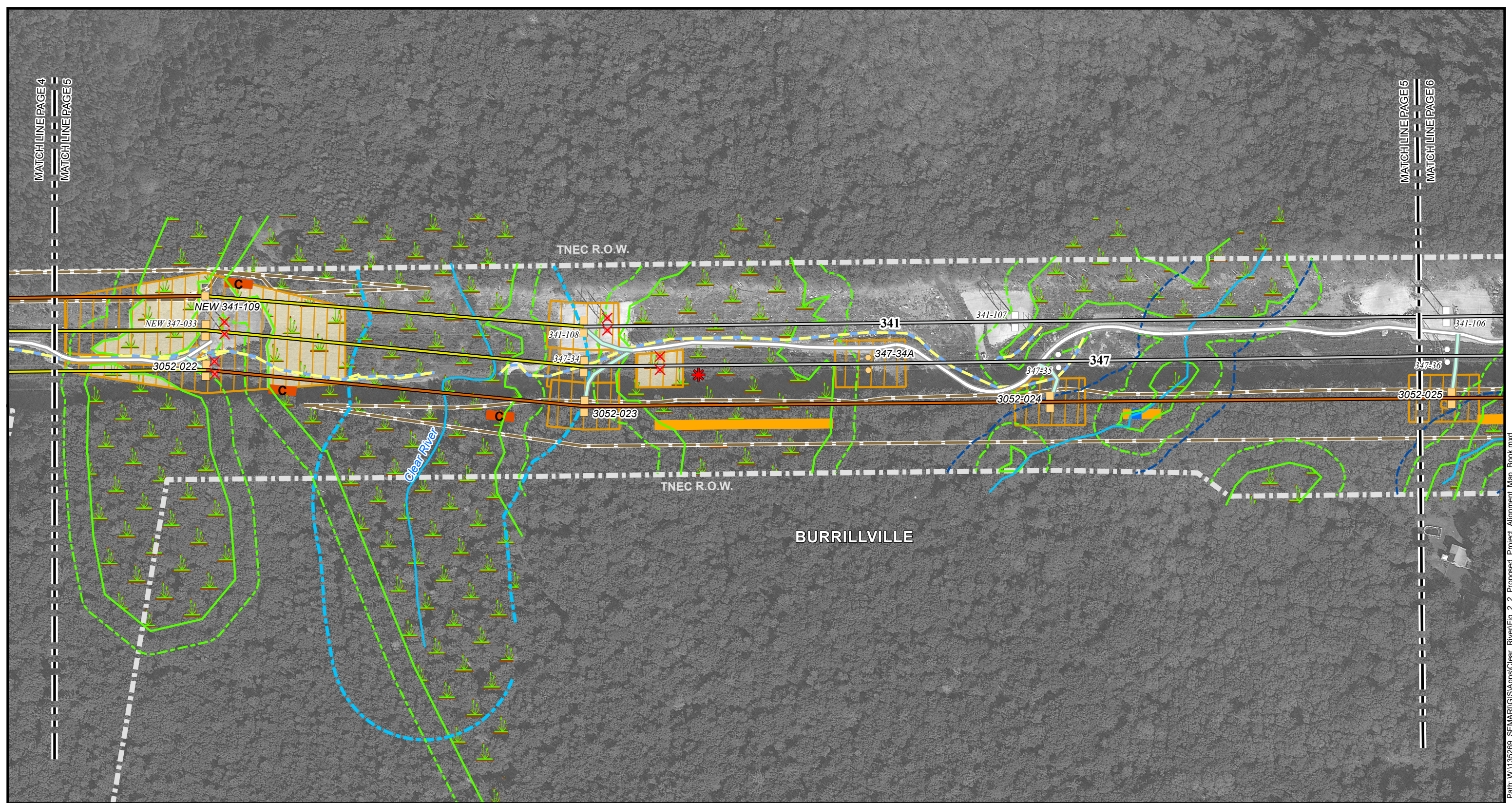
Legend					
	Proposed Steel Pole		Vernal Pool		Swamp Mat (Tree Clearing)
	Reused Steel Pole		Watercourse		Swamp Mat (Access)
	Wood Pole to be Removed		Area Subject to Storm Flowage (ASSF)		Stream Crossing Mat / Temporary Bridge
	Wood Distribution Pole		Field Delineated Wetland		Guard Structure
	Proposed 345 kV Transmission Line		50' Perimeter Wetland		Wire Pulling Station
	Rebuilt 345 kV Transmission Line		100' Riverbank Buffer		Work Pad / Area
	Existing 345 kV Transmission Line		Use Existing Access Road		Limit of Tree Clearing
	Existing Right of Way		Construct New Access Road		
			Swamp Mat (Construction)		

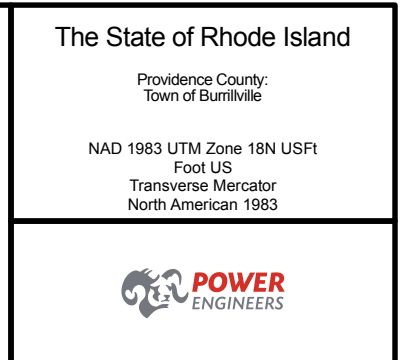
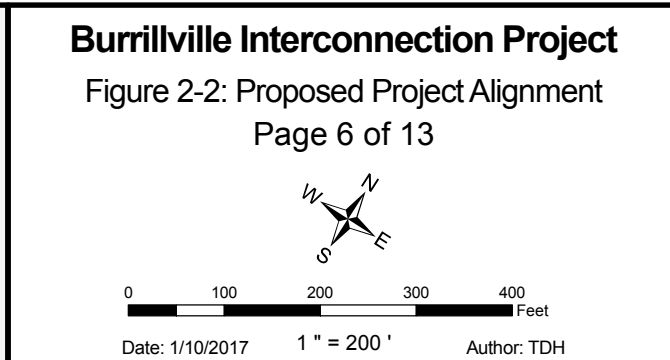
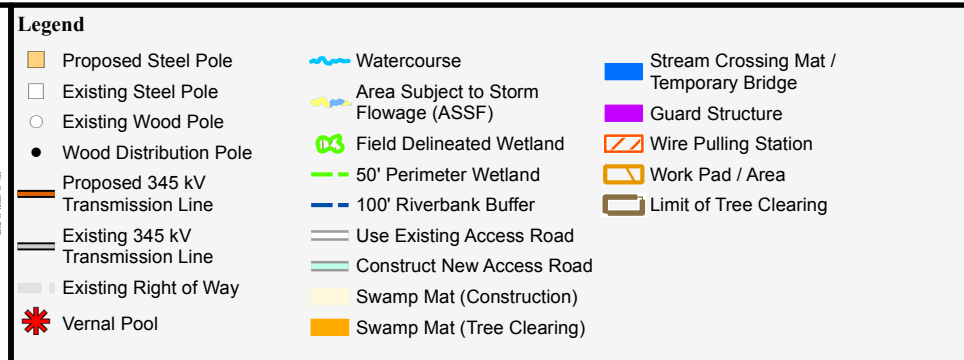
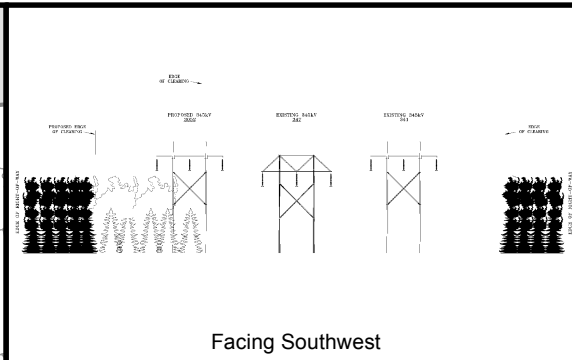
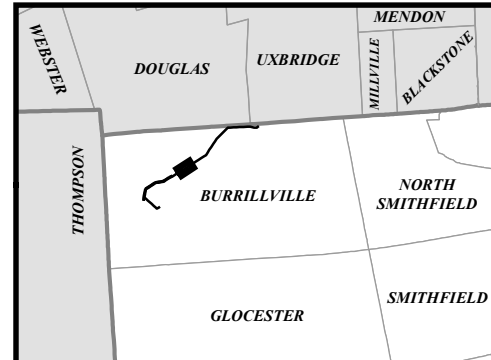


The State of Rhode Island
 Providence County:
 Town of Burrillville

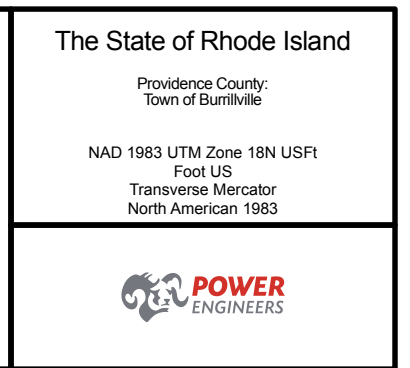
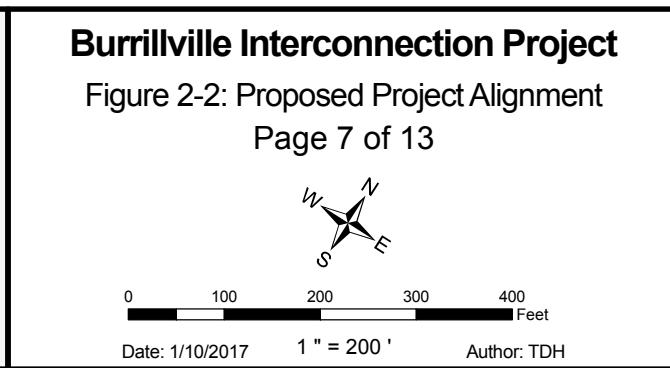
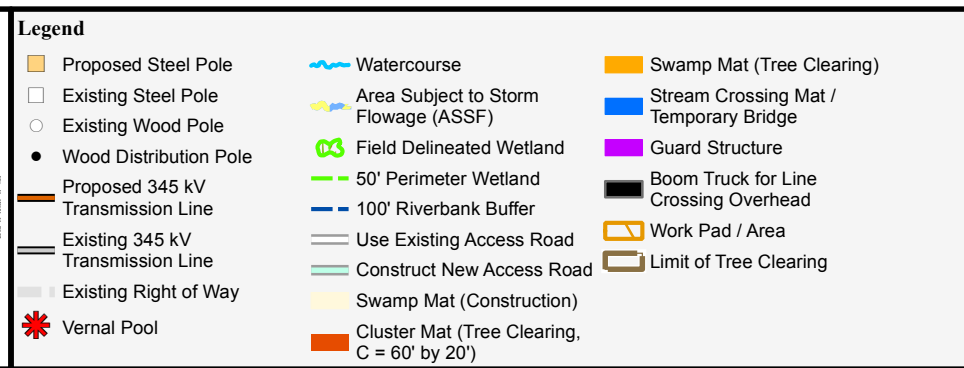
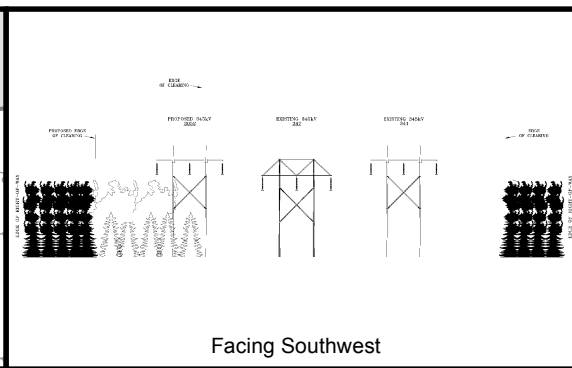
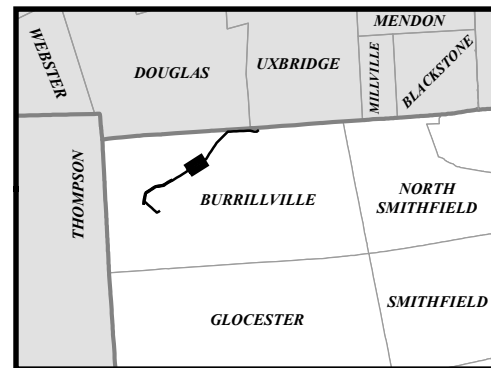
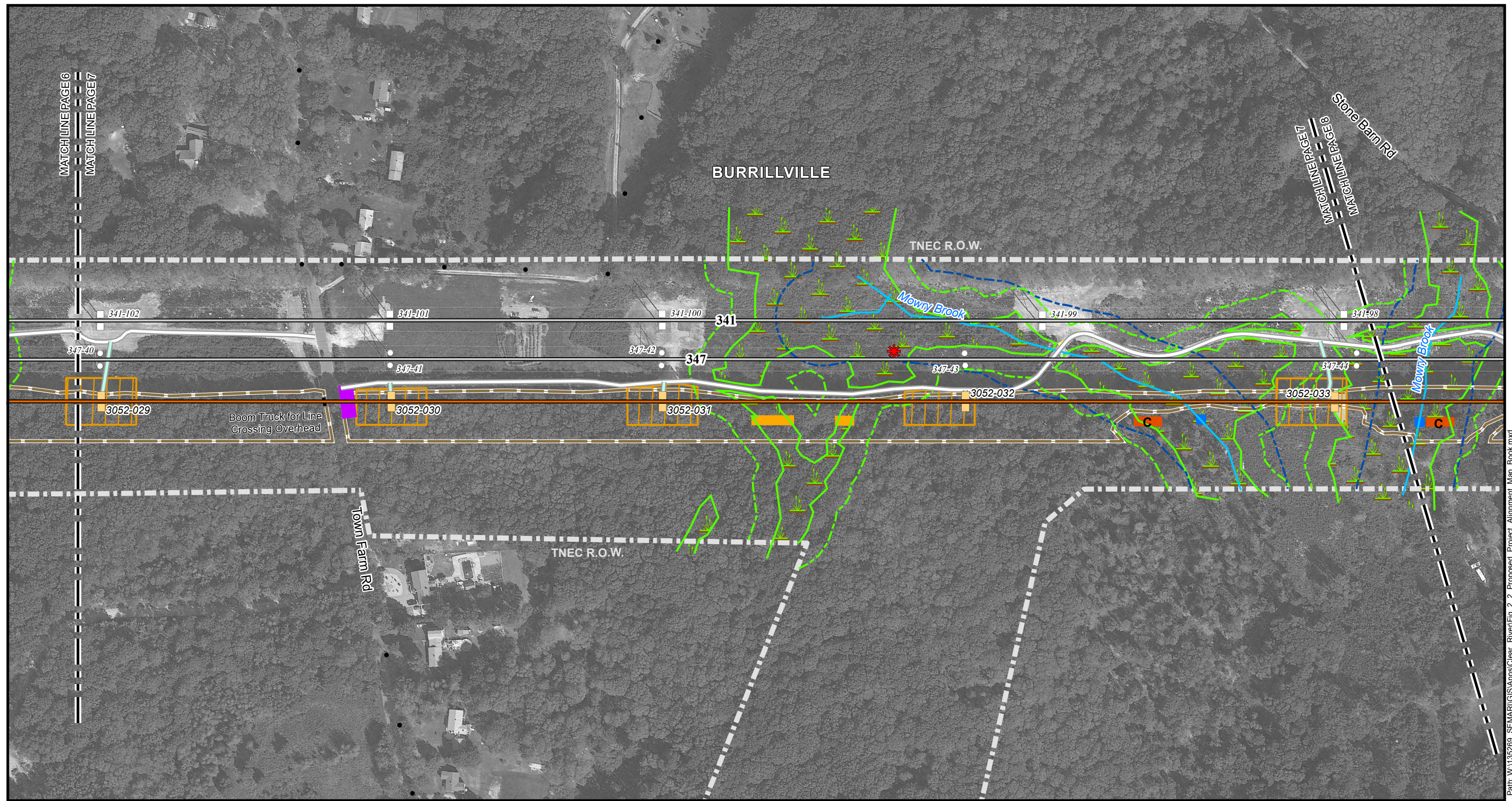
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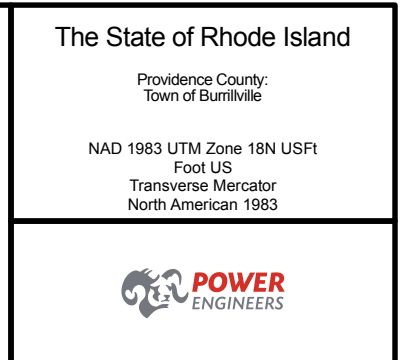
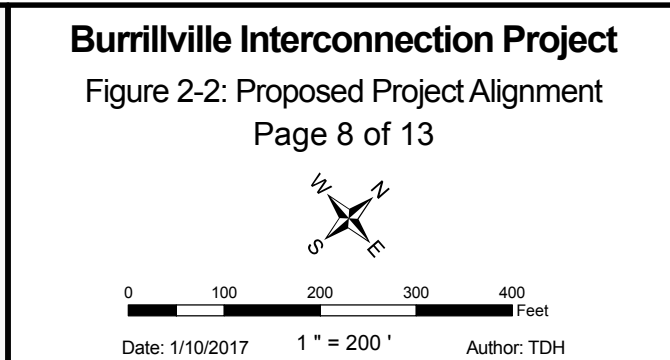
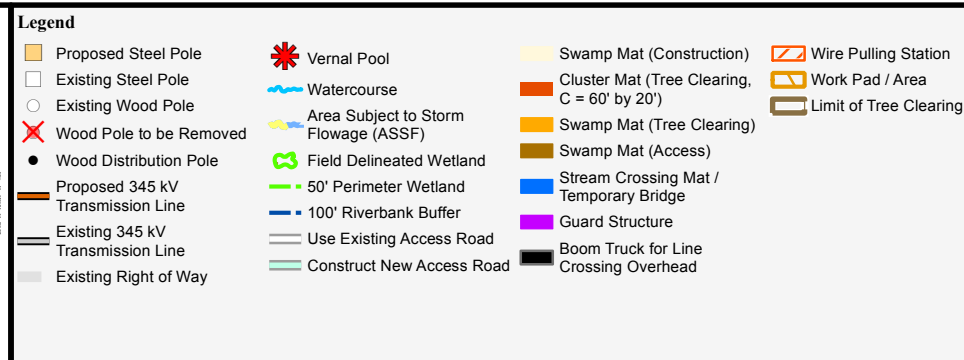
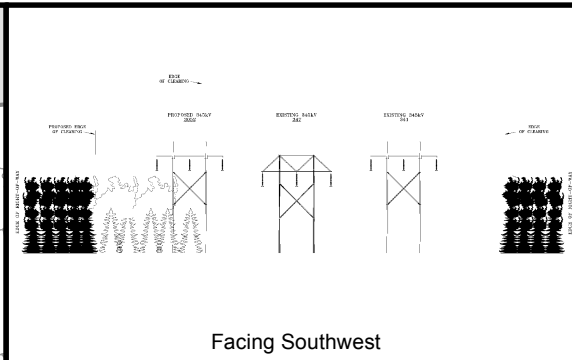
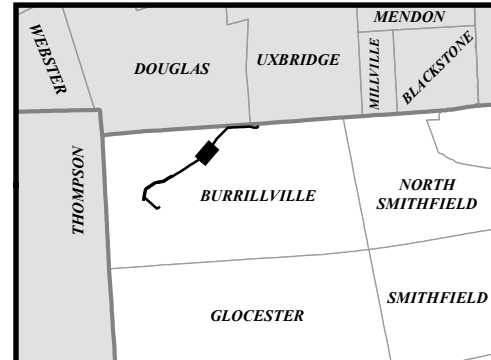
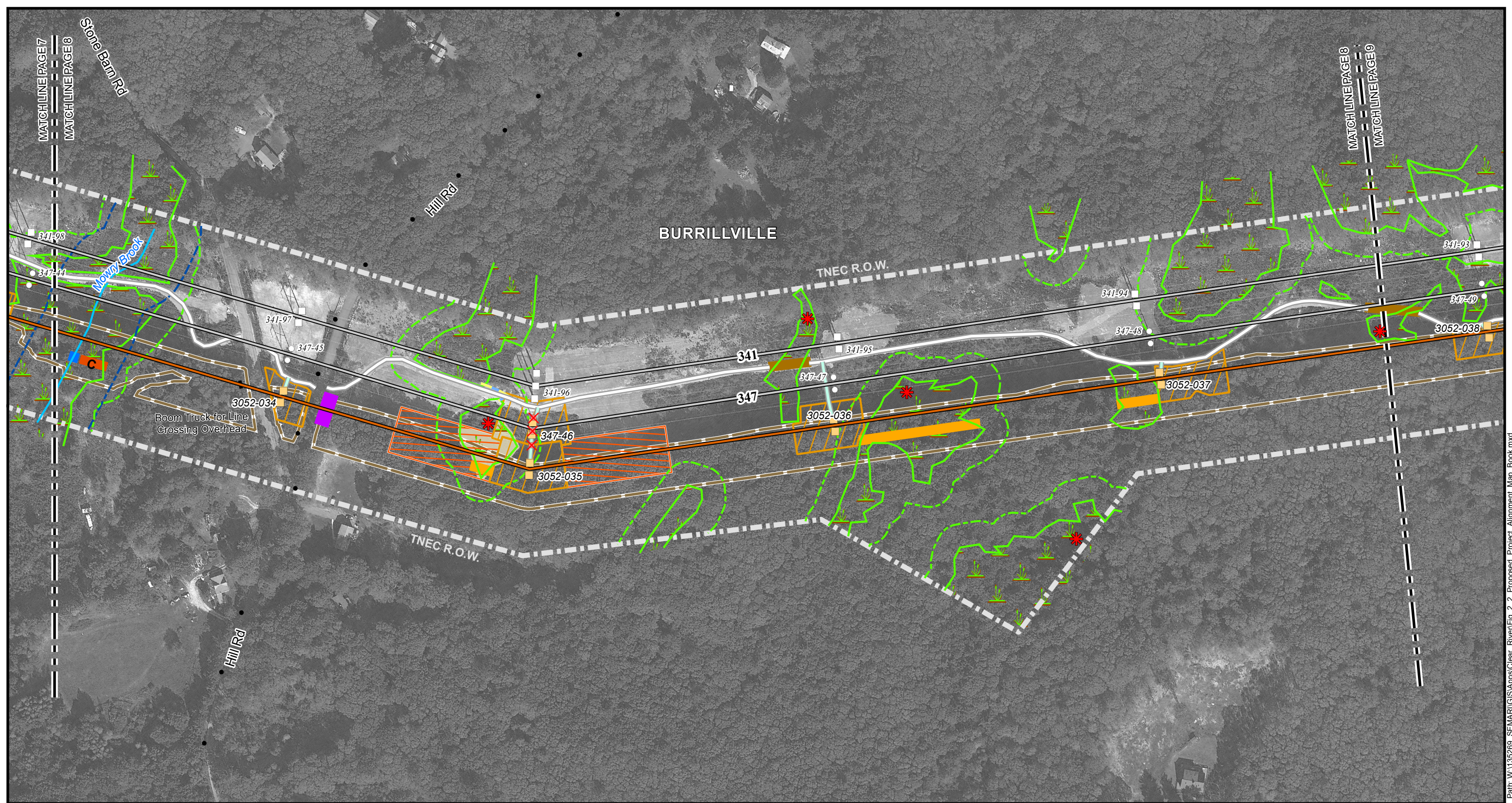
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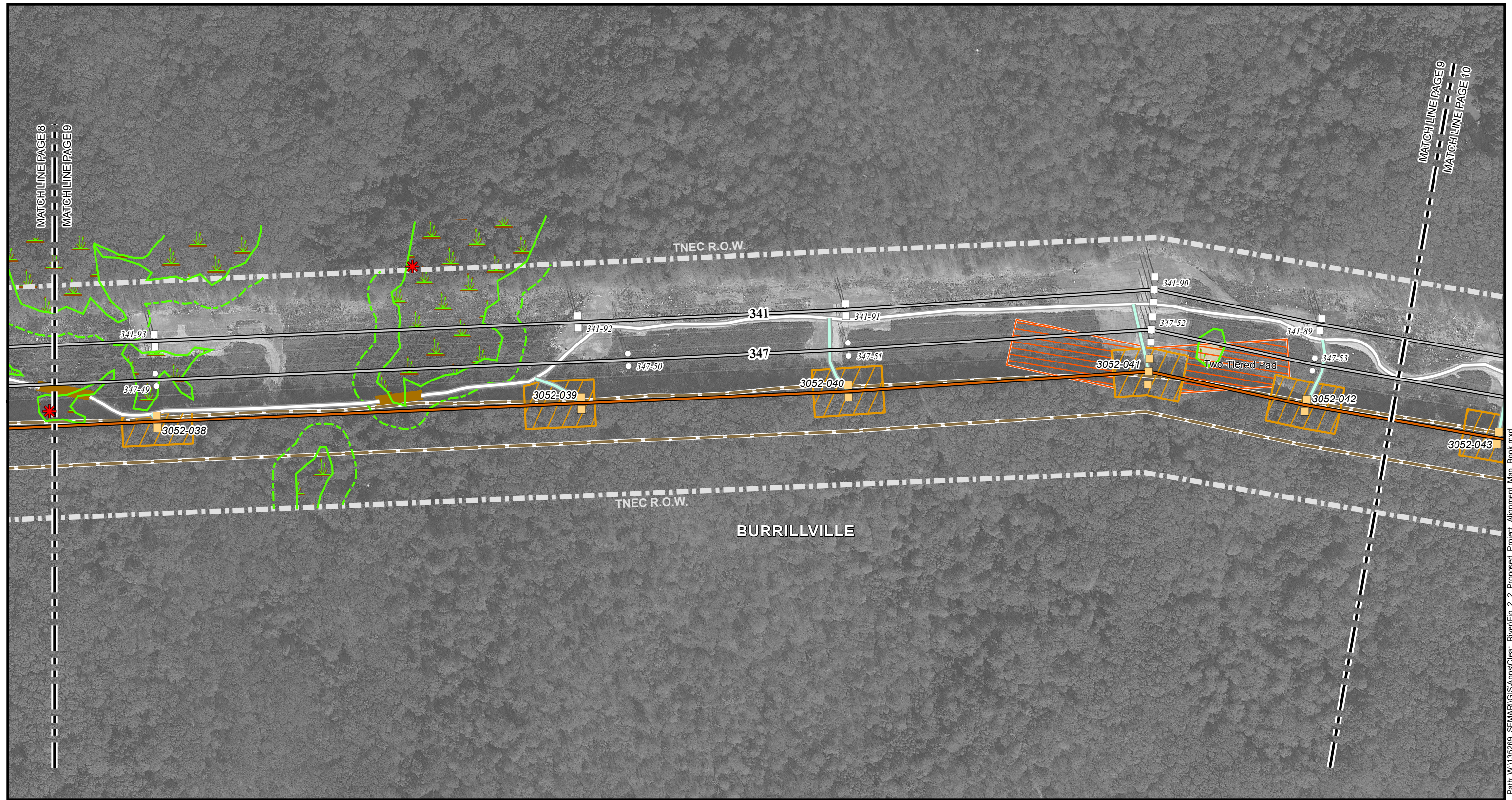


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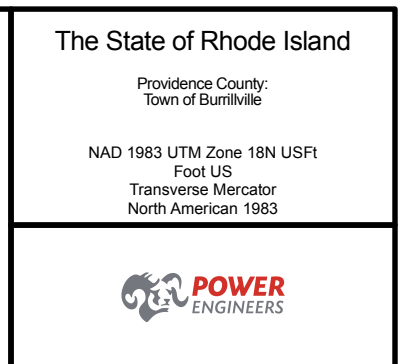
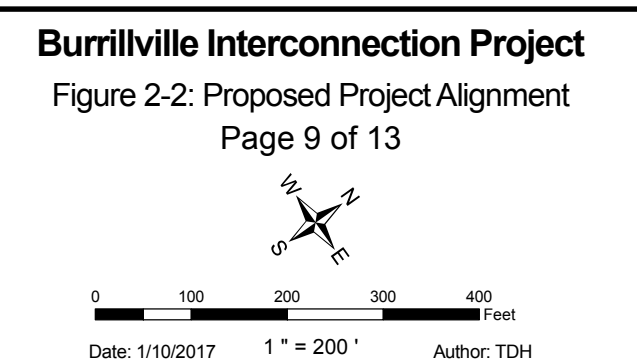
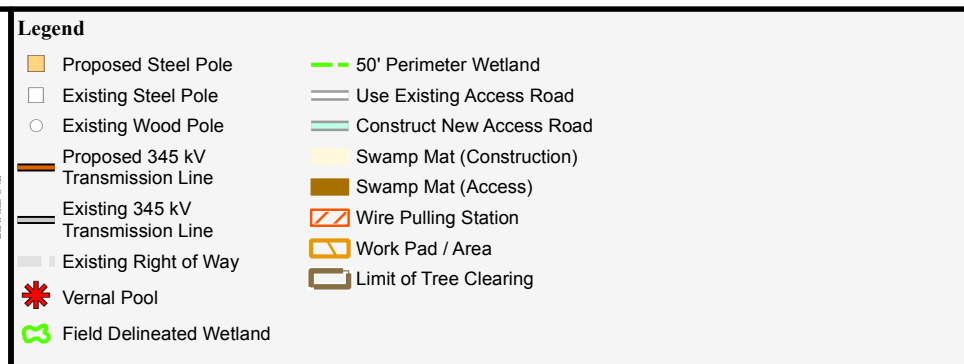
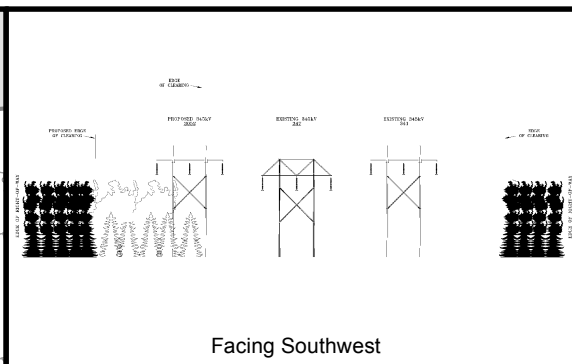
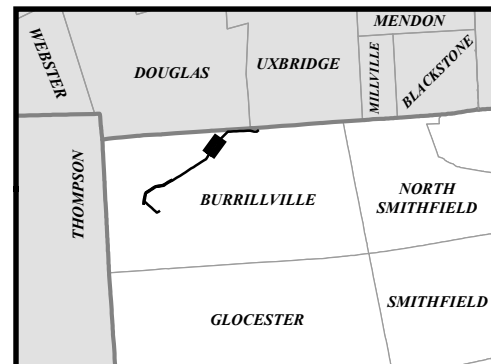


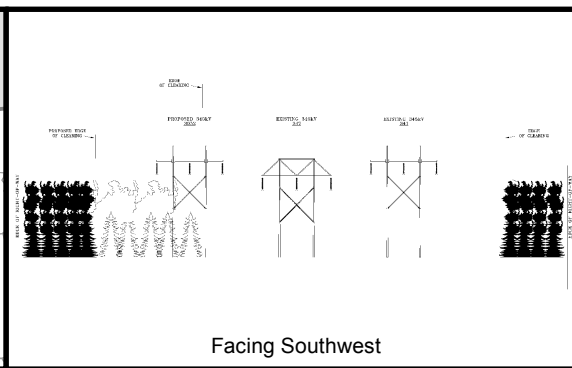
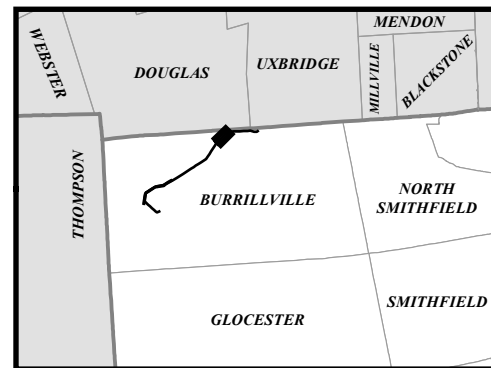
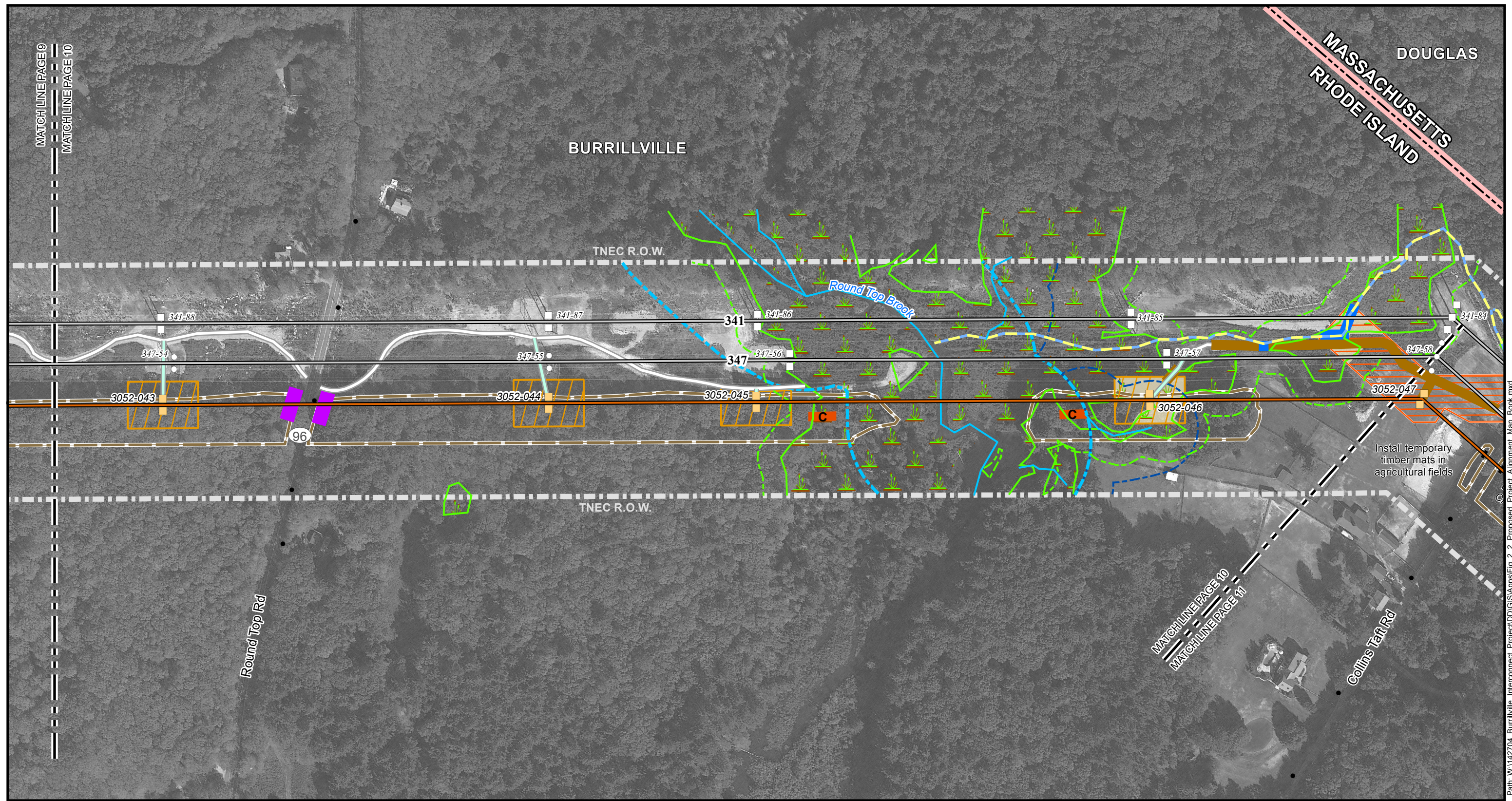


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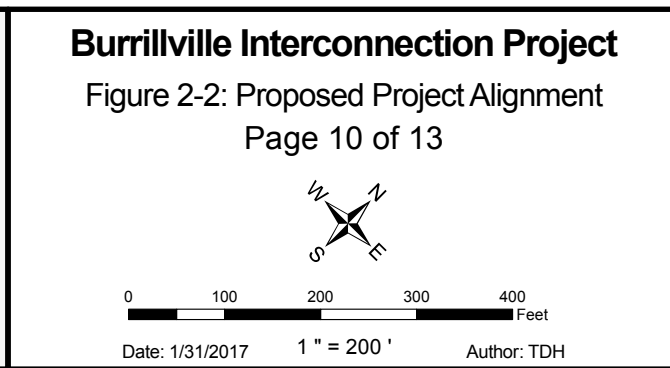


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Legend		
Proposed Steel Pole	Area Subject to Storm Flowage (ASSF)	Swamp Mat (Access)
Existing Steel Pole	Field Delineated Wetland	Stream Crossing Mat / Temporary Bridge
Existing Wood Pole	50' Perimeter Wetland	Guard Structure
Wood Distribution Pole	100' Riverbank Buffer	Boom Truck for Line Crossing Overhead
Proposed 345 kV Transmission Line	200' Riverbank Buffer	Wire Pulling Station
Existing 345 kV Transmission Line	Use Existing Access Road	Work Pad / Area
Existing Right of Way	Construct New Access Road	Limit of Tree Clearing
Watercourse	Swamp Mat (Construction)	
	Cluster Mat (Tree Clearing, C = 60' by 20')	

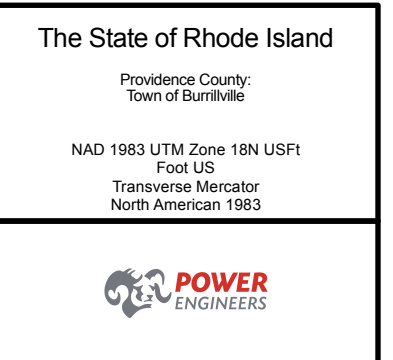
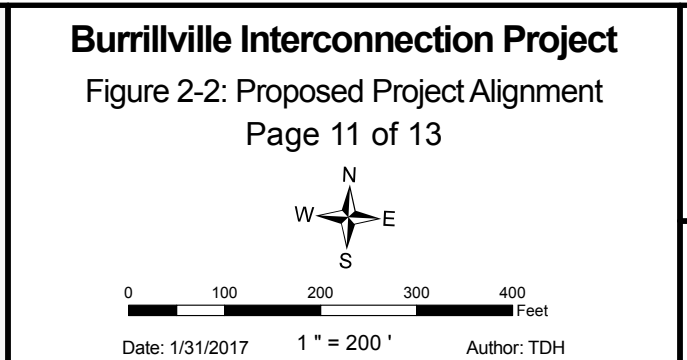
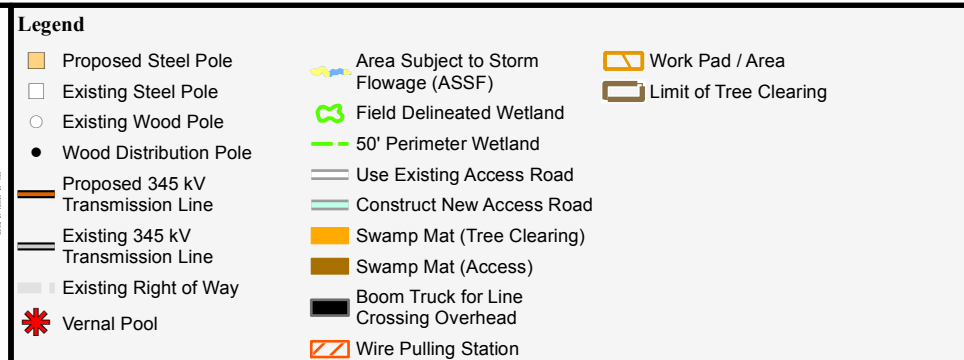
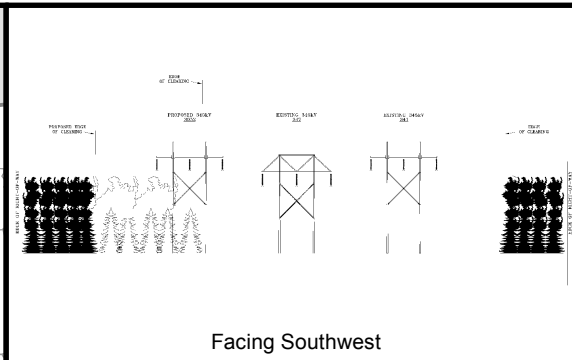
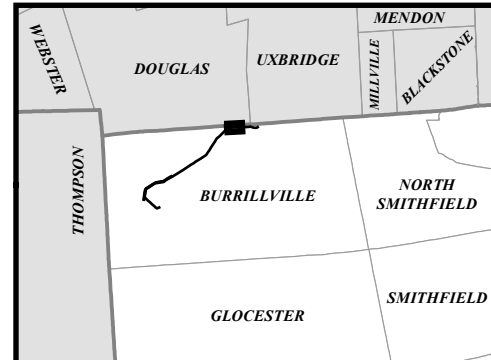
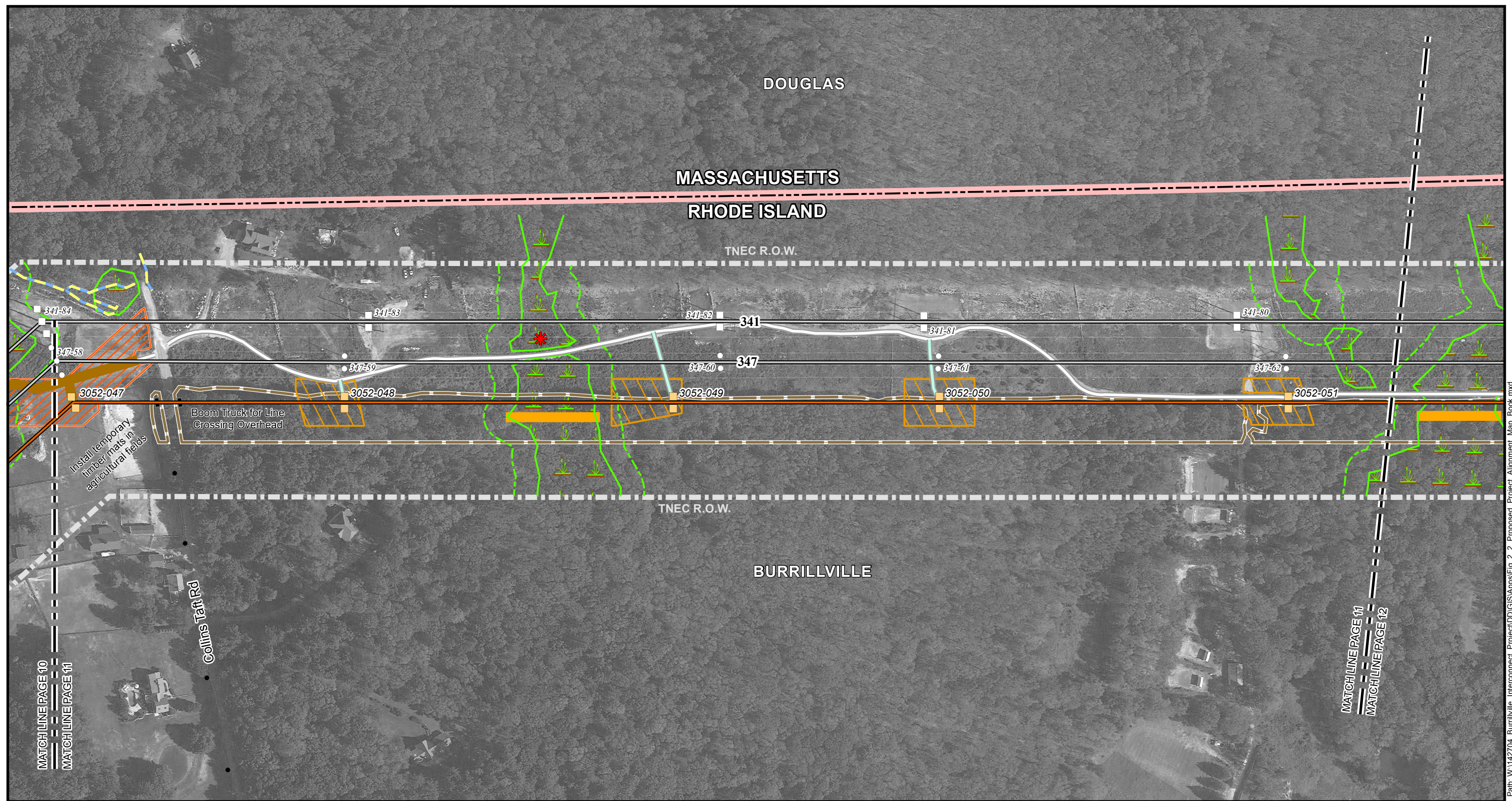


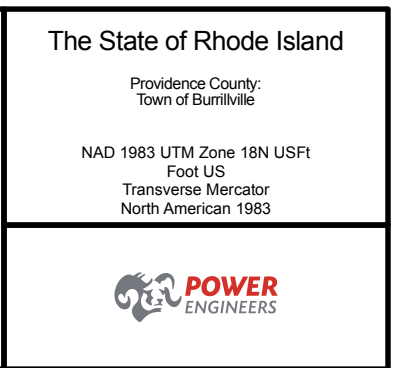
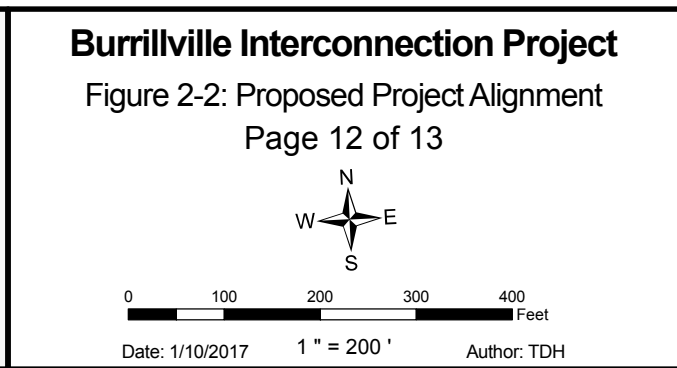
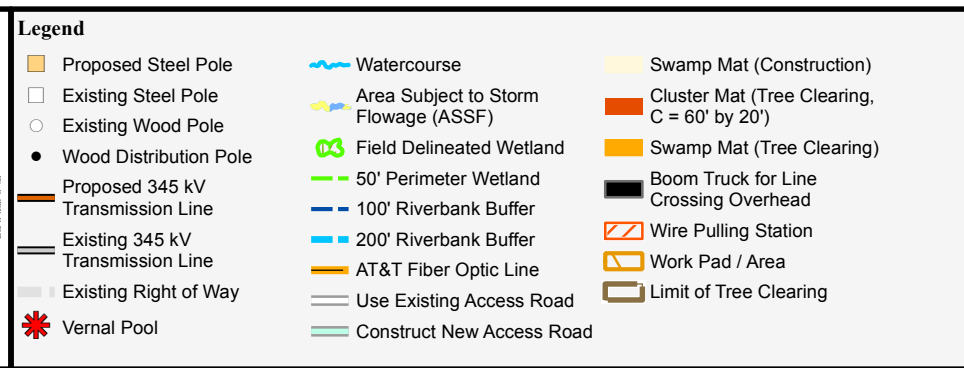
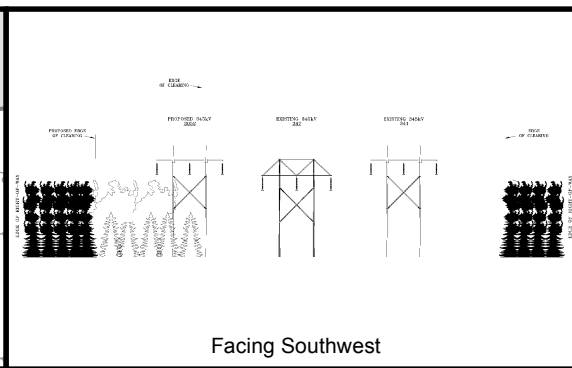
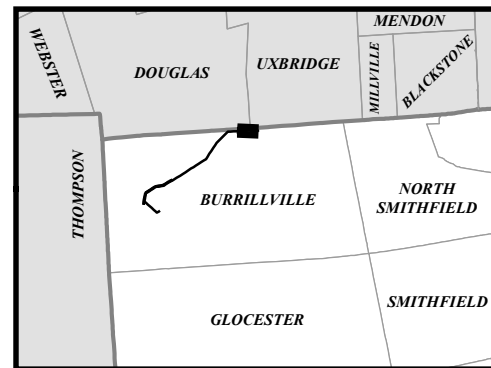
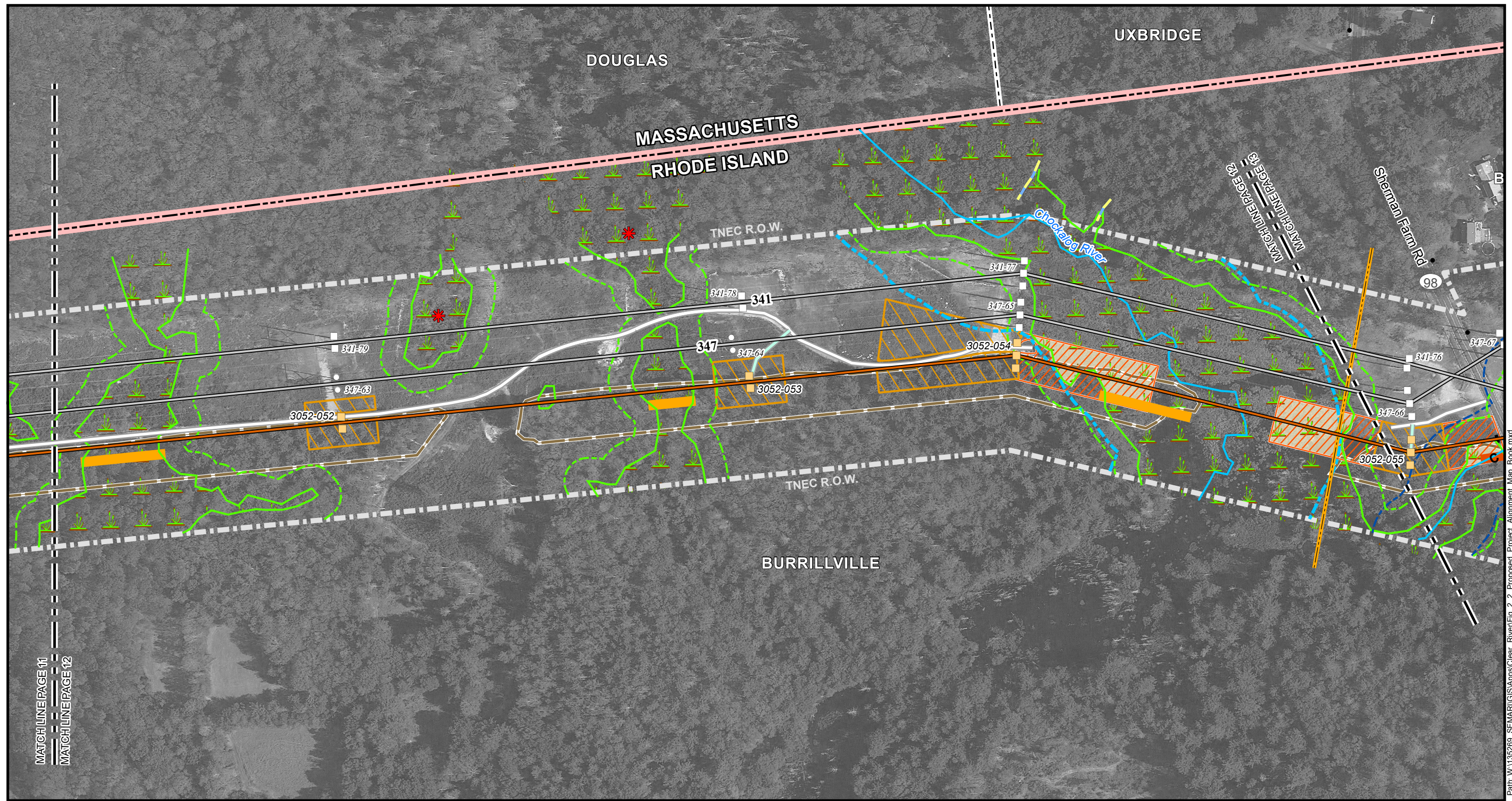
The State of Rhode Island

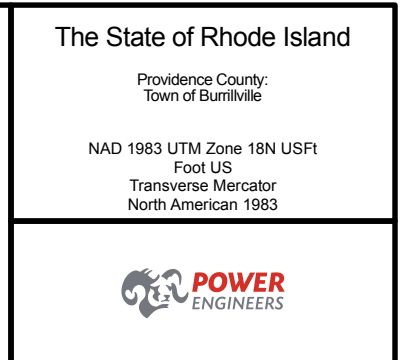
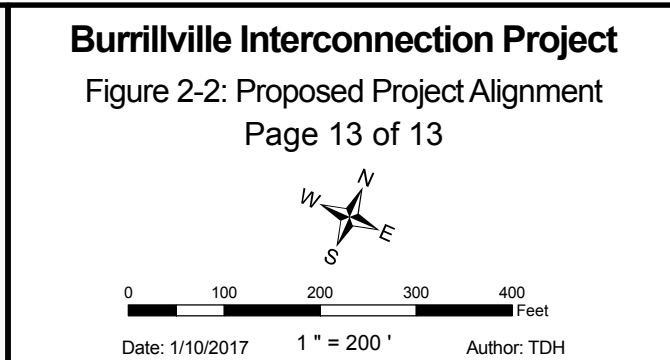
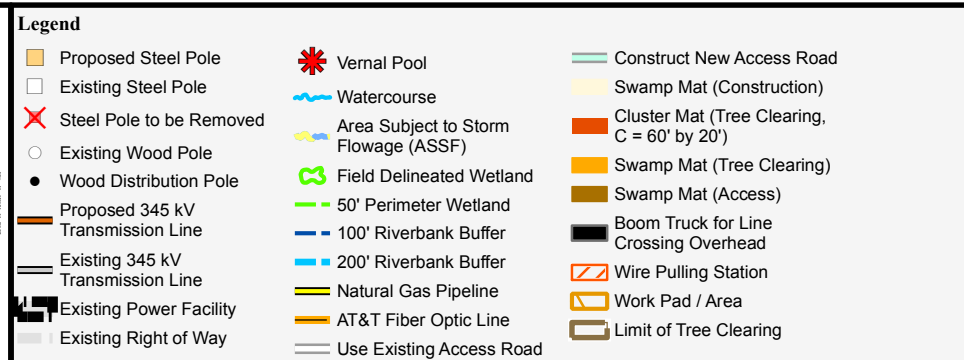
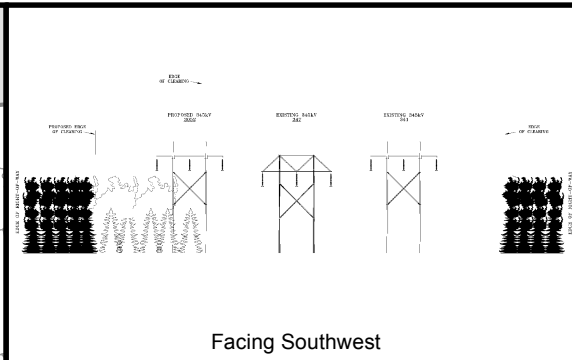
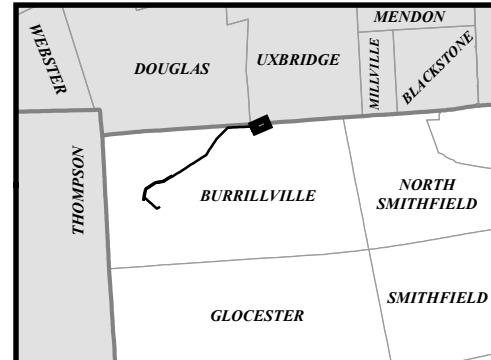
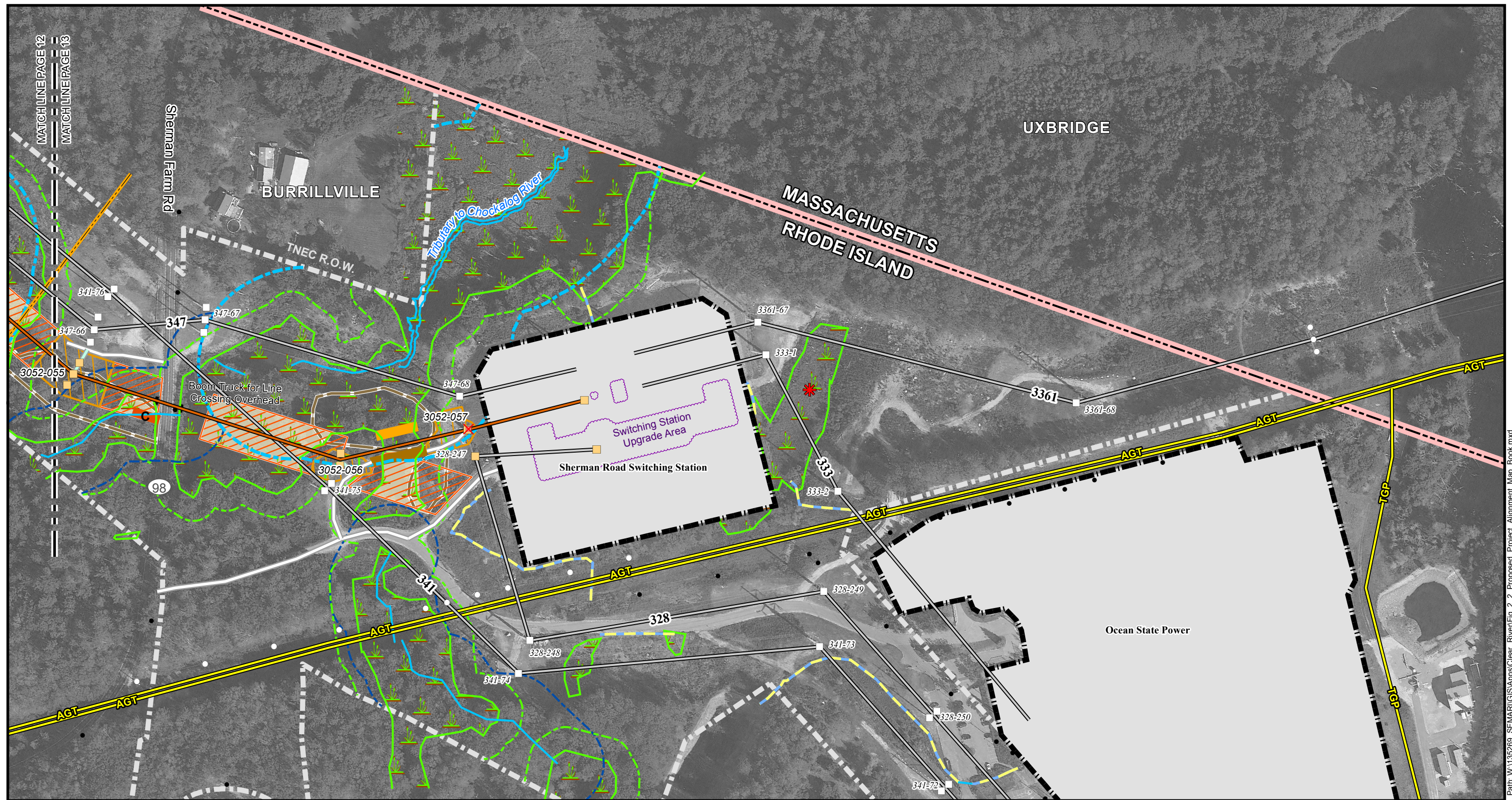
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Foot US
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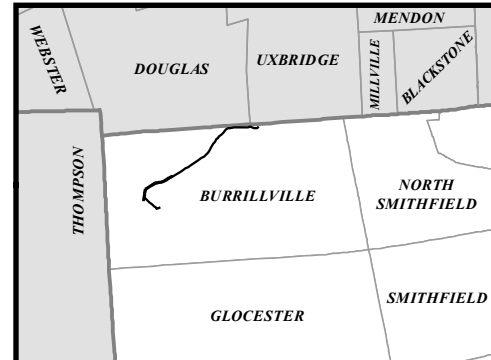
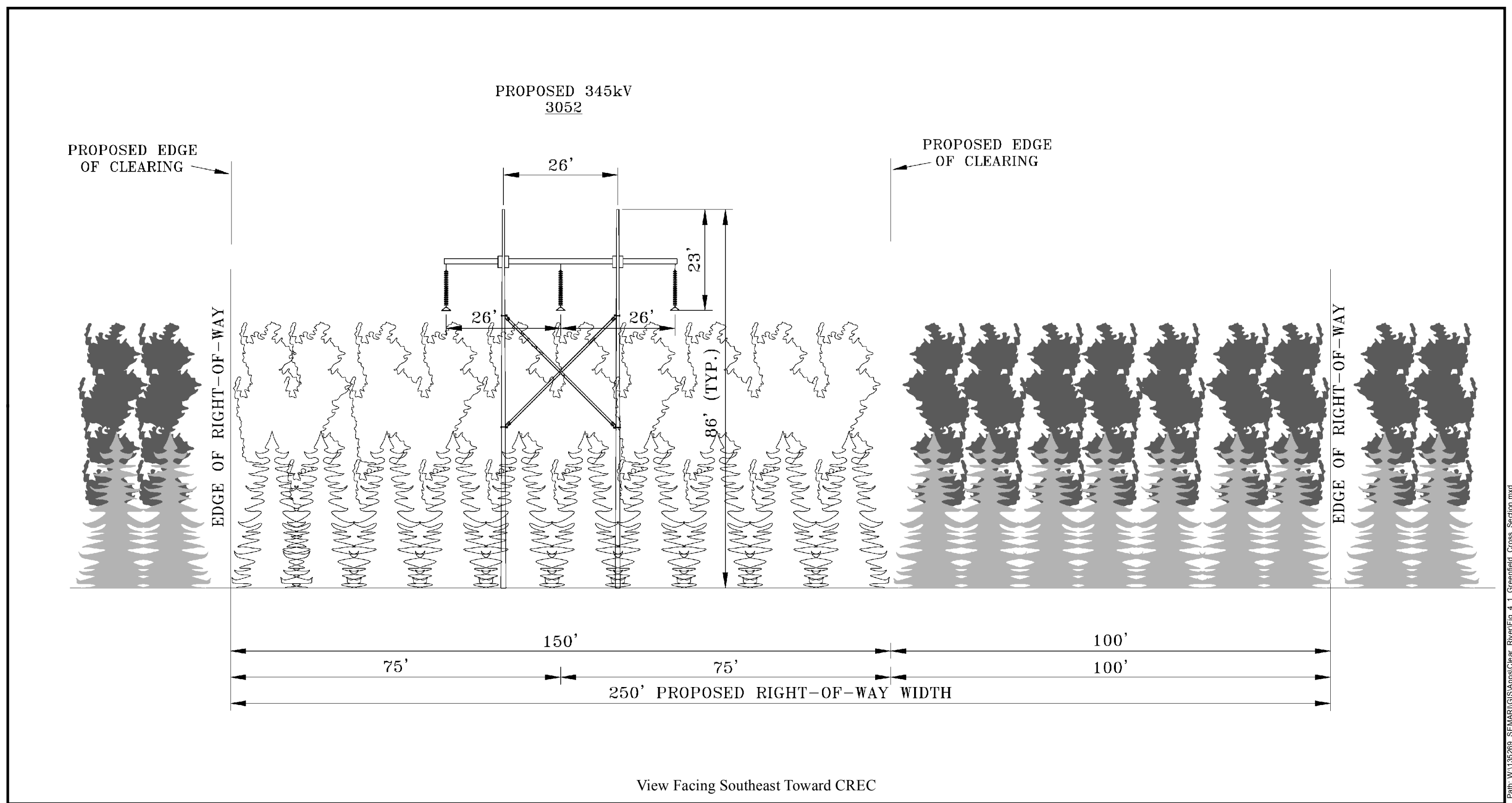
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Typical Right of Way Cross Section - Segment 1
CREC ROW
Approximately 0.8 Mile
Burrillville, RI

Burrillville Interconnection Project

Figure 4-1:
CREC ROW Segment 1 Cross Section

Date: 1/3/2017

Author: TDH

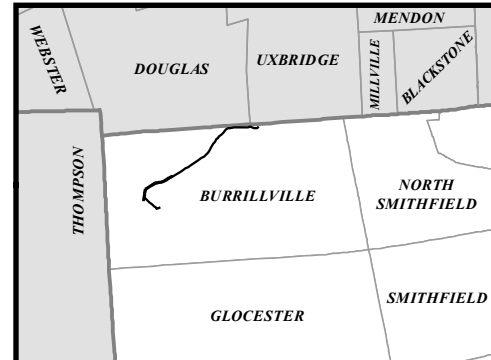
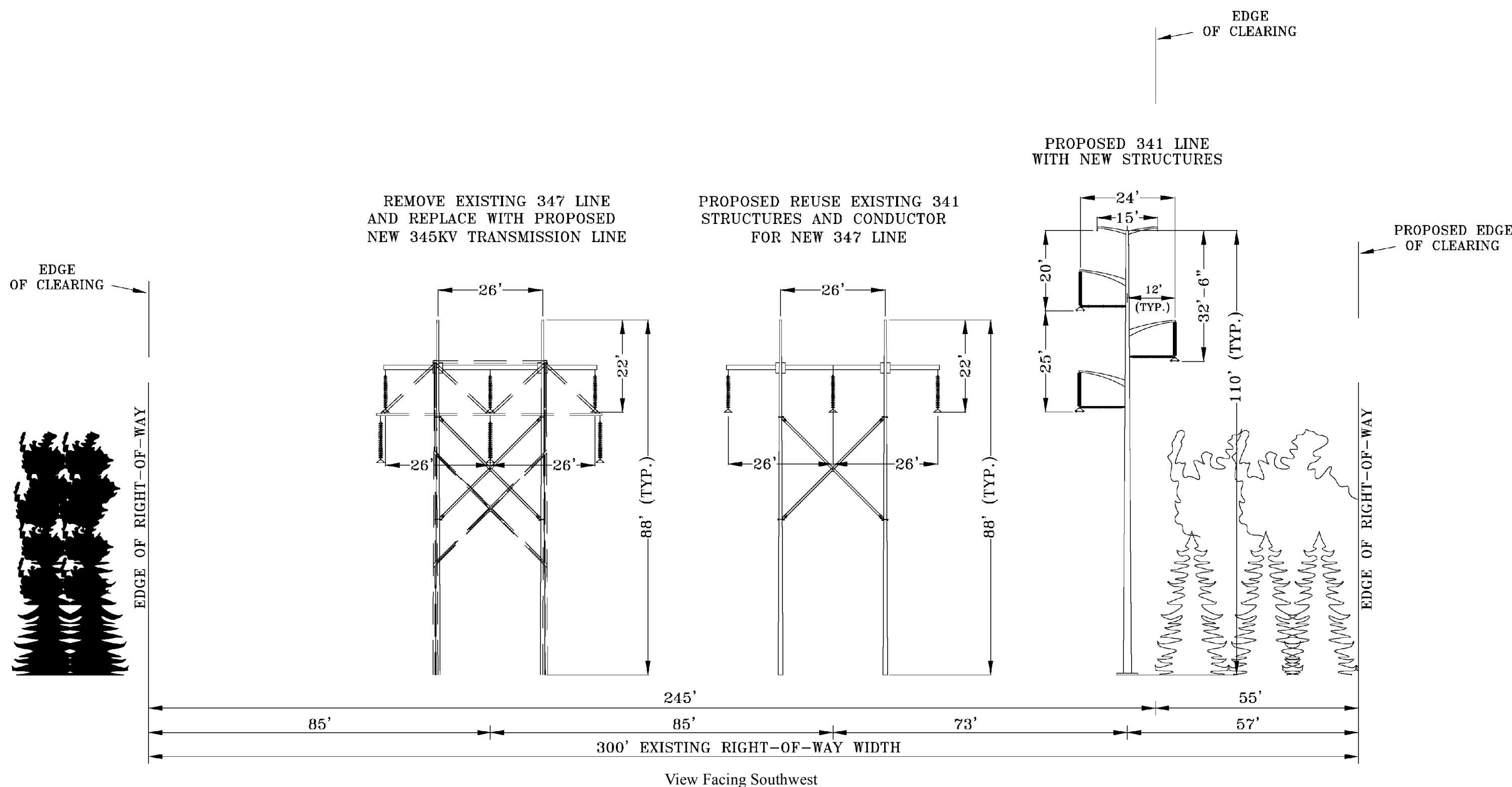
The State of Rhode Island

Providence County:
Town of Burrillville

NAD 1983 UTM Zone 18N USFt
Foot US
Transverse Mercator
North American 1983

**POWER
ENGINEERS**

Path: W:\135269_SEMAR\GISApps\Clear_River\Fig_4_1_Greenfield_Cross_Section.mxd



Typical Right of Way Cross Section - Segment 2
TNEC ROW to 0.19 Mile West of the Clear River
Approximately 1.6 Miles
Burrillville, RI

Burrillville Interconnection Project
Figure 4-1:
TNEC ROW Segment 2 Cross Section

The State of Rhode Island
Providence County:
Town of Burrillville

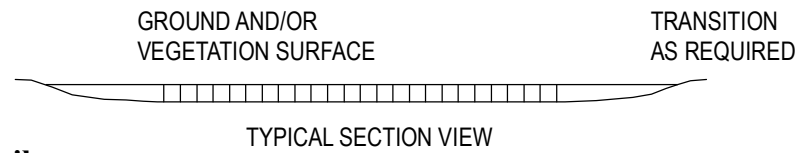
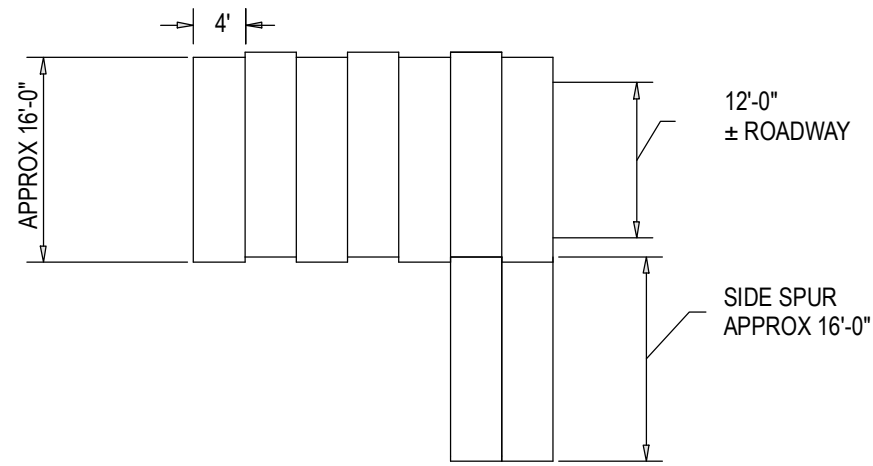
NAD 1983 UTM Zone 18N USFt
Foot US
Transverse Mercator
North American 1983



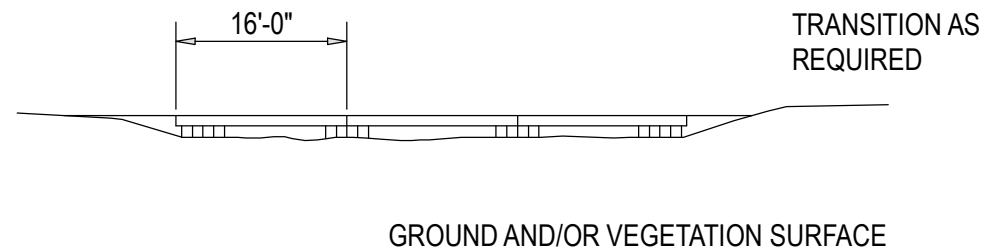
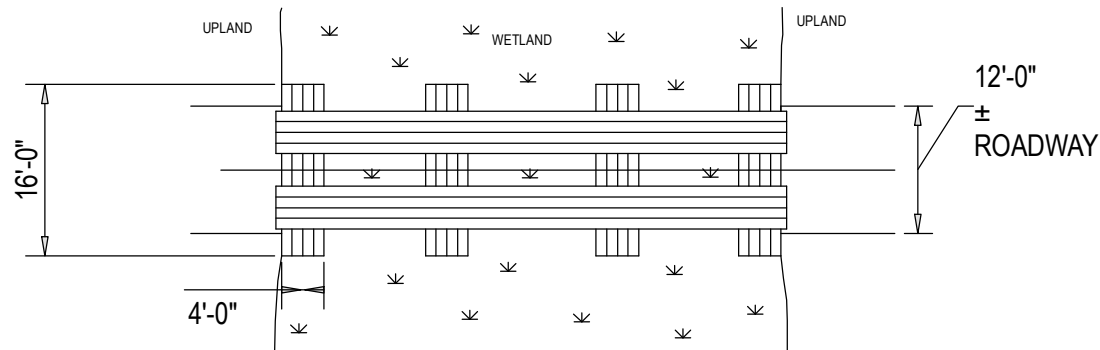
Date: 1/10/2017

Author: TDH

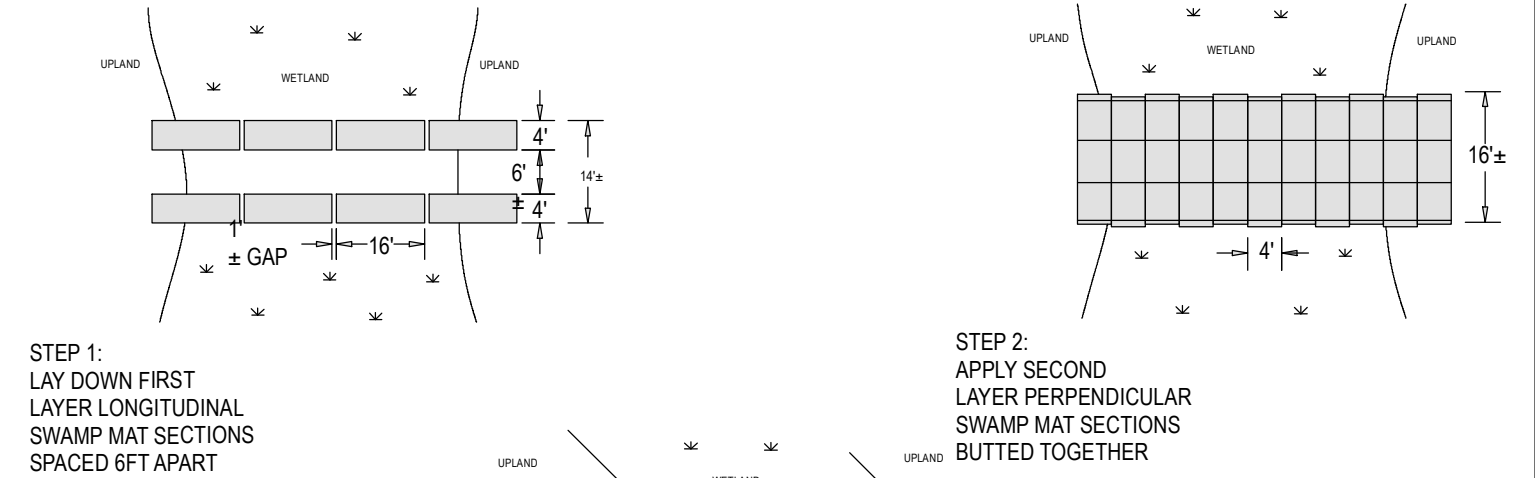
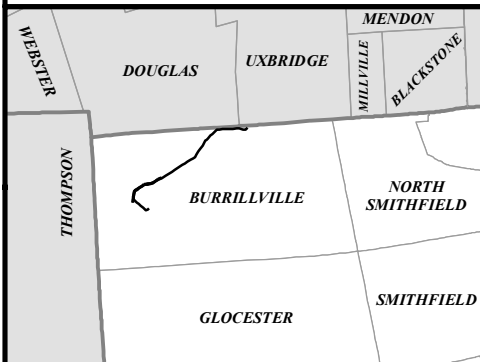
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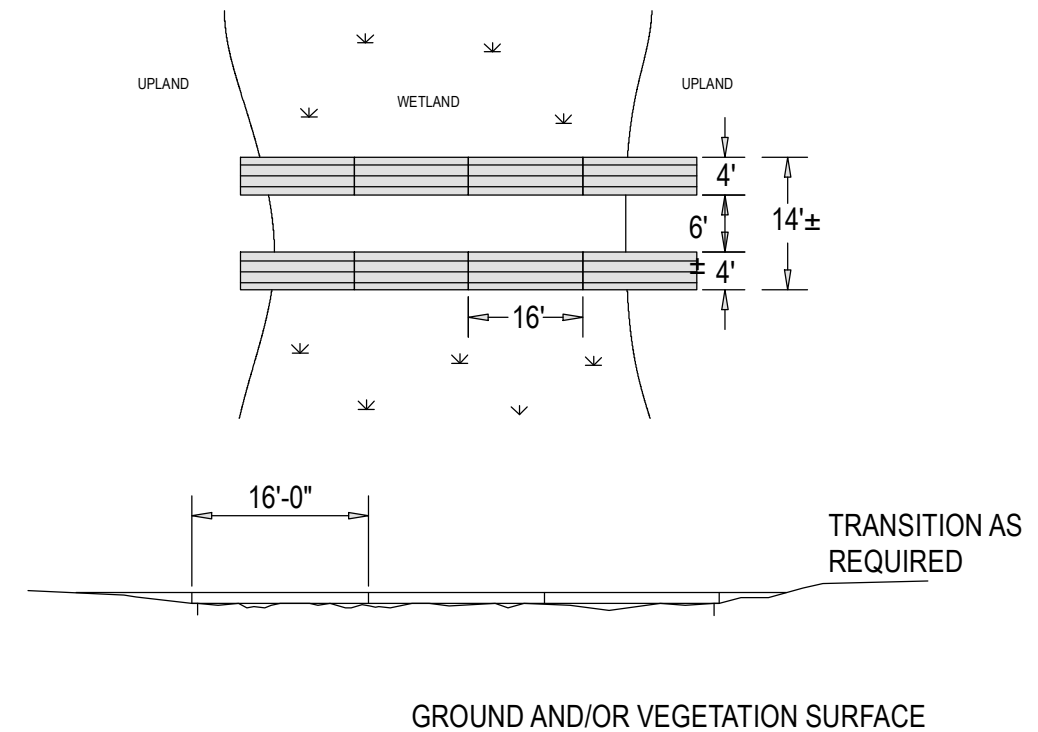
Crosswise Swamp Mat Detail



Parallel Swamp Mat Details with Stringers



Crosswise Swamp Mat Detail with Stringers



Parallel Swamp Mat Details

Burrillville Interconnection Project

Figure 4-2:
Swamp Mat Details

Date: 12/2/2016

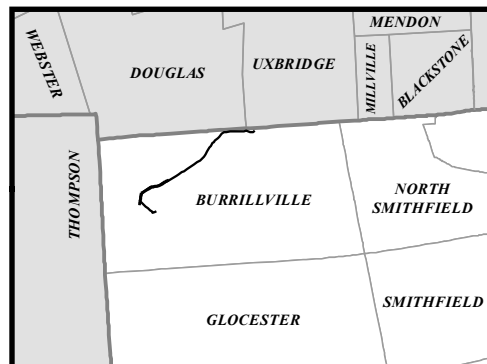
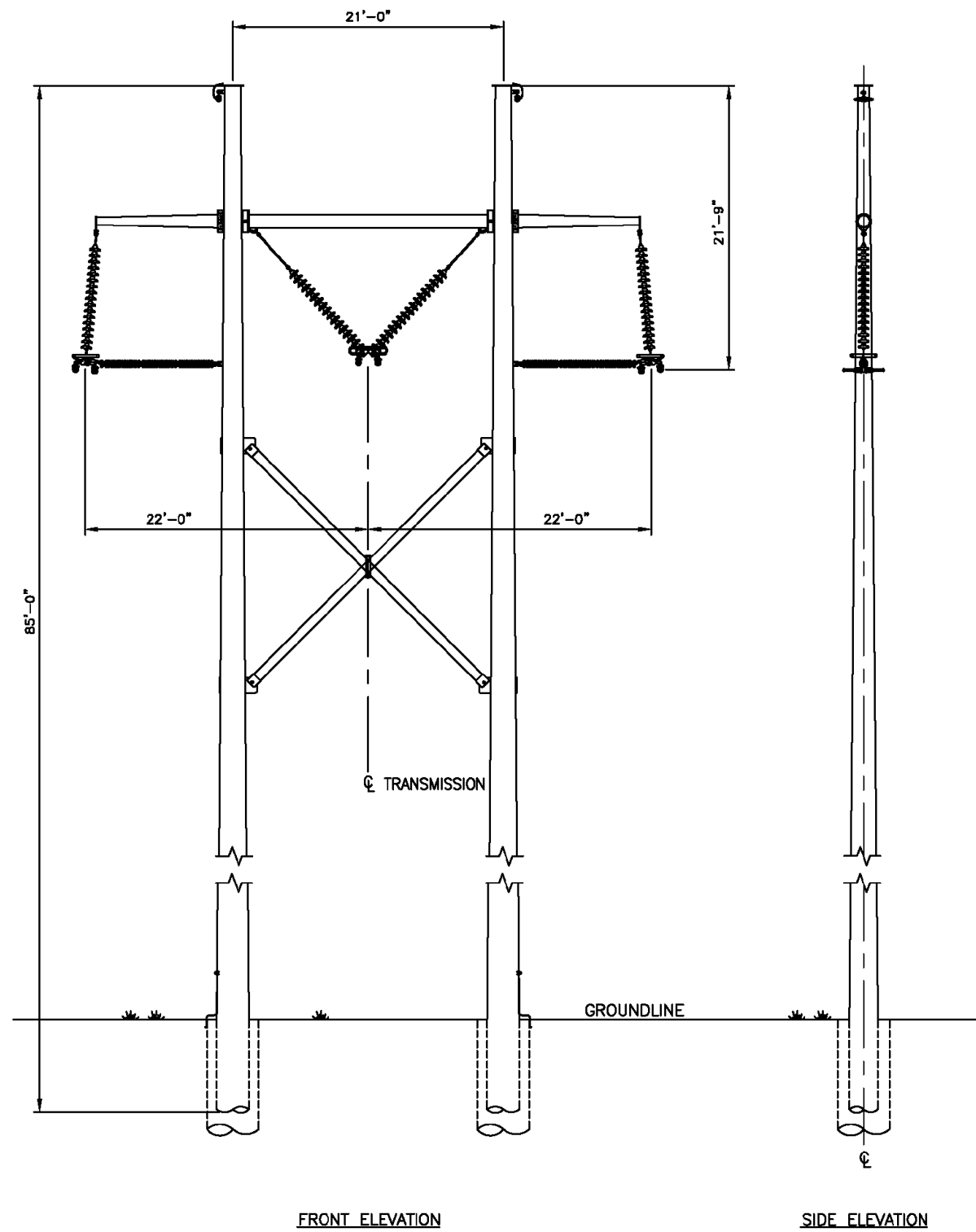
Author: TDH

The State of Rhode Island

Providence County:
Town of Burrillville

NAD 1983 UTM Zone 18N USFt
Foot US
Transverse Mercator
North American 1983





Burrillville Interconnection Project

Figure 4-3:
0° - 2° Tangent H-Frame Suspension

Date: 12/5/2016

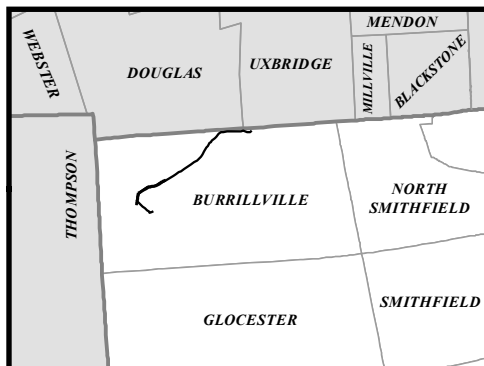
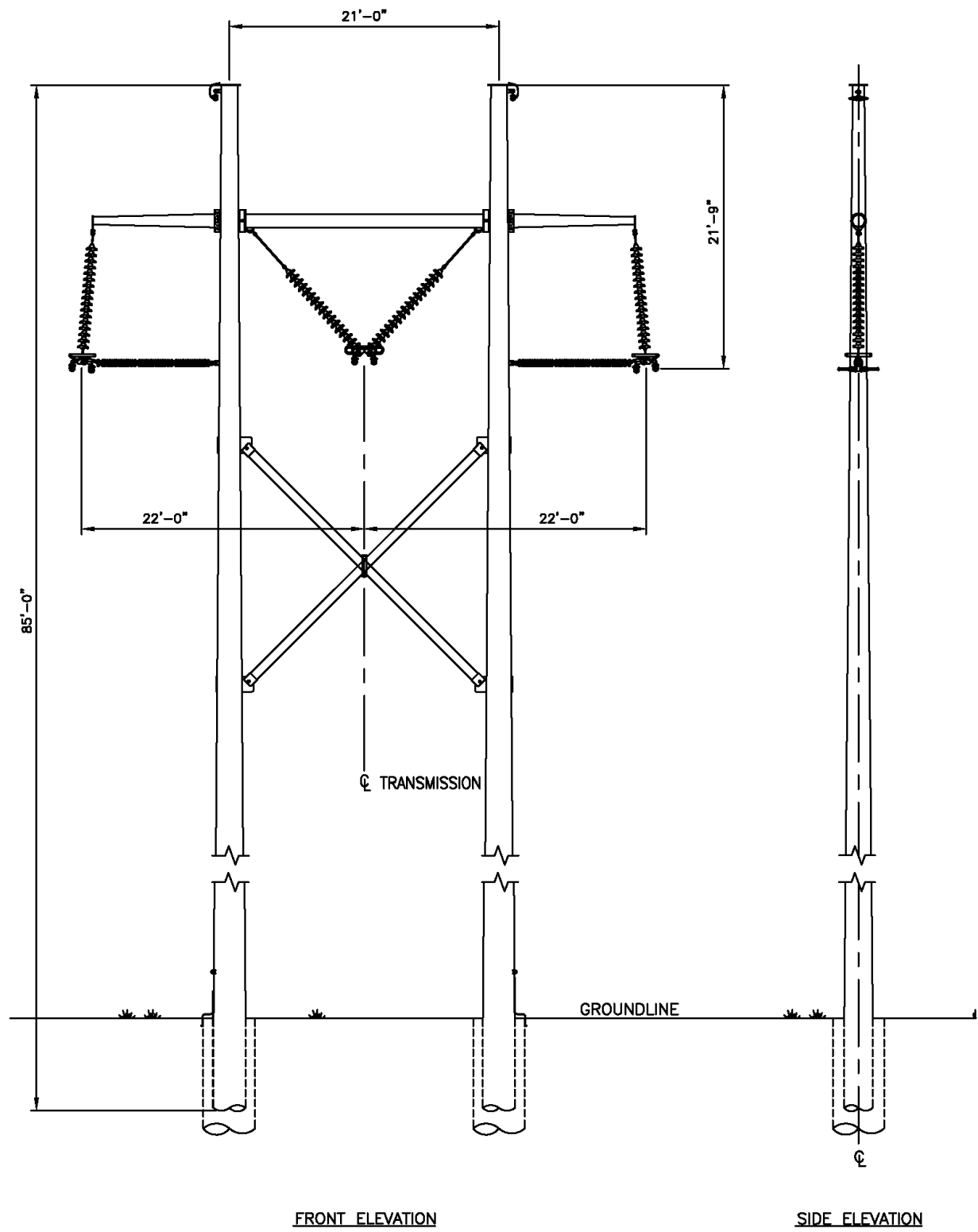
Author: TDH

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Providence County:
Town of Burrillville

NAD 1983 UTM Zone 18N USFt
Foot US
Transverse Mercator
North American 1983





Burrillville Interconnection Project

Figure 4-4:
0° - 2° Tangent H-Frame Suspension Restrained

Date: 12/5/2016

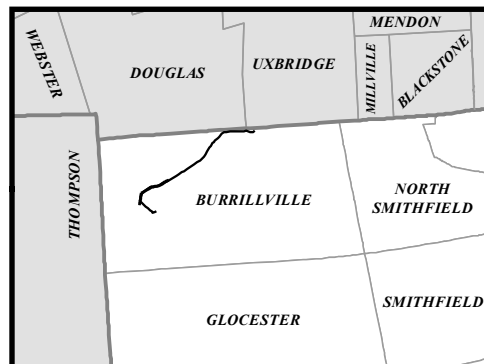
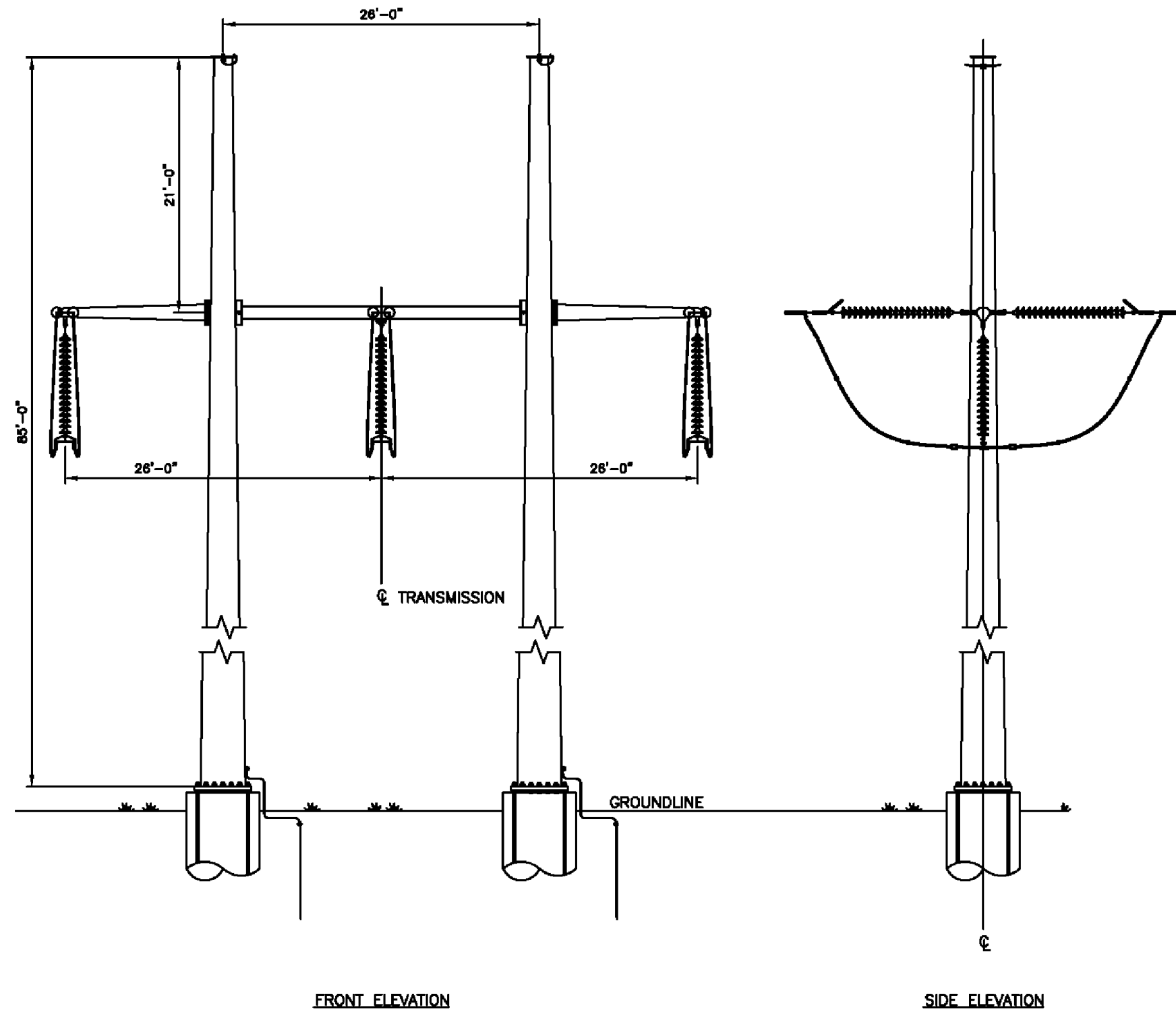
Author: TDH

The State of Rhode Island

Providence County:
Town of Burrillville

NAD 1983 UTM Zone 18N USFt
Foot US
Transverse Mercator
North American 1983





Burrillville Interconnection Project

Figure 4-5:
0° - 60° H-Frame Dead End

Date: 12/5/2016

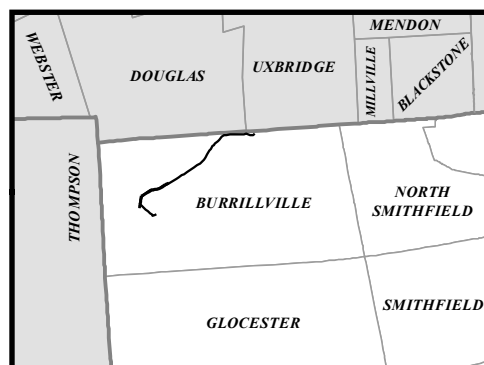
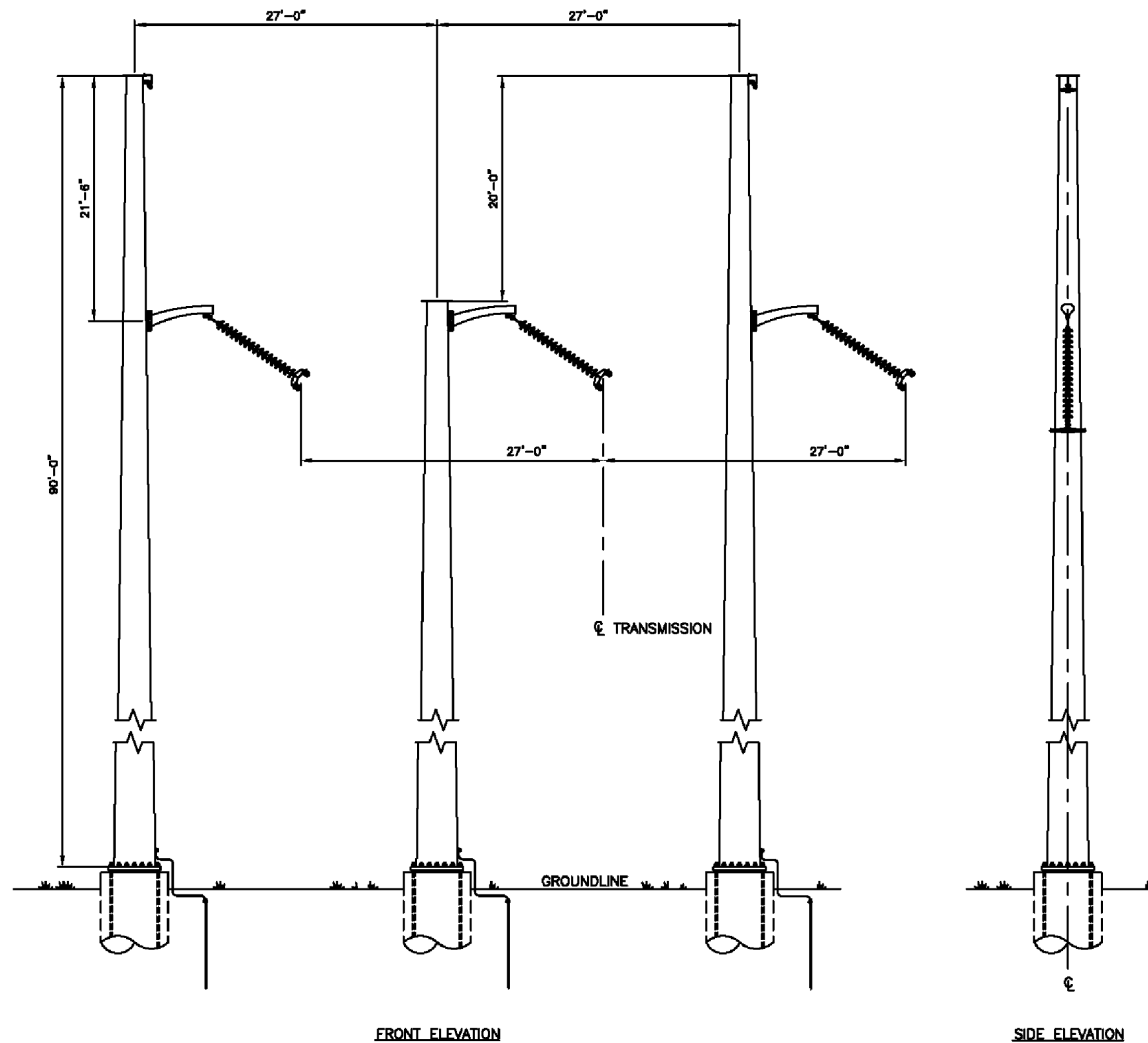
Author: TDH

The State of Rhode Island

Providence County:
Town of Burrillville

NAD 1983 UTM Zone 18N USFt
Foot US
Transverse Mercator
North American 1983





Burrillville Interconnection Project

Figure 4-6:
10° - 30° 3-Pole Suspension Pulloff

Date: 12/5/2016

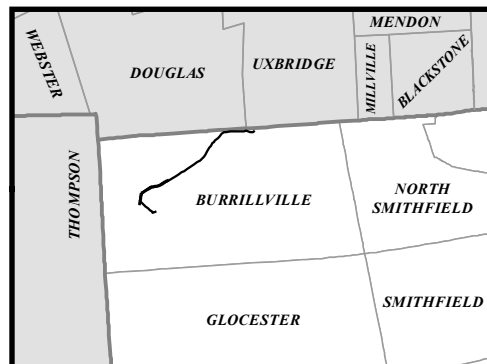
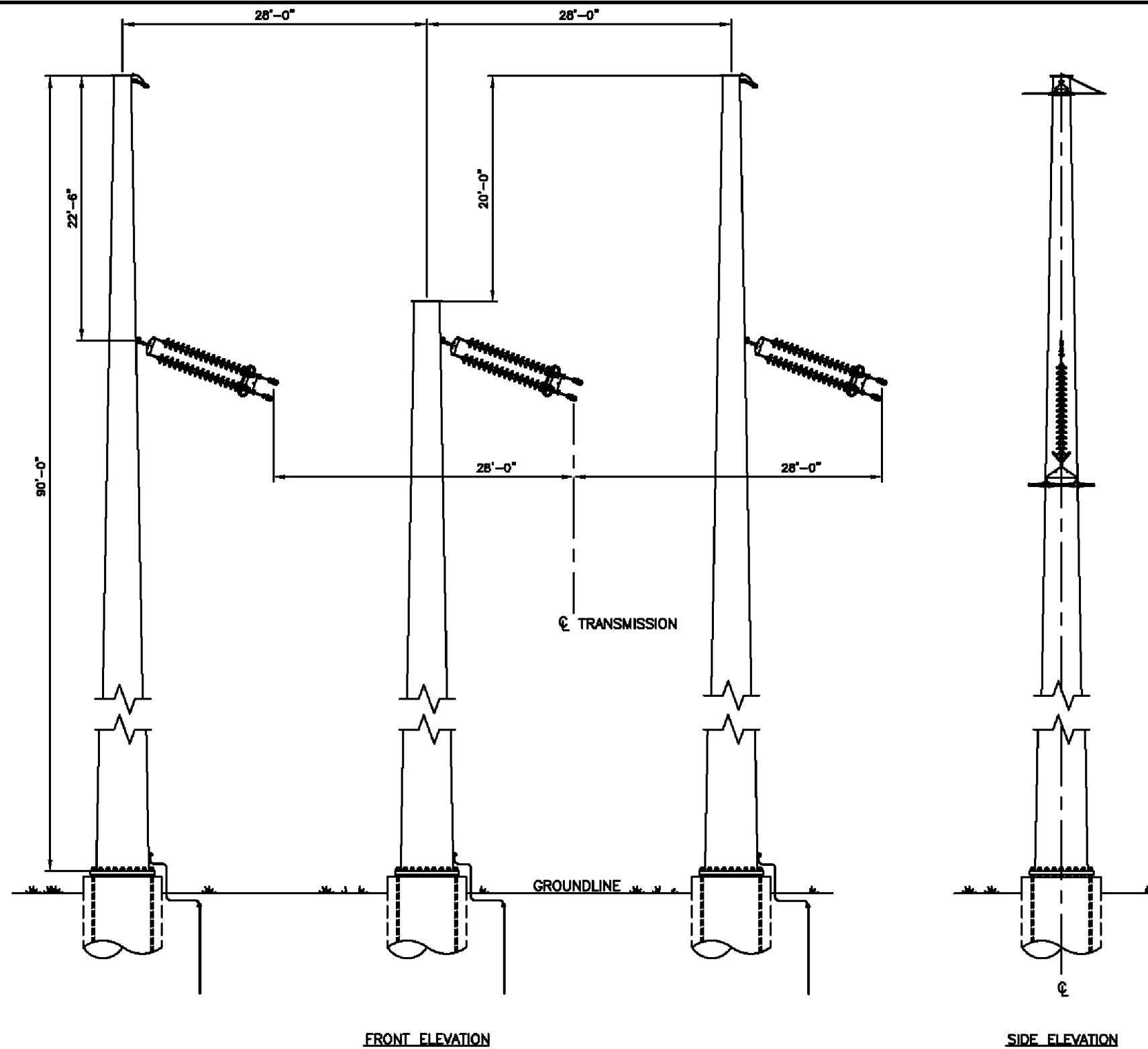
Author: TDH

The State of Rhode Island

Providence County:
Town of Burrillville

NAD 1983 UTM Zone 18N USFt
Foot US
Transverse Mercator
North American 1983





Burrillville Interconnection Project

Figure 4-7:
30° - 50° 3-Pole Suspension Pulloff

Date: 12/5/2016

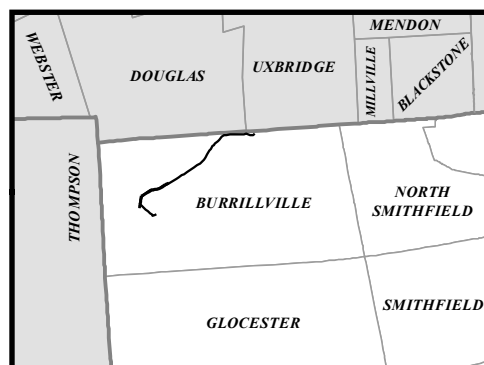
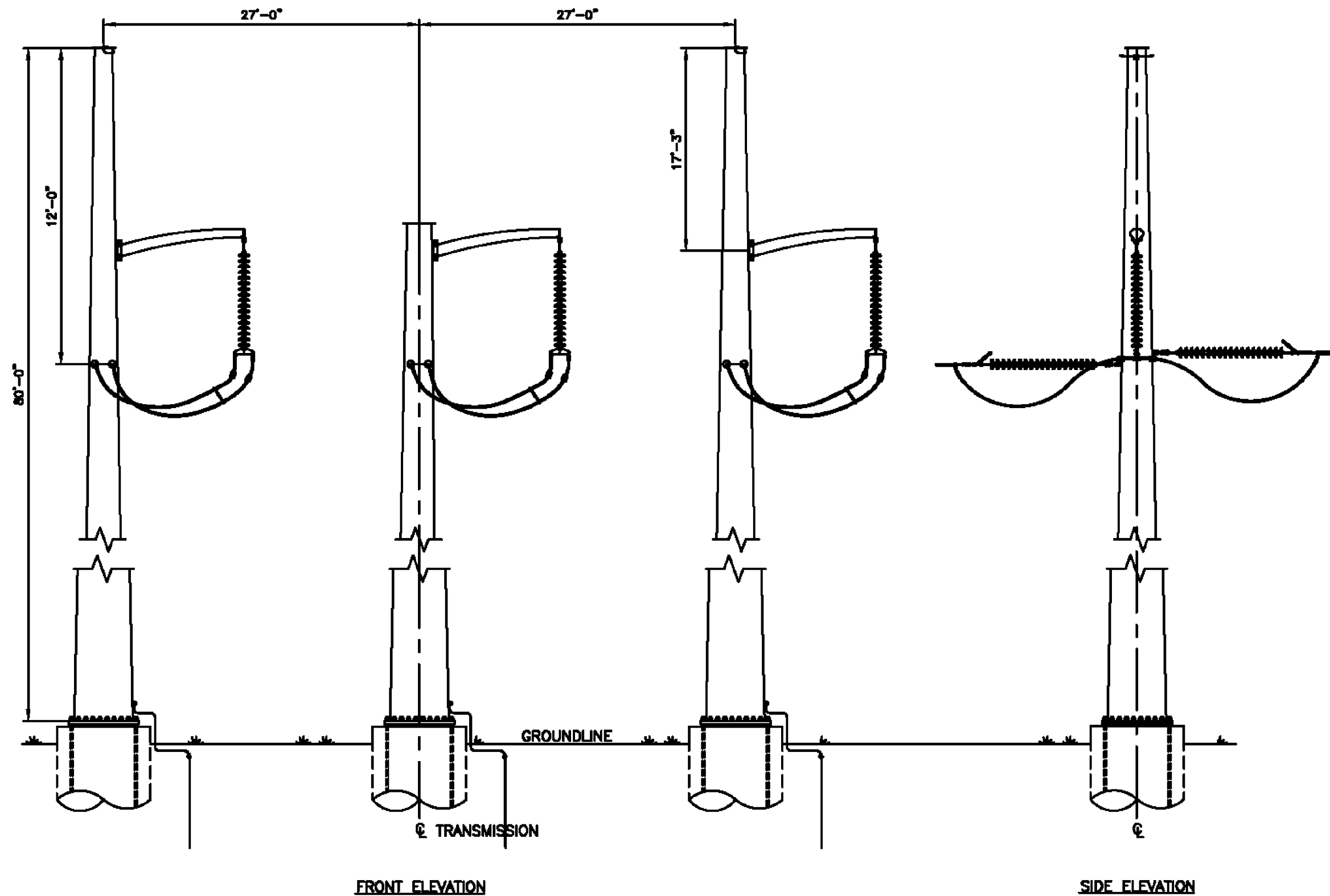
Author: TDH

The State of Rhode Island

Providence County:
Town of Burrillville

NAD 1983 UTM Zone 18N USFt
Foot US
Transverse Mercator
North American 1983





Burrillville Interconnection Project

Figure 4-8:
0° - 60° 3-Pole Dead End

Date: 12/5/2016

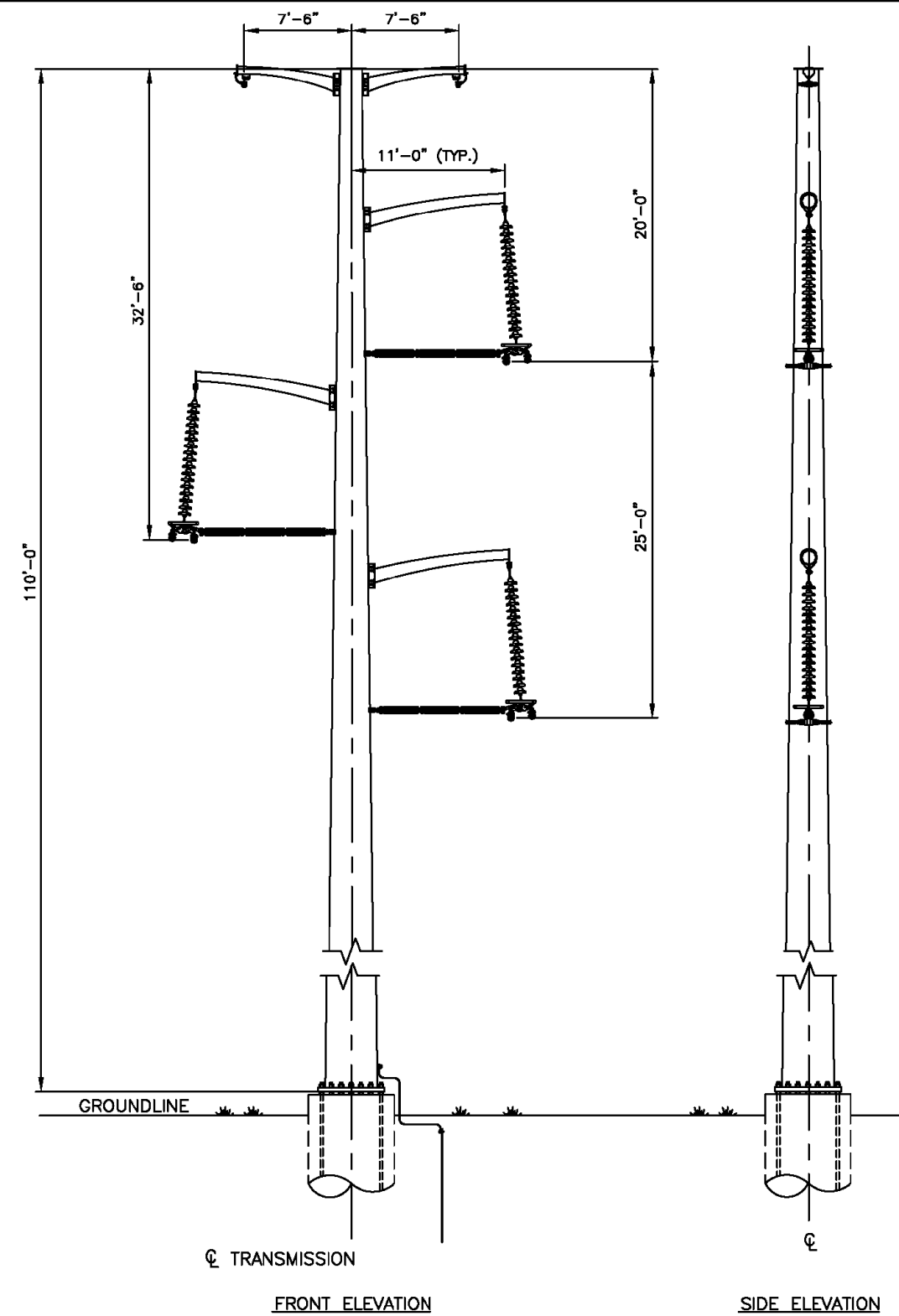
Author: TDH

The State of Rhode Island

Providence County:
Town of Burrillville

NAD 1983 UTM Zone 18N USFt
Foot US
Transverse Mercator
North American 1983





Burrillville Interconnection Project

Figure 4-9:
0° - 2° Tangent Single Pole Delta Restrained

The State of Rhode Island

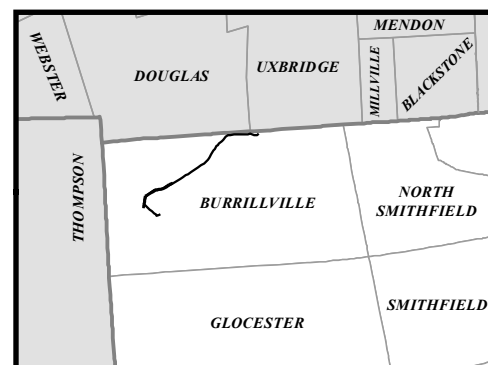
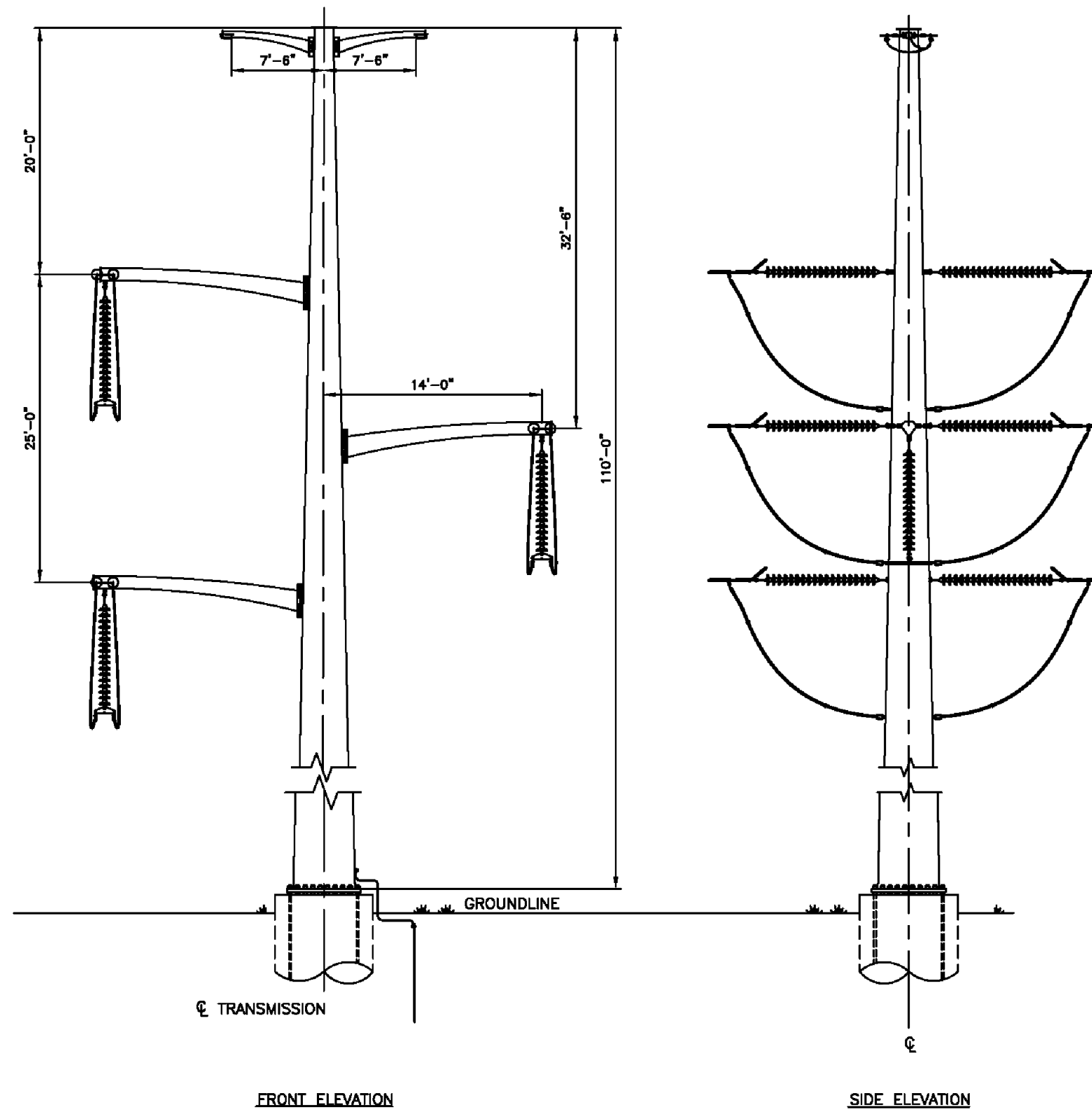
Providence County:
Town of Burrillville

NAD 1983 UTM Zone 18N USFt
Foot US
Transverse Mercator
North American 1983



Date: 12/5/2016

Author: TDH



Burrillville Interconnection Project

Figure 4-10:
0° - 90° Single Pole Dead End

Date: 12/5/2016

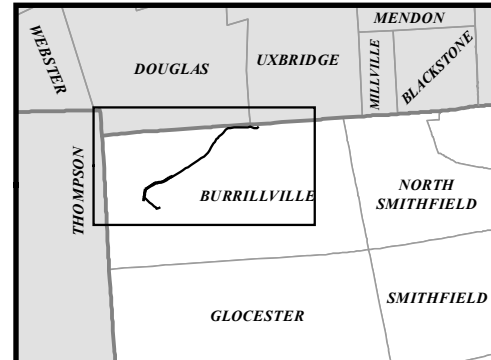
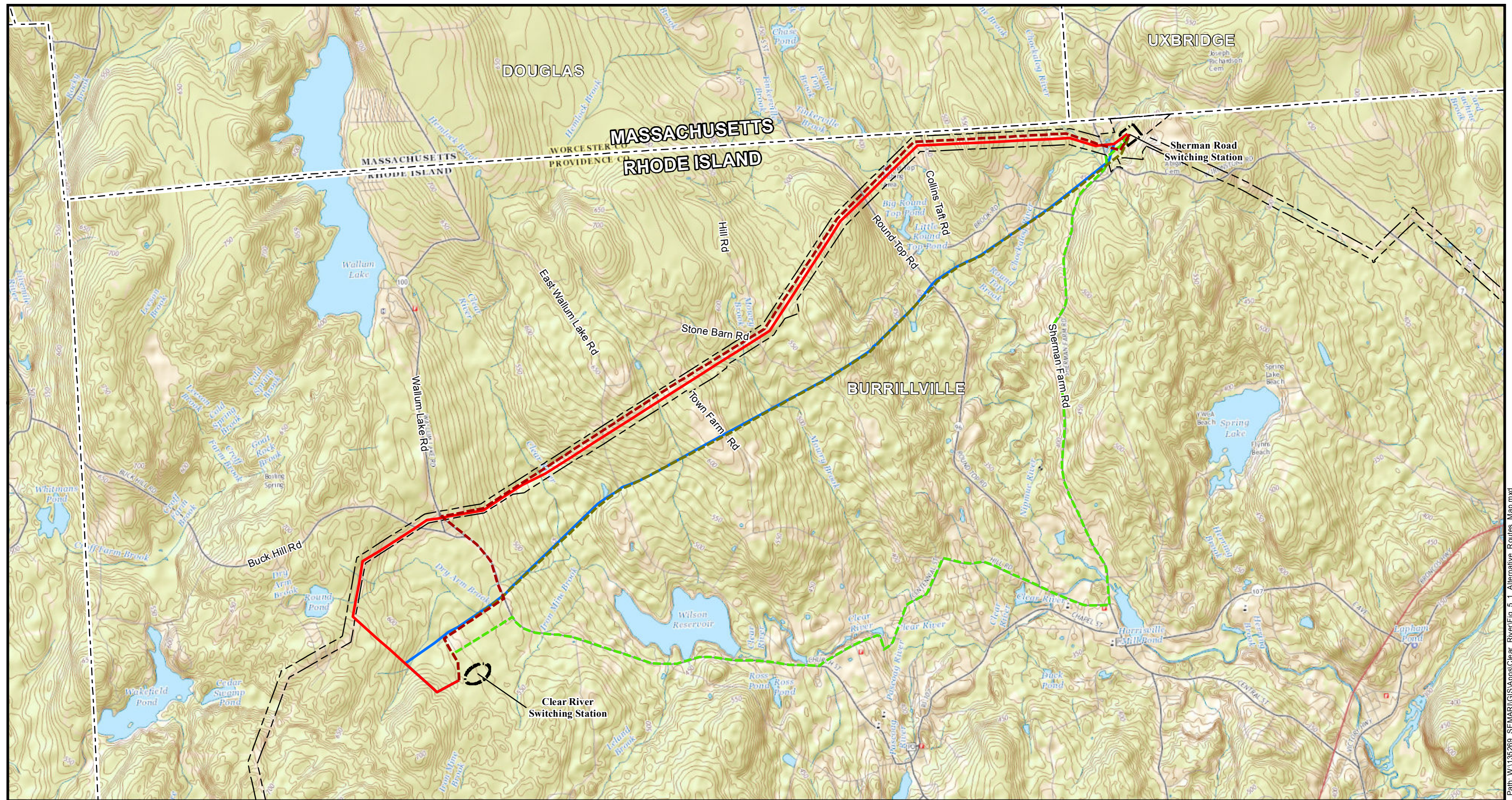
Author: TDH

The State of Rhode Island

Providence County:
Town of Burrillville

NAD 1983 UTM Zone 18N USFt
Foot US
Transverse Mercator
North American 1983





Legend

Overhaed Project Alternatives

- Proposed 3052 Line
- Alternative Pipeline Corridor

Underground Project Alternatives

- Transmission Line Right of Way
- Pipeline Right of Way
- Existing Road Right of Way

Existing or Proposed Power Facility

Existing Right-of-Way Edge

Town Boundary

Burrillville Interconnection Project

Figure 5-1:
Alternative Routes Map

N
W E
S

0 1,000 2,000 3,000 4,000 5,000 6,000 Feet

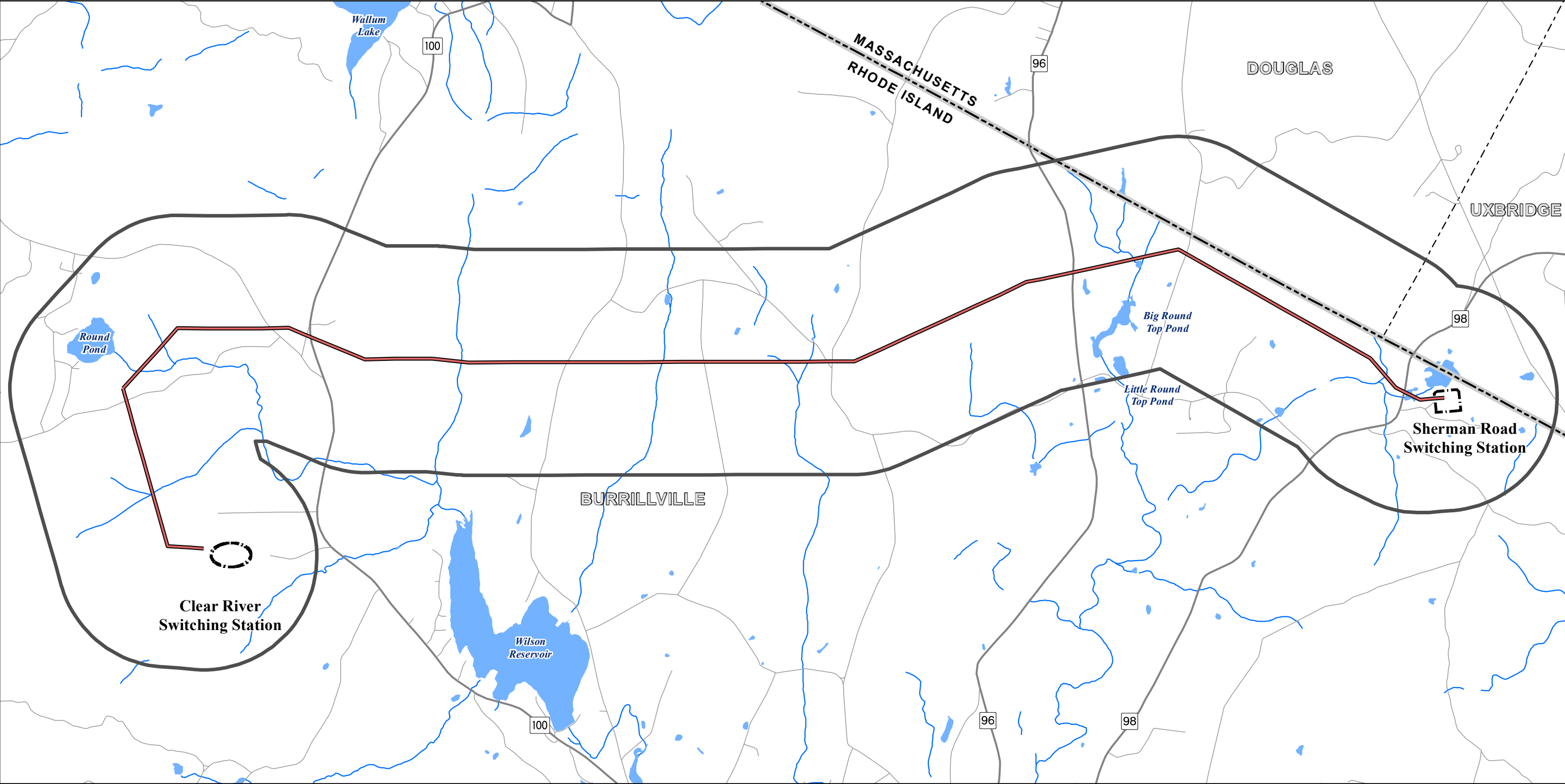
Date: 1/10/2017 1" = 3,000' Author: TDH

The State of Rhode Island

Providence County:
Town of Burrillville

NAD 1983 UTM Zone 18N USFt
Foot US
Transverse Mercator
North American 1983

Path: W:\135269_SEMAR\GISApps\Clear_River\Fig_5_1_Alternative_Routes_Map.mxd



Legend

Project Features

- Proposed Transmission Line
- 5000 Foot Study Area
- Substation Site

Transportation Features

- State Highway
- Other Road

Political Boundaries

- State Boundary
- Town Boundary

Water features

- Lake or Pond
- River or Stream

DOUGLAS

UXBRIDGE

BURRILLVILLE

GLOCESTER

WEBSTER

THOMPSON

FIGURE 6-1

Basemap

Burrillville Interconnection Project

0 1,000 2,000 3,000 4,000

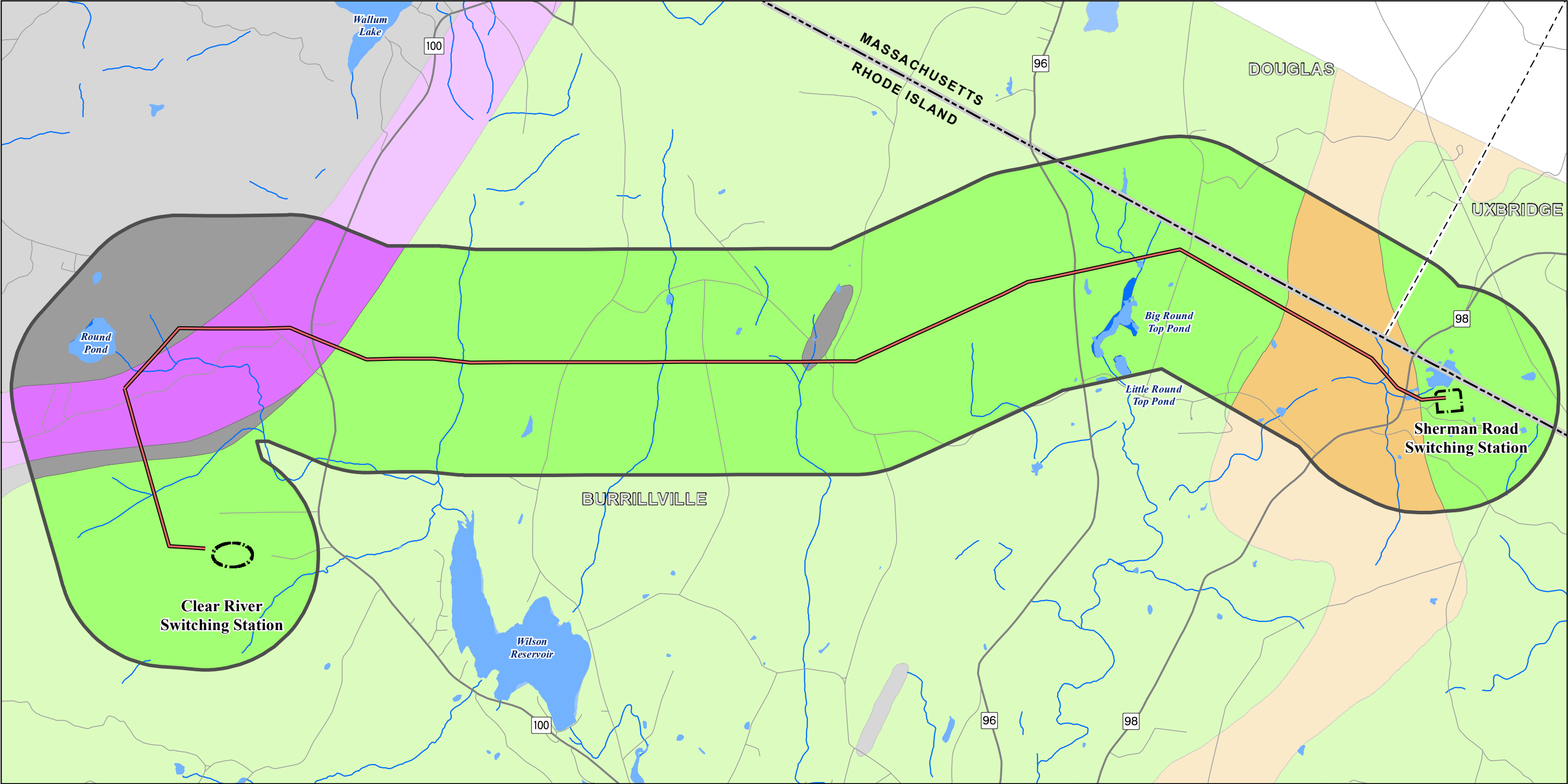
Feet

Invenergy

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Date: 1/4/2017

nationalgrid



Legend

Project Features

- Proposed Transmission Line
- 5000 Foot Study Area
- Substation Site

Transportation Features

- State Highway
- Other Road

Political Boundaries

- State Boundary
- Town Boundary

Water features

- Lake or Pond
- River or Stream

Bedrock Geology

- Alaskite Gneiss
- Augen Granite Gneiss
- Granite Gneiss
- Undifferentiated Rock
- Water

FIGURE 6-2
Bedrock Geology
Burrillville Interconnection Project

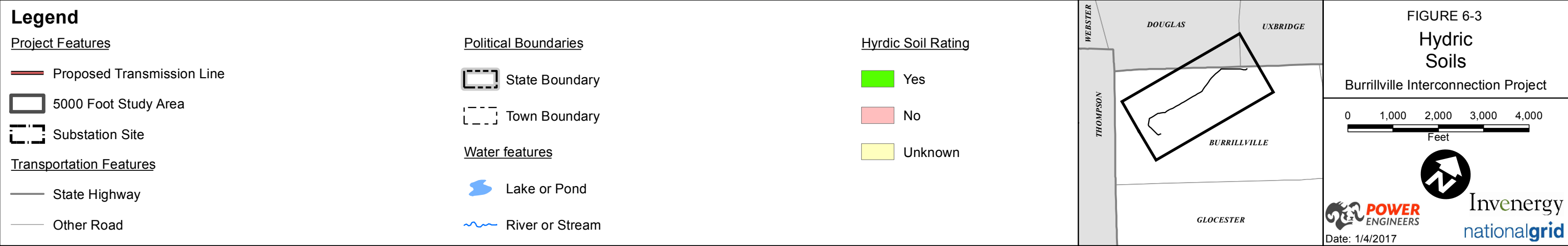
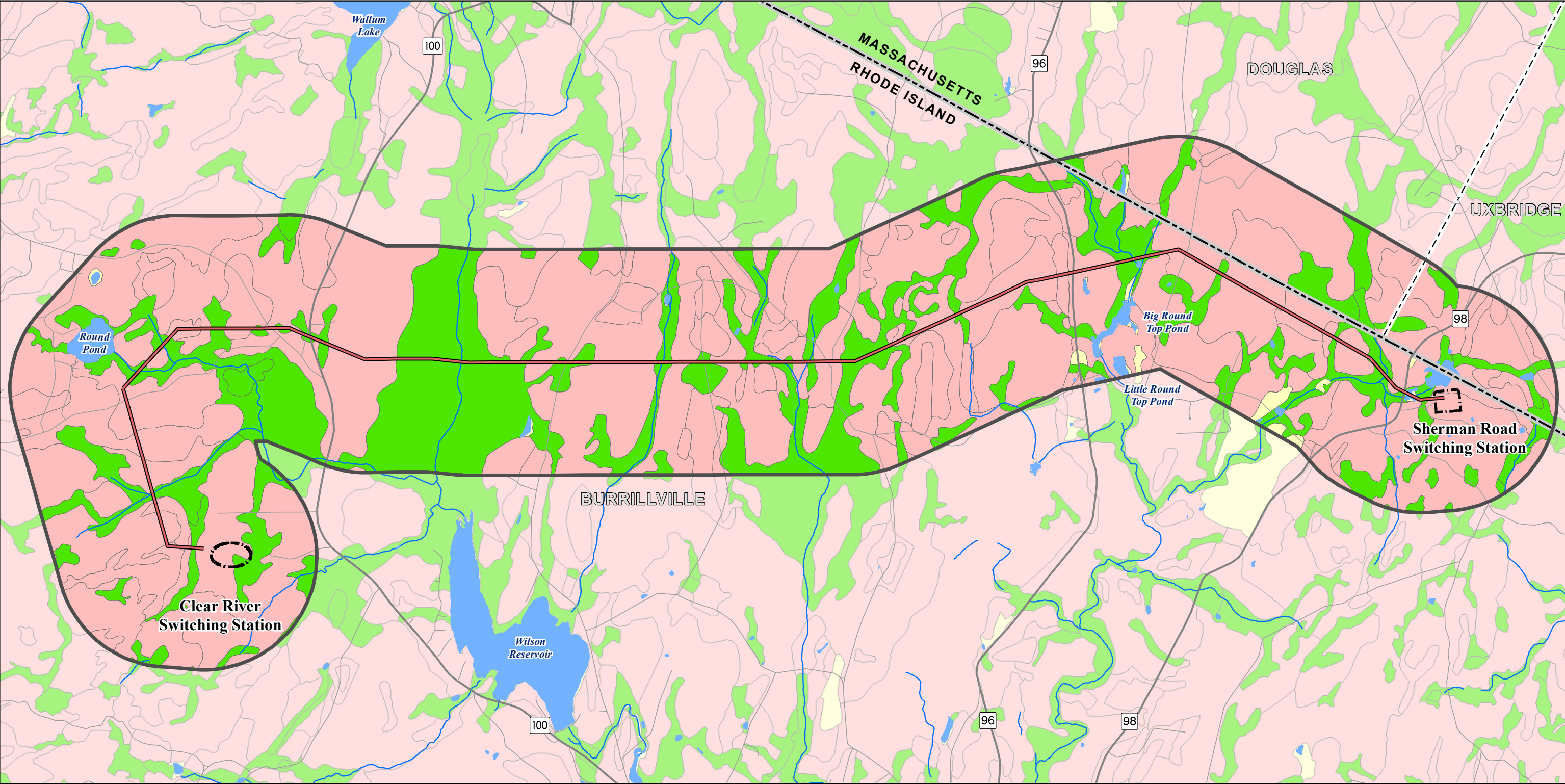
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Feet

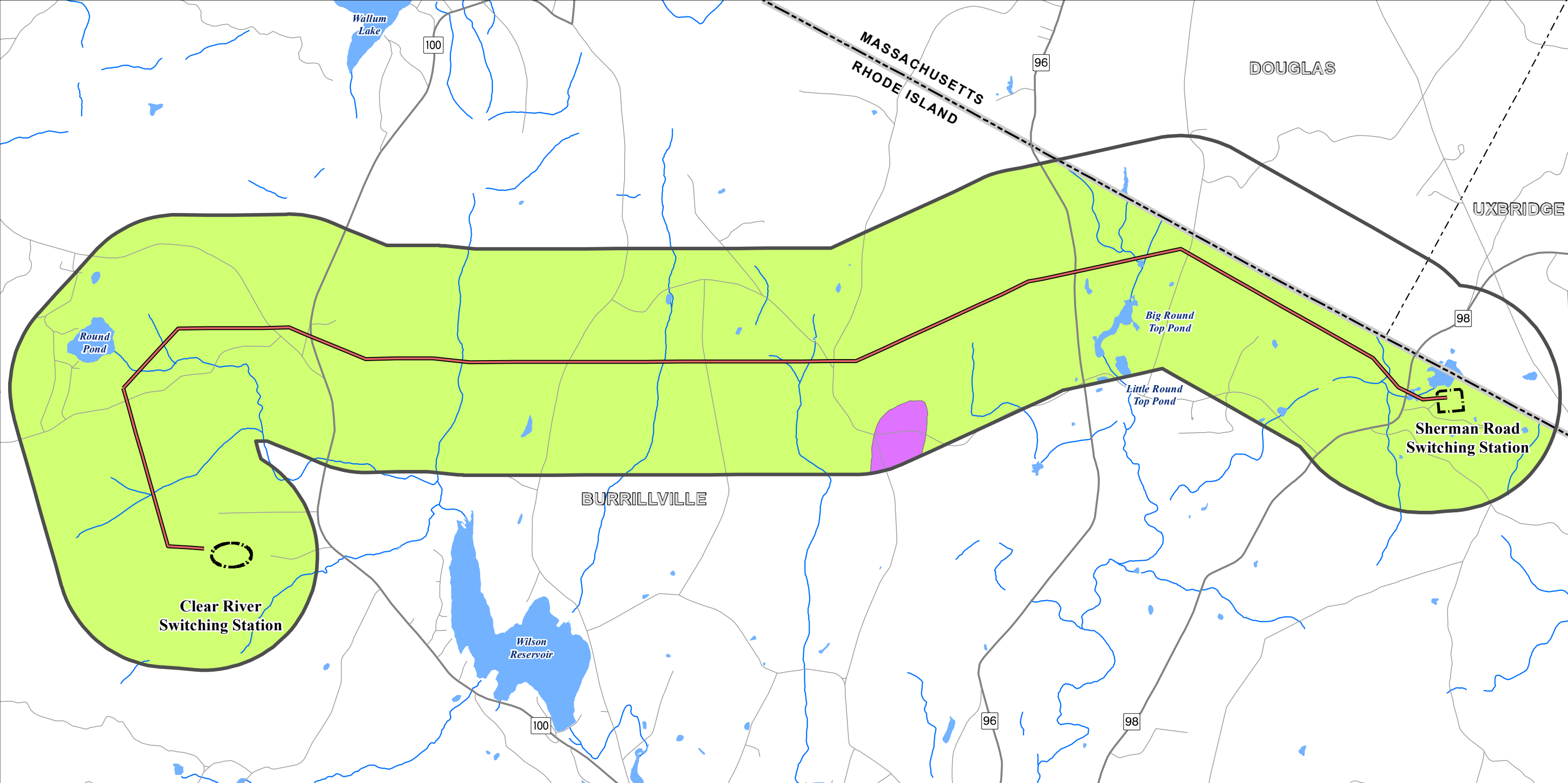
WEBSTER DOUGLAS UXBRIDGE THOMPSON BURRILLVILLE GLOCESTER

POWER ENGINEERS

Invenergy
nationalgrid

Date: 1/4/2017





Legend

Project Features

- Proposed Transmission Line
- 5000 Foot Study Area
- Substation Site

Transportation Features

- State Highway
- Other Road

Political Boundaries

- State Boundary
- Town Boundary

Water features

- Lake or Pond
- River or Stream

Groundwater Classification

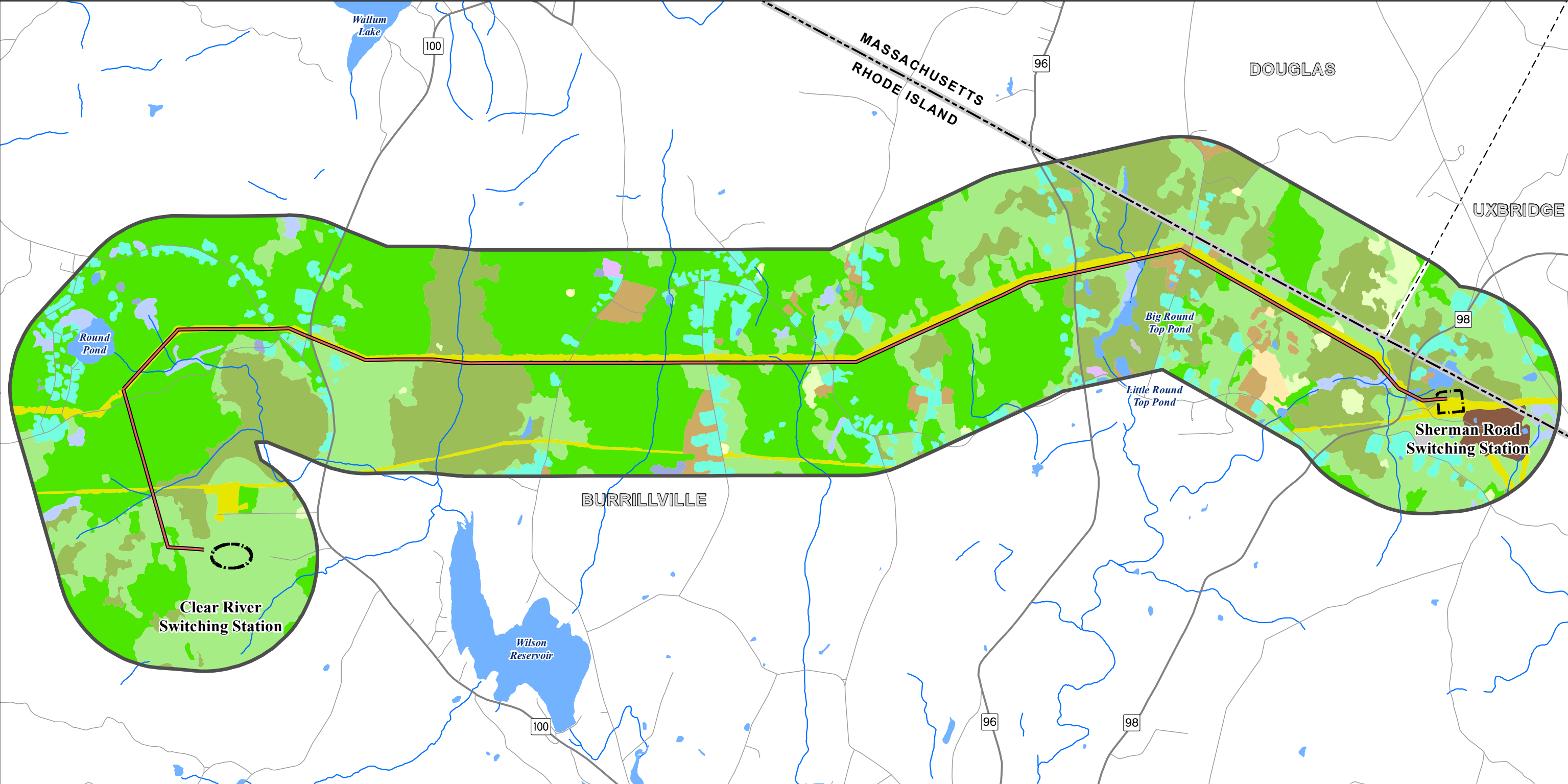
- GAA
- GA

FIGURE 6-4
Groundwater Classification
Burrillville Interconnection Project

0 1,000 2,000 3,000 4,000
Feet

Date: 1/4/2017

nationalgrid



Legend

Project Features

- Proposed Transmission Line
- 5000 Foot Study Area
- Substation Site

Transportation Features

- State Highway
- Other Road

Political Boundaries

- State Boundary
- Town Boundary

Water features

- Lake or Pond
- River or Stream

Land Use / Cover

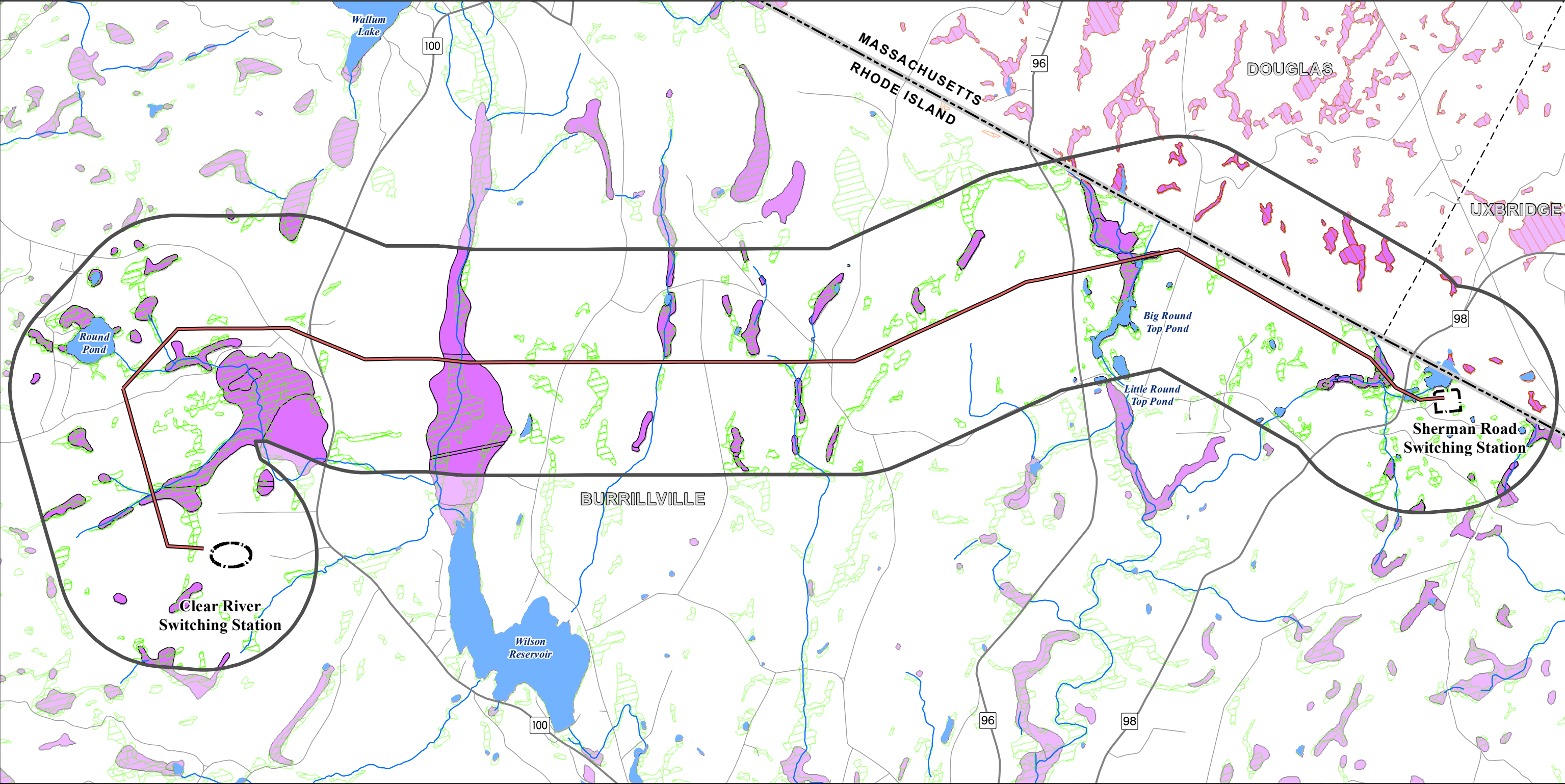
- Brushland
- Residential
- Commercial
- Industrial
- Transitional Areas
- Agriculture or Pasture
- Recreation
- Mines, Quarries and Gravel Pits
- Forest
- Mixed Forest
- Softwood Forest
- Utility Easement
- Vacant Land
- Wetland

FIGURE 6-5
Land Use Classification
Burrillville Interconnection Project

0 1,000 2,000 3,000 4,000
Feet

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Date: 1/4/2017



Legend

Project Features

- Proposed Transmission Line
- 5000 Foot Study Area
- Substation Site

Transportation Features

- State Highway
- Other Road

Political Boundaries

- State Boundary
- Town Boundary

Water features

- Lake or Pond
- River or Stream

Wetlands

- NWI Wetland Area
- RIDEM Freshwater Wetlands
- MASS DEP Wetlands

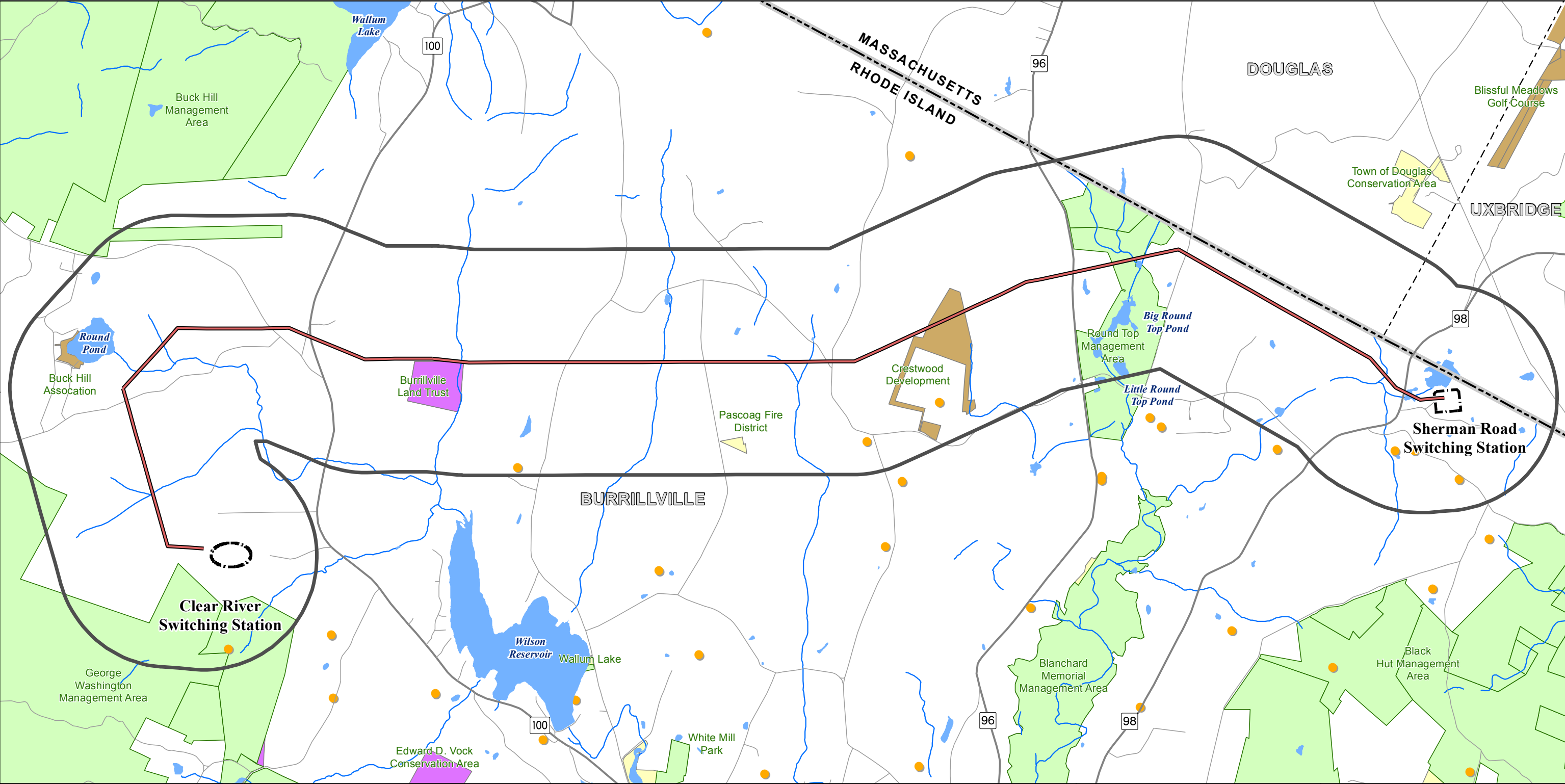
FIGURE 6-6
National Wetland Inventory & State Designated Wetlands
Burrillville Interconnection Project

0 1,000 2,000 3,000 4,000
Feet

WEBSTER DOUGLAS UXBRIDGE THOMPSON BURRILLVILLE GLOCESTER

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Legend

Project Features

- Proposed Transmission Line
- 5000 Foot Study Area
- Substation Site

Transportation Features

- State Highway
- Other Road

Political Boundaries

- State Boundary
- Town Boundary

Water Features

- Lake or Pond
- River or Stream

Conservation Lands

- Historic Cemetery
- State
- Municipal or Local Government
- NGO or Non-Profit
- Residential Development Open Space (Private)

FIGURE 7-1
State and Local Conservation Areas, Bikeways and Trails
Burrillville Interconnection Project

0 1,000 2,000 3,000 4,000
Feet

Invenergy
nationalgrid

POWER ENGINEERS
Date: 1/4/2017