Bridal Path - Title, Right, and Interest - *Click desired row to jump to agreement*

Number	Location	Tax Map	Plan	Lot	Project Area	Project Map	Current Owner	TRI
01 of 01	Houlton	27		30	Bridal Path	BP_01	FA Peabody Co	TCRA
01 of 01	Houlton	33		2,1	Bridal Path	BP_02	Stephen R and Bernice L Johnson	TCRA
01 of 01	Houlton	33		3	Bridal Path	BP_04	Town of Houlton	TCRA
01 of 01	Houlton	33		1	Bridal Path	BP_05	Willard A Putnam and Sons, Inc	TCRA
01 of 01	Houlton	33		2	Bridal Path	BP_05.2	Dianna A Bishop	TCRA
01 of 01	Houlton	33		14	Bridal Path	BP_06	Jason C Howland	TCRA
01 of 01	Houlton	32		37	Bridal Path	BP_07	McQuade Tidd Industries	TCRA
01 of 01	Houlton	38		1	Bridal Path	BP_08	Steelstone Industries Inc	TCRA
01 of 01	Houlton	32		25	Bridal Path	BP_09	Michael A and Ann H Hagan	TCRA
01 of 01	Houlton	44		5	Bridal Path	BP_10	Helen B Hagan	TCRA
01 of 01	Houlton	44		10	Bridal Path	BP_11	Michael and Carolyn Gough	TCRA
01 of 01	Houlton	44		11	Bridal Path	BP_12	Roger A and Linda W Callnan	TCRA
01 of 01	Houlton	44		12	Bridal Path	BP_13	Glen A Holmes Jr	TCRA
01 of 01	Houlton	44		26	Bridal Path	BP_15	Roger A and Linda W Callnan	TCRA
01 of 01	Houlton	50		7	Bridal Path	BP_16	Odette Ouellette	TCRA
01 of 01	Houlton	50		5	Bridal Path	BP_17	Michael W and Carolyn D Gough	TCRA
01 of 01	Houlton	50		28	Bridal Path	BP_18	David and Candace Crane	TCRA
01 of 01	Houlton	50		3	Bridal Path	BP_19	Donald W and Barbara K Holston	TCRA
01 of 01	Houlton	49		2	Bridal Path	BP_20	David L and Candace E Crane	TCRA
01 of 01	Houlton	49		3	Bridal Path	BP_21	Weldon G and Cheryl L Long	TCRA
01 of 01	Hodgdon	10		6	Bridal Path	BP_23	Leonard G Long	TCRA
01 of 01	Hodgdon	10		5	Bridal Path	BP_24	Michael W and Carolyn Gough	TCRA
01 of 01	Linneus	12		21	Bridal Path	BP_25	Michael W and Carolyn D Gough	TCRA
01 of 01	Linneus	12		22	Bridal Path	BP_26	Michael W and Carolyn D Gough	TCRA
01 of 01	Linneus	12		23	Bridal Path	BP_27	Matthew Andrew Ellis	TCRA
01 of 01	Linneus	12		30	Bridal Path	BP_28	Vera Kervin	TCRA
01 of 01	Linneus	12		17	Bridal Path	BP_29	Joseph Lombardo ET AL	TCRA
01 of 01	Linneus	12		32	Bridal Path	BP_30	Osman and Trudy Turney	TCRA
01 of 01	Linneus	9		39-1	Bridal Path	BP_31	Jamison Hagan	TCRA
01 of 01	Linneus	9		34	Bridal Path	BP_32	Jamison Hagan	TCRA
01 of 01	Linneus	9		28	Bridal Path	BP_33	Ronald Smith	TCRA
01 of 01	Linneus	9		25-1	Bridal Path	BP_34	Darrell McGuire and Sons	TCRA
01 of 01	Linneus	9		25	Bridal Path	BP_35	Jamison Hagan	TCRA
01 of 01	Linneus	9		17.1	Bridal Path	BP_36	Community Living Association	TCRA
01 of 01	Linneus	9		10	Bridal Path	BP_38	Gary and Sandra Sanders	TCRA
01 of 01	Linneus	8		35	Bridal Path	BP_39	Louis and Doris Feldman	TCRA
01 of 01	Linneus	9		3-2	Bridal Path	BP_40	Donald W Scott	TCRA
01 of 01	Linneus	8		36	Bridal Path	BP_41	Frances Hutchinson	TCRA
01 of 01	Linneus	8		37	Bridal Path	BP_42	Gary Sanders	TCRA
01 of 01	Linneus	8		38	Bridal Path	BP_43	Michael R White	TCRA
01 of 01	Linneus	8		39	Bridal Path	BP_44	Paul S Ducharme	TCRA
01 of 01	Linneus	5		18	Bridal Path	BP_45	Donmar Farms, Inc.	TCRA
01 of 01	Linneus	5		19-2	Bridal Path	BP_46	Pricilla Farrar Heirs of	TCRA
01 of 01	Linneus	5		19-3	Bridal Path	BP_47	James M Ruben	TCRA

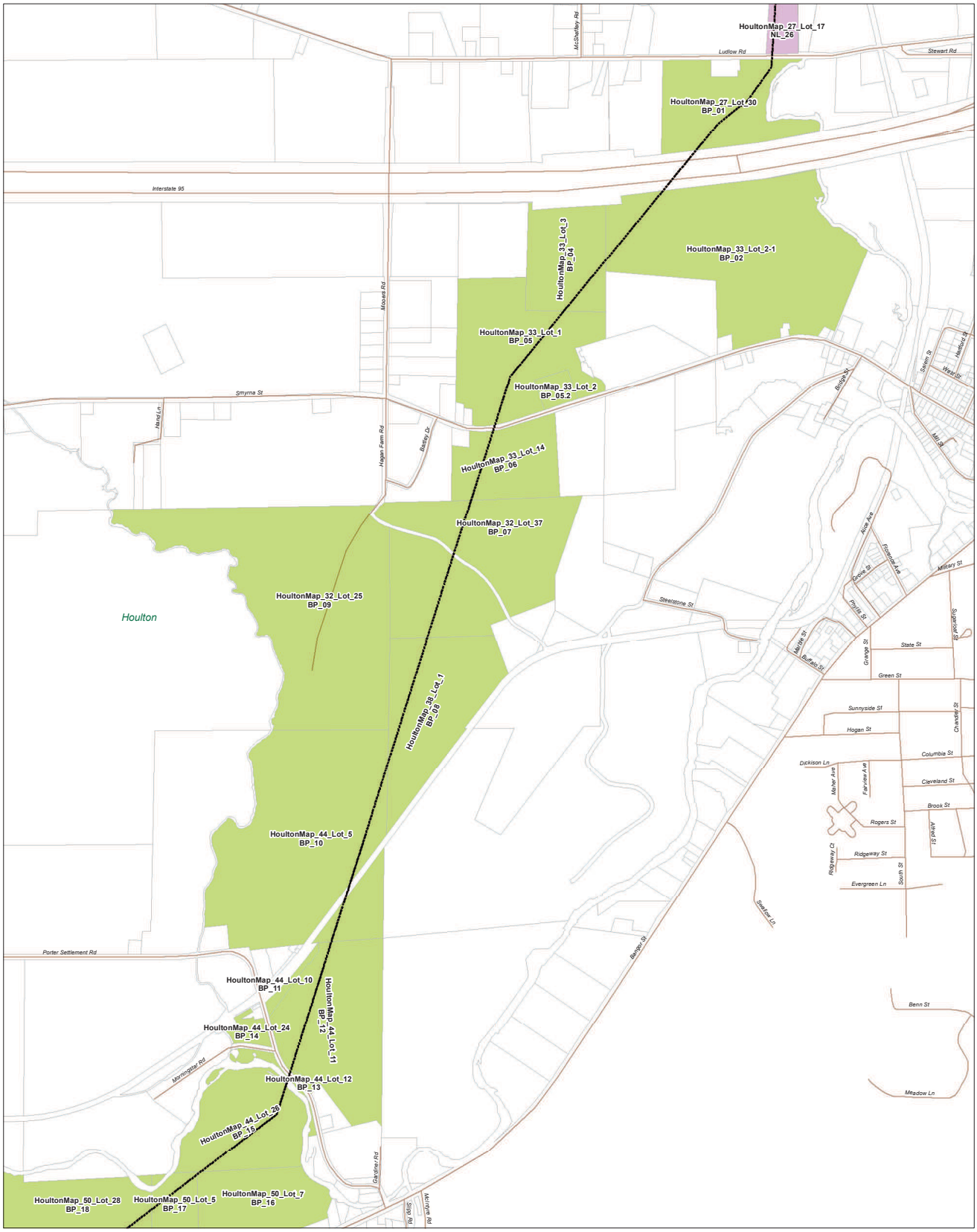
Number	Location	Tax Map	Plan	Lot	Project Area	Project Map	Current Owner	TRI
01 of 01	Linneus	5		16-3	Bridal Path	BP_48	Douglas and Brent McGuire	TCRA
01 of 01	Linneus	5		16-1	Bridal Path	BP_49	Douglas and Sarah McGuire	TCRA
01 of 01	Linneus	5		14	Bridal Path	BP_50	Francesco Salamone	TCRA
01 of 01	Linneus	5		9	Bridal Path	BP_51	Jere Armen	TCRA
01 of 01	Linneus	5		6	Bridal Path	BP_52	Ronald and Breggette Dupont	TCRA
01 of 01	Linneus	5		4	Bridal Path	BP_53	Hope Services International	TCRA
01 of 01	Linneus	5		1	Bridal Path	BP_54	Marilyn J Foster	TCRA
01 of 01	Linneus	5		1-2	Bridal Path	BP_55	Steven Foster	TCRA
01 of 01	Linneus	5		1-3	Bridal Path	BP_56	Arden O Foster	TCRA
01 of 01	Linneus	5		1-1	Bridal Path	BP_57	Merle Foster	TCRA
01 of 01	Linneus	2		17	Bridal Path	BP_58	Antonio Parada	TCRA
01 of 01	Linneus	2		16	Bridal Path	BP_59	Bertrand Audette	TCRA
01 of 01	Linneus	20		1-1	Bridal Path	BP_60	Brian J and Sammi Hayes	TCRA
01 of 01	Linneus	20		1	Bridal Path	BP_61	Richard E and Jonathan Dobbert	TCRA
01 of 01	Linneus	20		2.1	Bridal Path	BP_62	Michael H McElhinney and Magan I	TCRA
01 of 01	Linneus	20		2	Bridal Path	BP_63	Richard E and Jenna Dobbert	TCRA
01 of 01	Linneus	2		11	Bridal Path	BP_64	Richard and Nellis Ferris	TCRA
01 of 01	Linneus	2		8_1	Bridal Path	BP_65	Lakeville Shores Inc	TCRA
01 of 01	Linneus	2		8	Bridal Path	BP_66	Birdena and Mary Lou Tapley	TCRA
01 of 01	Linneus	2		8-2	Bridal Path	BP_67	Gary Tapley	TCRA
01 of 01	Linneus	2		8-3	Bridal Path	BP_68	Michael Lilley	TCRA
01 of 01	Linneus	2		7	Bridal Path	BP_69	Lakeville Shores Inc	TCRA
01 of 01	TA R2 WELS	AR001	01	1	Bridal Path	BP_70	Stead Timberlands LLC	TCRA
01 of 01	Forkstown Twp	AR004	01	8	Bridal Path	BP_71	Lakeville Shores Inc	TCRA
01 of 01	Forkstown Twp	AR004	01	3.1	Bridal Path	BP_72	Hinch & Ahearn c/o Prentiss and Ca	TCRA
01 of 01	Forkstown Twp	AR004	01	3	Bridal Path	BP_73	Prentiss and Carlisle	TCRA
01 of 01	Forkstown Twp	AR004	01	1	Bridal Path	BP_74	Roger R and Marilyn L Biagetti Trus	TCRA
01 of 01	Forkstown Twp	AR004	01	7	Bridal Path	BP_75	Bradley Smith and Company LLC	TCRA
01 of 01	Forkstown Twp	AR004	01	5.1	Bridal Path	BP_76	Penobscot Forest LLC	TCRA
01 of 01	Haynesville	2		11	Bridal Path	BP_77	Lakeville Shores Inc	TCRA
01 of 01	Haynesville	4		40.1	Bridal Path	BP_78	Todd Howland	TCRA
01 of 01	Haynesville	2		7	Bridal Path	BP_79	Lakeville Shores Inc	TCRA
01 of 01	Haynesville	4		40B	Bridal Path	BP_80	Roger A Howland Roger M Howlan	TCRA
01 of 01	Haynesville	2		10	Bridal Path	BP_81	Joseph D and Sandra F MacDonald	TCRA
01 of 01	Haynesville	2		9	Bridal Path	BP_82	Joseph D and Sandra F MacDonald	TCRA
01 of 01	Haynesville	2		3	Bridal Path	BP_83	Earl F and Janice Wilder	TCRA

Number Nine Wind Farm

Map 1 of 5

Section 2 - Title, Right, and Interest

NUMBER NINE WIND FARM



Legend

Parcels

Project Map

- TA - Turbine Area
- NL - Northern Gen Lead Line
- BP - Bridal Path
- Not Part of Number Nine Project
- Townships
- Turbine
- Met Tower
- Generator Lead Line
- Collection
- Access Road
- Existing Roads
- Substation
- O&M Building
- Batch Plant
- Laydown Yard

Author - Jon Dove
Date: 3/19/2015
Version -1

Datum -

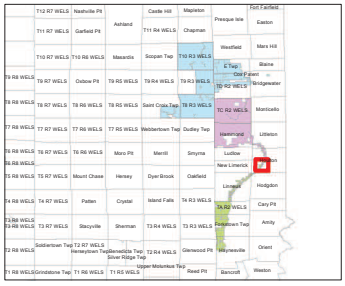
Projection -
NAD 83 State Plane ME E 1801 FT

Data Sources -ESRI, EDPR, MEGIS

Notes -

1:6,890

Miles
0 0.25 0.5

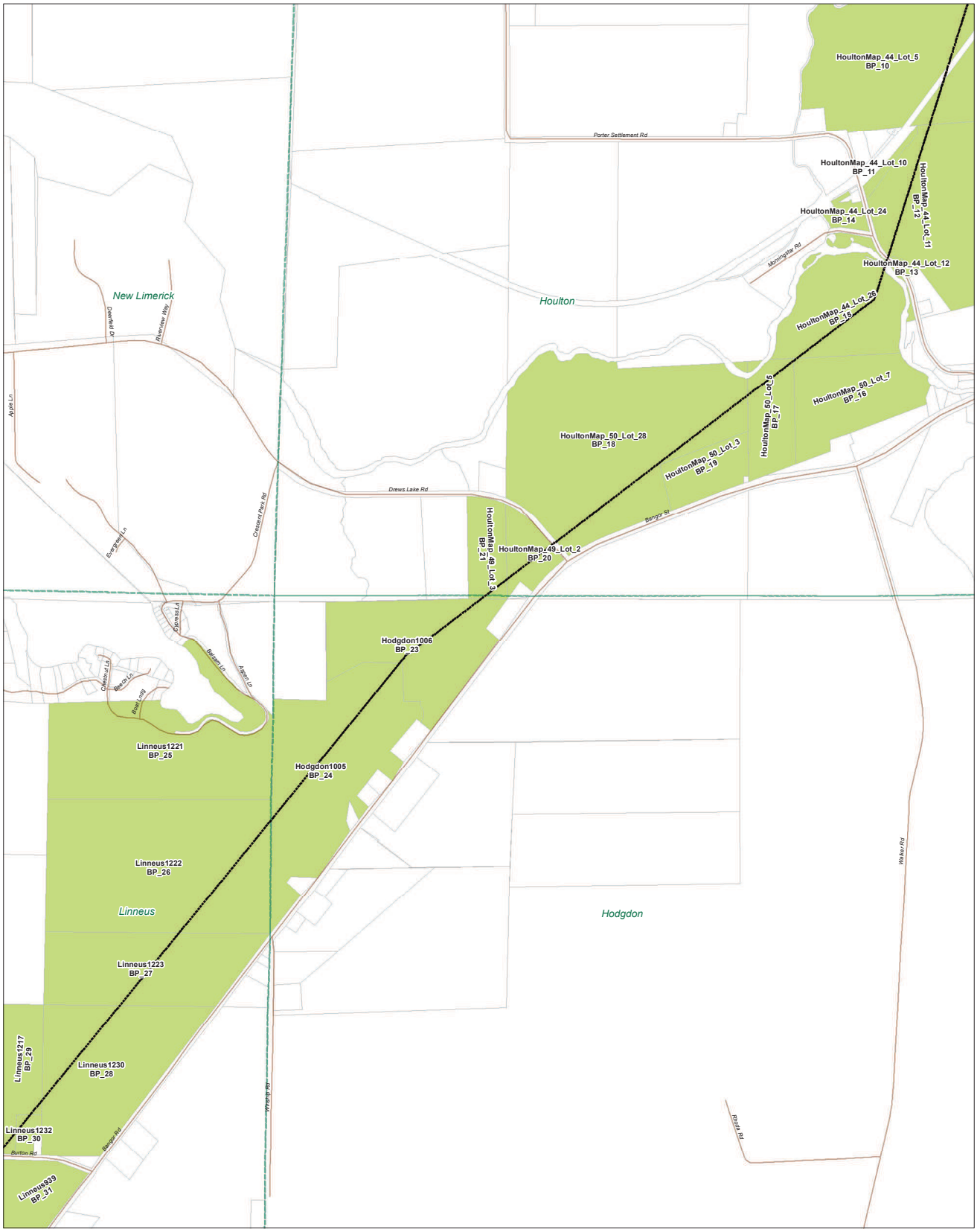


Number Nine Wind Farm

Map 2 of 5

Section 2 - Title, Right, and Interest

NUMBER NINE WIND FARM



Legend

Parcels

Project Map

- TA - Turbine Area
- NL - Northern Gen Lead Line
- BP - Bridal Path
- Not Part of Number Nine Project
- Townships

- Turbine
- Met Tower
- Generator Lead Line
- Collection
- Access Road
- Existing Roads

- Substation
- O&M Building
- Batch Plant
- Laydown Yard

Author - Jon Dove
Date: 3/19/2015
Version -1

Datum -

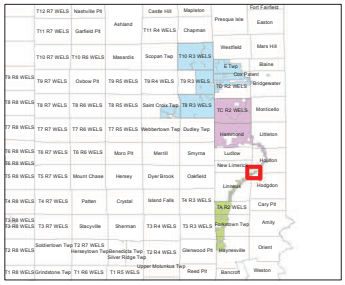
Projection -
NAD 83 State Plane ME E 1801 FT

Data Sources -ESRI, EDPR, MEGIS

Notes -

1:6,780

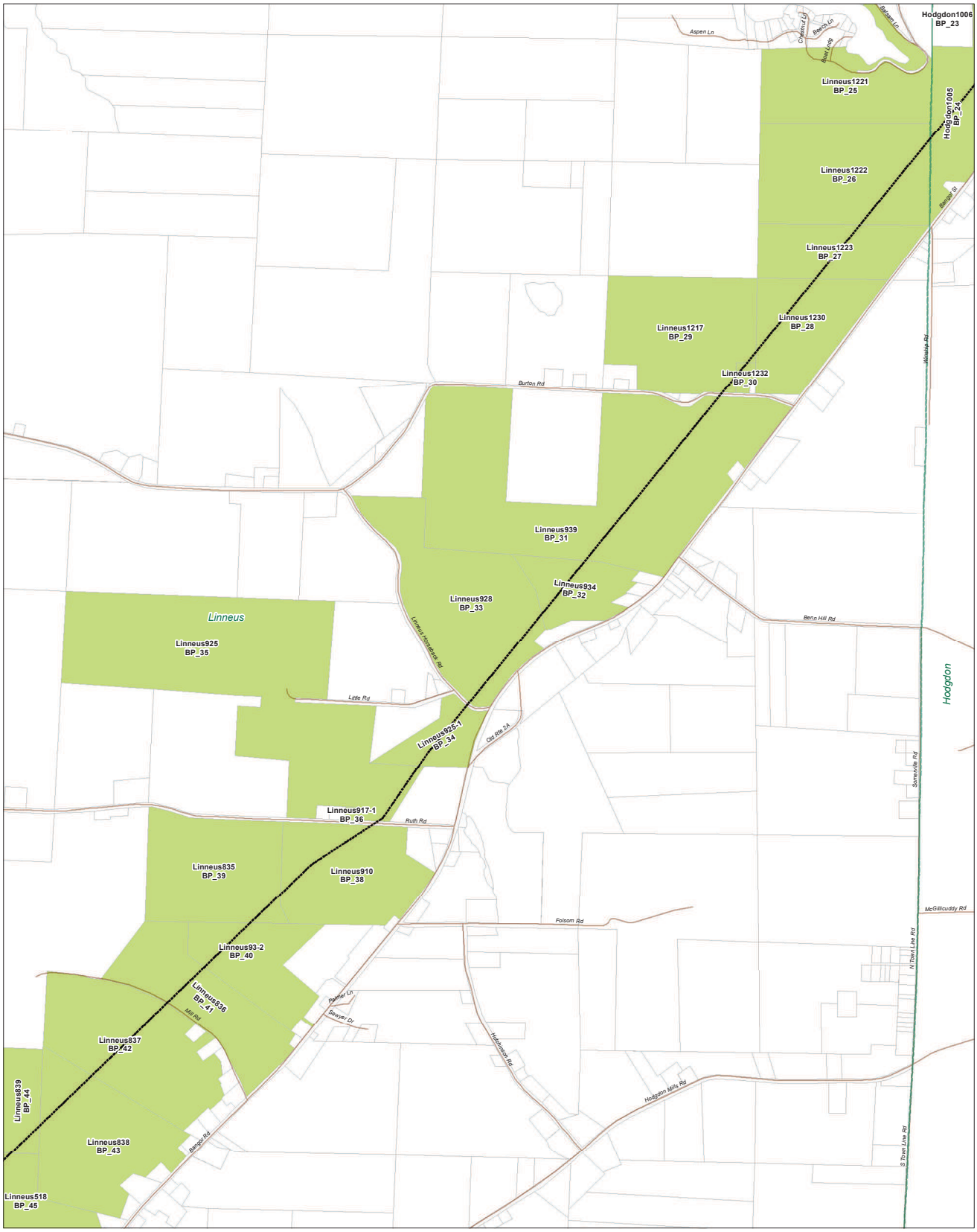
Miles
0 0.25 0.5



NUMBER NINE WIND FARM

Number Nine Wind Farm

Section 2 - Title, Right, and Interest



Legend

Parcels

Project Map

- TA - Turbine Area
- NL - Northern Gen Lead Line
- BP - Bridal Path
- Not Part of Number Nine Project
- Townships
- Turbine
- Met Tower
- Generator Lead Line
- Collection
- Access Road
- Existing Roads
- Substation
- O&M Building
- Batch Plant
- Laydown Yard

Author - Jon Dove
Date: 3/19/2015
Version -1

Datum -

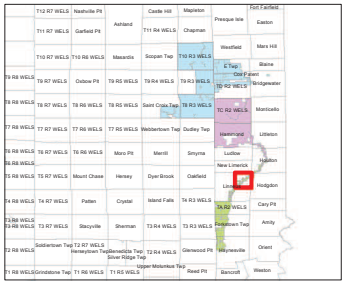
Projection -
NAD 83 State Plane ME E 1801 FT

Data Sources -ESRI, EDPR, MEGIS

Notes -

1:8,900

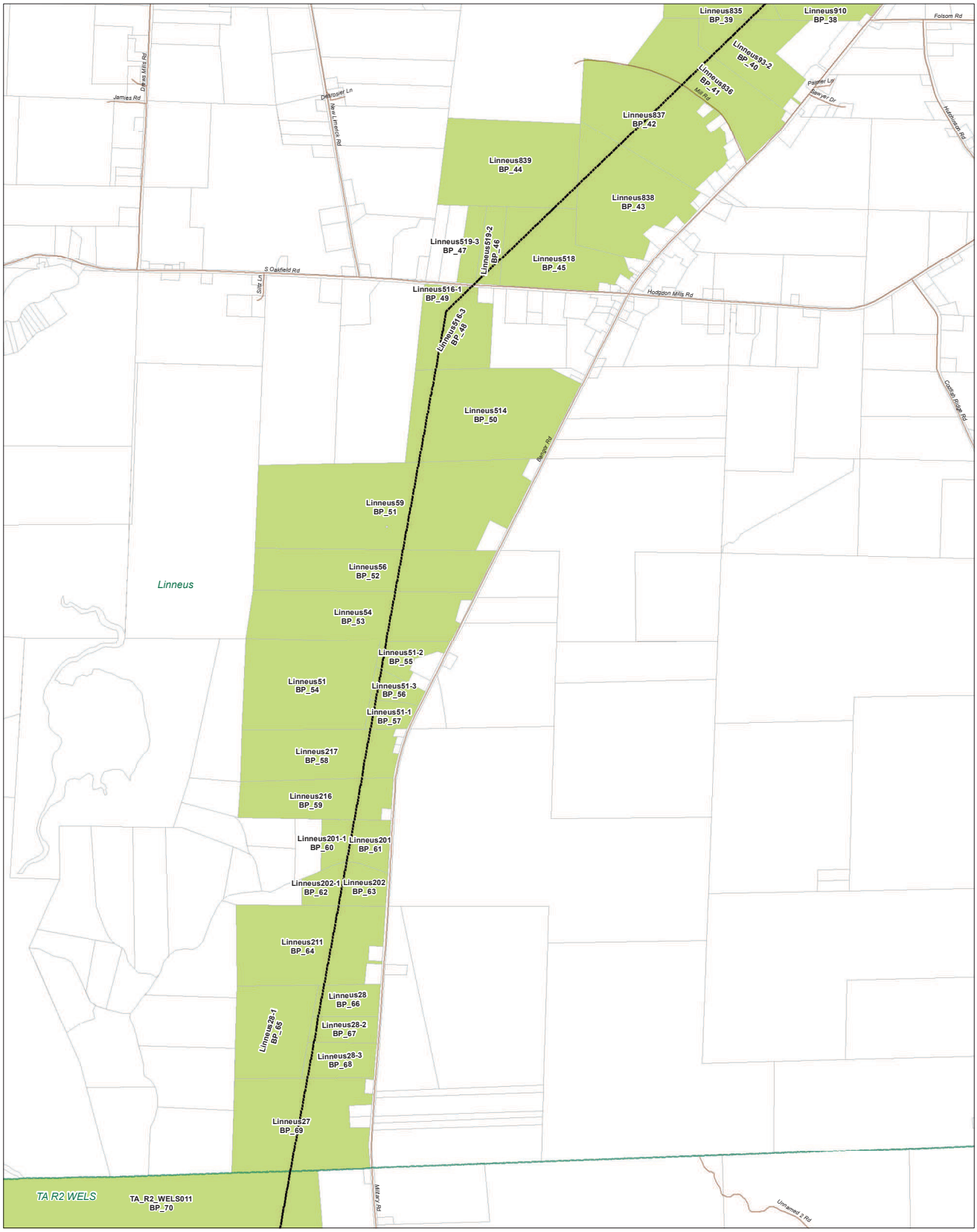
Miles
0 0.3 0.6



Number Nine Wind Farm

Section 2 - Title, Right, and Interest

Map 4 of 5



Legend

Parcels

Project Map

- TA - Turbine Area
- NL - Northern Gen Lead Line
- BP - Bridal Path
- Not Part of Number Nine Project
- Townships
- Turbine
- Met Tower
- Generator Lead Line
- Collection
- Access Road
- Existing Roads
- Substation
- O&M Building
- Batch Plant
- Laydown Yard

Author - Jon Dove
Date: 3/19/2015
Version -1

Datum -

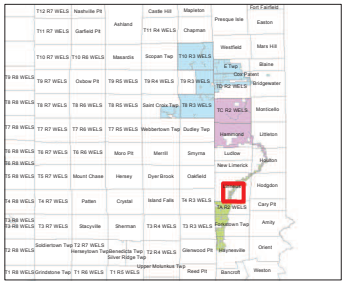
Projection -
NAD 83 State Plane ME E 1801 FT

Data Sources -ESRI, EDPR, MEGIS

Notes -

1:10,910

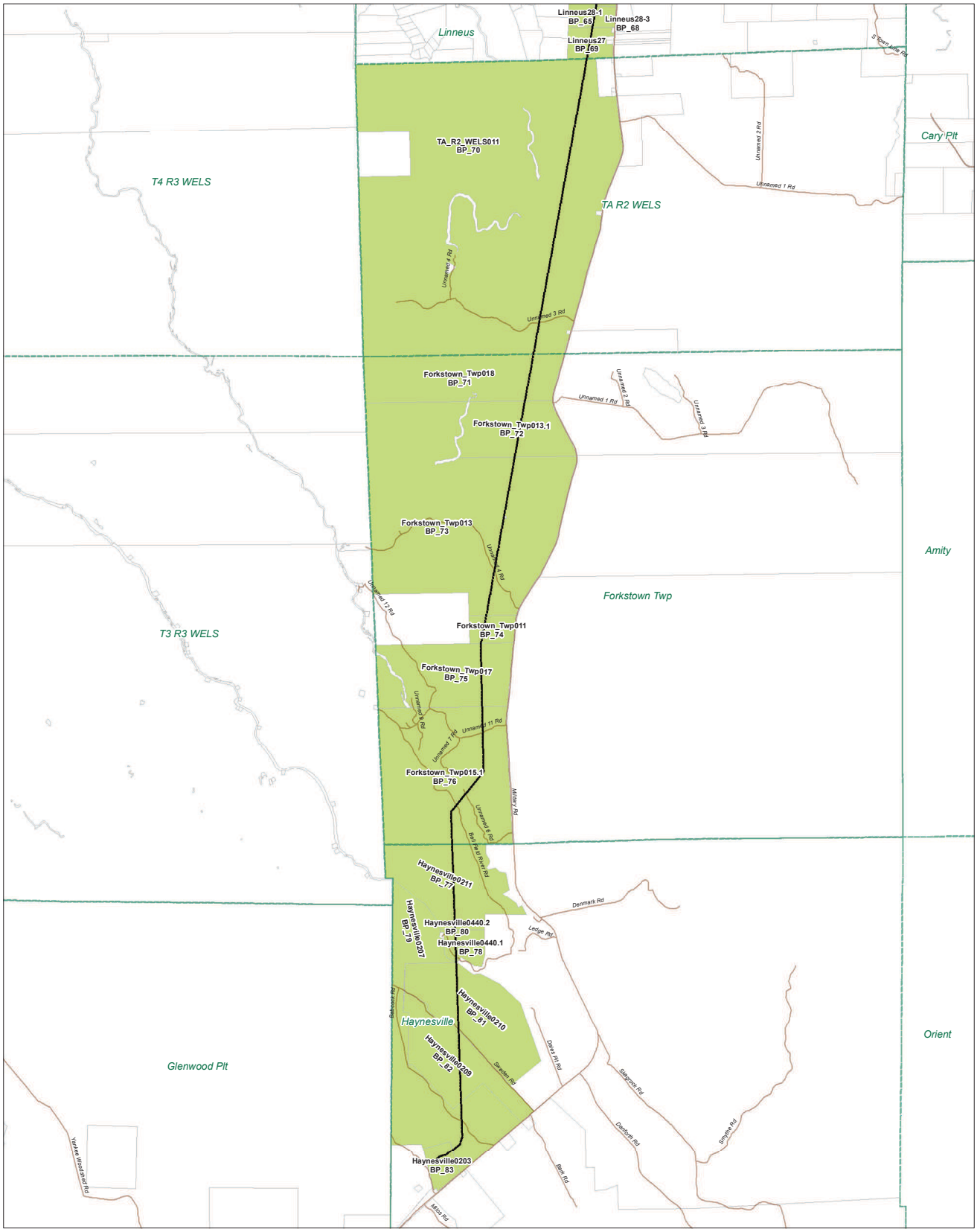
Miles
0 0.4 0.8



Number Nine Wind Farm

Section 2 - Title, Right, and Interest

Map 5 of 5



Legend

Parcels

Project Map

- TA - Turbine Area
- NL - Northern Gen Lead Line
- BP - Bridal Path
- Not Part of Number Nine Project
- Townships

- Turbine
- Met Tower
- Generator Lead Line
- Collection
- Access Road
- Existing Roads

- Substation
- O&M Building
- Batch Plant
- Laydown Yard

Author - Jon Dove
Date: 3/19/2015
Version -1

Datum -

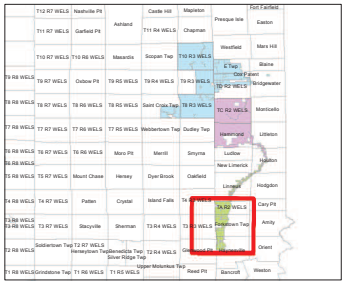
Projection -
NAD 83 State Plane ME E 1801 FT

Data Sources -ESRI, EDPR, MEGIS

Notes -

1:32,840

Miles
0 1 2



EXECUTION VERSION

TRANSMISSION CORRIDOR RIGHTS AGREEMENT

between

Central Maine Power Company

and

Emera Maine

and

Maine Electric Power Company, Inc.

and

Number Nine Wind Farm LLC

regarding

HOULTON TO HAYNESVILLE GENERATOR LEAD

December 30, 2014

TRANSMISSION CORRIDOR RIGHTS AGREEMENT

THIS TRANSMISSION CORRIDOR RIGHTS AGREEMENT ("Agreement"), dated as of December 30, 2014, is by and between and Central Maine Power Company, a corporation organized under the laws of the State of Maine ("CMP"), Emera Maine, a corporation organized under the laws of the State of Maine ("Emera"), Maine Electric Power Company, Inc., a corporation organized under the laws of the State of Maine ("MEPCO"), and Number Nine Wind Farm LLC ("Number Nine"), a limited liability company organized under the laws of Delaware. CMP, Emera, MEPCO, and Number Nine each may be referred herein individually as a "Party" and collectively as the "Parties". CMP, Emera and MEPCO may collectively be referred to herein as the "Granting Parties" or singly as a "Granting Party".

RECITALS

A. Number Nine is developing a 250 MW wind farm known as Number Nine Wind Farm on Number Nine Mountain in Aroostook County, Maine (the "Number Nine Wind Farm Project") for which Number Nine is evaluating generator lead solutions that will facilitate delivery of its power to the transmission system operated by ISO New England ("ISO-NE"). Affiliates of Number Nine are planning to develop and construct additional wind projects that will also deliver power into the ISO-NE transmission system.

B. Number Nine has executed and may in the future execute one or more long-term power purchase contracts with certain electric utilities in Connecticut or elsewhere for the output of the Number Nine Project (collectively, as executed, amended, supplemented and/or replaced from time to time, the "Number Nine Power Purchase Contract").

C. MEPCO owns and operates a transmission system carrying bulk electricity at 345 kV approximately 182 miles between the Maine Yankee station in Wiscasset, Maine, and Keswick substation near Fredericton, New Brunswick (the "MEPCO Line"). CMP owns 78.3% of the common stock of MEPCO and Emera owns 21.7% of the common stock of MEPCO.

D. The Granting Parties hold certain easement and other rights in and to a two hundred twenty-five foot (225') wide corridor located in the Towns of Houlton, Hodgdon, and Linneus, Township A, R.2, W.E.L.S., Township 3, R.2, W.E.L.S. (Forkstown), and the Town of Haynesville in Aroostook County, Maine, and CMP has certain rights to said lands and owns or controls easement interests and fee interests in land located in Haynesville, which collectively are approximately 26 miles long, between the MEPCO Line as it passes through Haynesville, Maine and an area near the Mullen substation in Houlton, Maine owned by Emera as shown on **Exhibit A-1** (such corridor collectively being hereinafter referred to as the "Houlton to Haynesville Corridor").

E. Number Nine wishes to acquire an option to purchase easements and related rights and interests in the easterly portion of the Houlton to Haynesville Corridor as described on **Exhibit A-2** (the "Houlton to Haynesville Easement Area"), in order to construct a portion of its generator lead connecting the Number Nine Wind Farm Project and future projects being developed by Number Nine and its Affiliates to the MEPCO Line at Haynesville, Maine, such

generator lead being the "Houlton to Haynesville Generator Lead". Number Nine is also planning to construct a generator lead between the Number Nine Wind Farm Project and the northern end of the Houlton to Haynesville Generator Lead, being the "Houlton to Number Nine Generator Lead". The Number Nine Wind Farm Project, the Houlton to Haynesville Generator Lead and the Houlton to Number Nine Generator Lead are collectively referred to as the Number Nine Project.

F. The Granting Parties are willing to grant Number Nine an exclusive option to purchase certain rights in the Houlton to Haynesville Corridor so that Number Nine may construct the Houlton to Haynesville Generator Lead. Such rights in the Houlton to Haynesville Corridor, together with the Houlton to Haynesville Generator Lead to be constructed by Number Nine, shall be the "Houlton to Haynesville Project".

G. In consideration for this Agreement and the rights in the Houlton to Haynesville Corridor, Number Nine has agreed to pay the cash consideration set forth below, and Number Nine shall grant to CMP and Emera, or an entity they designate (collectively the "Option Holder") an option to purchase the Houlton to Haynesville Project and a right of first refusal with respect to the Houlton to Haynesville Project. Additionally, Number Nine has agreed to construct the Houlton to Haynesville Generator Lead in full compliance with the plans and specifications established by the Parties as set forth below.

H. CMP and Number Nine are parties to that certain Memorandum of Understanding dated January 13, 2014 (the "MOU"), pursuant to which CMP and Number Nine memorialized their desire to work with each other to facilitate the successful development of the Houlton to Haynesville Project.

I. The Parties desire to enter into this definitive agreement related to the development and ownership of the Houlton to Haynesville Project, which will constitute the definitive agreement referred to in the MOU.

NOW THEREFORE, in consideration of the foregoing and the mutual covenants contained in this Agreement, the receipt and adequacy of which are hereby acknowledged by the Parties, the Parties agree as follows:

ARTICLE I

EASEMENT RIGHTS

1.1 **Assignment of Easement Rights**. The Granting Parties hereby grant Number Nine the right and option to purchase and receive the Houlton to Haynesville Easement (as defined below) on the terms and conditions set forth in this Agreement. Within five (5) business days after execution of this Agreement by all Parties, Number Nine shall make a payment of $336,540 (the "Initial Deposit") to the Granting Parties, which shall be paid $284,380 to Emera, $51,160 to CMP and $1000 to MEPCO. Number Nine will make two subsequent payments of $269,230 (each an "Additional Deposit") to the Granting Parties, payable $227,560 to Emera, $40,920 to CMP and $750 to MEPCO, on or before each anniversary of the payment of the Initial Deposit. (The Initial Deposit and all Additional Deposits are referred to collectively as the "Deposit".) Such payments

will be credited against the "Purchase Price" (defined below) due from Number Nine at the "Easement Closing" (defined below). The Deposit shall be non-refundable unless this Agreement is terminated due to the breach or default of any covenant or representation by any of the Granting Parties hereunder, pursuant to Number Nine's title review rights under Section 1.4 or the failure of the Granting Parties to cure within a reasonable time after notice a Subsequent Title Defect (described under Section 1.3) if such Subsequent Title Defect is caused by or through Granting Parties . In the event Number Nine fails to pay any Additional Deposit as and when due, then, subject to Number Nine's right to cure such failure within five (5) business days after written notice from any of the Granting Parties, the Granting Parties' sole remedy shall be termination of this Agreement and retention of the Initial Deposit and any Additional Deposits theretofore paid. The Parties agree that, both because Number Nine has the right, but not the obligation to purchase the Houlton to Haynesville Easement and because the costs and damages the Granting Parties would incur are difficult or impractical to determine, retention of the Deposit by the Granting Parties as provided herein is a reasonable estimate of such costs and damages, is not a penalty or forfeiture, and shall be the Granting Parties' sole and exclusive remedy if Number Nine fails to pay an Additional Deposit or fails to purchase the Houlton to Haynesville Easement.

Initials: Granting Parties AGR GRC Number Nine: ____

The Granting Parties agree that, for so long as this Agreement has not expired or been terminated, Number Nine shall be the sole and exclusive current or prospective grantee and assignee from the Granting Parties of any property, easements or other rights, or the right to acquire such rights, to construct, own and operate a generation lead or electric transmission facilities of any kind in the Houlton to Haynesville Easement Area and that they will not engage in discussions or negotiations with other parties with respect to the Houlton to Haynesville Easement Area unless and until this Agreement has been terminated. Provided, however, that during the last six (6) months of this Agreement (i.e., from and after July 1, 2017), the Granting Parties may negotiate back up offers with respect to the Houlton to Haynesville Easement Area, provided that any such agreement would be subordinate to this Agreement. The Parties agree that this Agreement shall not be recorded. Instead, concurrently with the execution of this Agreement, the Parties shall execute and record in the Southern Aroostook County Registry of Deeds, at Number Nine's expense, a "Memorandum of Agreement" in a form substantially similar to the form attached hereto as **Exhibit E.**

1.2 **Easement Closing.** At the "Easement Closing", the Parties shall execute and deliver an easement agreement granting or assigning to Number Nine certain easement rights to use the Houlton to Haynesville Corridor on the terms and conditions set forth herein and in said easement agreement, such easement rights being the "Houlton to Haynesville Easement". The form and substance of the Houlton to Haynesville Easement is attached hereto, and incorporated herein, as **Exhibit A.** In consideration for the Houlton to Haynesville Easement, Number Nine shall, at the Easement Closing (a) pay to the Granting Parties $8,750,000 (the "Purchase Price"), less the total amount of the Deposit previously paid and all reimbursable amounts paid by Number Nine pursuant to Section 1.4 below; (b) grant the "Option" (defined below) to the Option Holder; (c) grant the "Right of First Refusal" (defined below) to the Option Holder; and (d) cause EDP Renewables North America LLC ("EDPRNA") to give the "Guaranty" (defined below) to the Option Holder.

1.3 **Easement Closing Conditions.** In order to exercise its rights to purchase and receive the Houlton to Haynesville Easement, prior to the expiration or any earlier termination of

will be credited against the "Purchase Price" (defined below) due from Number Nine at the "Easement Closing" (defined below). The Deposit shall be non-refundable unless this Agreement is terminated due to the breach or default of any covenant or representation by any of the Granting Parties hereunder, pursuant to Number Nine's title review rights under Section 1.4 or the failure of the Granting Parties to cure within a reasonable time after notice a Subsequent Title Defect (described under Section 1.3) if such Subsequent Title Defect is caused by or through Granting Parties . In the event Number Nine fails to pay any Additional Deposit as and when due, then, subject to Number Nine's right to cure such failure within five (5) business days after written notice from any of the Granting Parties, the Granting Parties' sole remedy shall be termination of this Agreement and retention of the Initial Deposit and any Additional Deposits theretofore paid. The Parties agree that, both because Number Nine has the right, but not the obligation to purchase the Houlton to Haynesville Easement and because the costs and damages the Granting Parties would incur are difficult or impractical to determine, retention of the Deposit by the Granting Parties as provided herein is a reasonable estimate of such costs and damages, is not a penalty or forfeiture, and shall be the Granting Parties' sole and exclusive remedy if Number Nine fails to pay an Additional Deposit or fails to purchase the Houlton to Haynesville Easement.

Initials: Granting Parties SKB, ____, ____ Number Nine: ____

The Granting Parties agree that, for so long as this Agreement has not expired or been terminated, Number Nine shall be the sole and exclusive current or prospective grantee and assignee from the Granting Parties of any property, easements or other rights, or the right to acquire such rights, to construct, own and operate a generation lead or electric transmission facilities of any kind in the Houlton to Haynesville Easement Area and that they will not engage in discussions or negotiations with other parties with respect to the Houlton to Haynesville Easement Area unless and until this Agreement has been terminated. Provided, however, that during the last six (6) months of this Agreement (i.e., from and after July 1, 2017), the Granting Parties may negotiate back up offers with respect to the Houlton to Haynesville Easement Area, provided that any such agreement would be subordinate to this Agreement. The Parties agree that this Agreement shall not be recorded. Instead, concurrently with the execution of this Agreement, the Parties shall execute and record in the Southern Aroostook County Registry of Deeds, at Number Nine's expense, a "Memorandum of Agreement" in a form substantially similar to the form attached hereto as **Exhibit E**.

1.2 **Easement Closing**. At the "Easement Closing", the Parties shall execute and deliver an easement agreement granting or assigning to Number Nine certain easement rights to use the Houlton to Haynesville Corridor on the terms and conditions set forth herein and in said easement agreement, such easement rights being the "Houlton to Haynesville Easement". The form and substance of the Houlton to Haynesville Easement is attached hereto, and incorporated herein, as **Exhibit A**. In consideration for the Houlton to Haynesville Easement, Number Nine shall, at the Easement Closing (a) pay to the Granting Parties $8,750,000 (the "Purchase Price"), less the total amount of the Deposit previously paid and all reimbursable amounts paid by Number Nine pursuant to Section 1.4 below; (b) grant the "Option" (defined below) to the Option Holder; (c) grant the "Right of First Refusal" (defined below) to the Option Holder; and (d) cause EDP Renewables North America LLC ("EDPRNA") to give the "Guaranty" (defined below) to the Option Holder.

1.3 **Easement Closing Conditions**. In order to exercise its rights to purchase and receive the Houlton to Haynesville Easement, prior to the expiration or any earlier termination of

will be credited against the "Purchase Price" (defined below) due from Number Nine at the "Easement Closing" (defined below). The Deposit shall be non-refundable unless this Agreement is terminated due to the breach or default of any covenant or representation by any of the Granting Parties hereunder, pursuant to Number Nine's title review rights under Section 1.4 or the failure of the Granting Parties to cure within a reasonable time after notice a Subsequent Title Defect (described under Section 1.3) if such Subsequent Title Defect is caused by or through Granting Parties . In the event Number Nine fails to pay any Additional Deposit as and when due, then, subject to Number Nine's right to cure such failure within five (5) business days after written notice from any of the Granting Parties, the Granting Parties' sole remedy shall be termination of this Agreement and retention of the Initial Deposit and any Additional Deposits theretofore paid. The Parties agree that, both because Number Nine has the right, but not the obligation to purchase the Houlton to Haynesville Easement and because the costs and damages the Granting Parties would incur are difficult or impractical to determine, retention of the Deposit by the Granting Parties as provided herein is a reasonable estimate of such costs and damages, is not a penalty or forfeiture, and shall be the Granting Parties' sole and exclusive remedy if Number Nine fails to pay an Additional Deposit or fails to purchase the Houlton to Haynesville Easement.

Initials: Granting Parties ____, ____, ____ Number Nine: KAP/H

The Granting Parties agree that, for so long as this Agreement has not expired or been terminated, Number Nine shall be the sole and exclusive current or prospective grantee and assignee from the Granting Parties of any property, easements or other rights, or the right to acquire such rights, to construct, own and operate a generation lead or electric transmission facilities of any kind in the Houlton to Haynesville Easement Area and that they will not engage in discussions or negotiations with other parties with respect to the Houlton to Haynesville Easement Area unless and until this Agreement has been terminated. Provided, however, that during the last six (6) months of this Agreement (i.e., from and after July 1, 2017), the Granting Parties may negotiate back up offers with respect to the Houlton to Haynesville Easement Area, provided that any such agreement would be subordinate to this Agreement. The Parties agree that this Agreement shall not be recorded. Instead, concurrently with the execution of this Agreement, the Parties shall execute and record in the Southern Aroostook County Registry of Deeds, at Number Nine's expense, a "Memorandum of Agreement" in a form substantially similar to the form attached hereto as Exhibit E.

1.2 Easement Closing. At the "Easement Closing", the Parties shall execute and deliver an easement agreement granting or assigning to Number Nine certain easement rights to use the Houlton to Haynesville Corridor on the terms and conditions set forth herein and in said easement agreement, such easement rights being the "Houlton to Haynesville Easement". The form and substance of the Houlton to Haynesville Easement is attached hereto, and incorporated herein, as Exhibit A. In consideration for the Houlton to Haynesville Easement, Number Nine shall, at the Easement Closing (a) pay to the Granting Parties $8,750,000 (the "Purchase Price"), less the total amount of the Deposit previously paid and all reimbursable amounts paid by Number Nine pursuant to Section 1.4 below; (b) grant the "Option" (defined below) to the Option Holder; (c) grant the "Right of First Refusal" (defined below) to the Option Holder; and (d) cause EDP Renewables North America LLC ("EDPRNA") to give the "Guaranty" (defined below) to the Option Holder.

1.3 Easement Closing Conditions. In order to exercise its rights to purchase and receive the Houlton to Haynesville Easement, prior to the expiration or any earlier termination of

this Agreement, Number Nine shall provide written notice to the Granting Parties, together with supporting documentation, that it has satisfied the "Easement Closing Conditions" (defined below) and requesting that the Parties execute and deliver the Houlton to Haynesville Easement (the "Closing Notice"). The Parties' obligations to complete the Easement Closing shall also be subject to the concurrent performance by the other Parties of their respective obligations at the Easement Closing (e.g. execution of documents, payment of money), the Easement Closing Conditions continuing to be satisfied or waived, and, with respect to Number Nine, issuance of a title insurance policy subject only to the Permitted Exceptions and containing no exceptions to title for encumbrances or liens that occur of record or affect title which (i) arise after the issuance of the Number Nine Title Commitment and are not addressed thereby; (ii) would constitute a Title Defect and not a Permitted Exception as such terms are described in Section 1.4; and, (iii) do not arise by or through Number Nine (including without limitation any acts, work or conduct of any Number Nine affiliate, officer, employee, agent, invitee or contractor) (hereinafter a "Subsequent Title Defect") ; provided however that Number Nine shall provide notice to the Granting Parties of any such Subsequent Title Defect prior to the Easement Closing and Granting Parties shall be given a reasonable opportunity to cure such defect and extend the date of the Easement Closing for such purpose. The Granting Parties will not take, fail to take or, to the extent they have the ability to do so, permit any action that causes or results in a Subsequent Title Defect. The "Easement Closing" shall occur within 60 days of the Granting Parties' receipt of the Closing Notice. Unless otherwise agreed in writing by all Parties, but subject to Number Nine's rights to proceed to the Easement Closing prior to satisfaction of these conditions as described in the next sentence, satisfaction by Number Nine of the "Easement Closing Conditions" shall mean: (a) Number Nine shall have obtained all legally required Permits, in final and non-appealable form, necessary to construct the Number Nine Project; (b) Number Nine shall have obtained all debt and/or equity financing necessary to construct the Number Nine Project or shall otherwise demonstrate to the reasonable satisfaction of the Granting Parties that it has the funds necessary to construct the Number Nine Project; (c) the Number Nine Power Purchase Contract is in full force and effect and none of the parties are in default thereof; and (d) Number Nine shall have entered into a standard form Large Generator Interconnection Agreement (the "Number Nine LGIA") with MEPCO and ISO-NE with respect to the connection of the Number Nine Project to the MEPCO transmission line at the point of interconnection in Haynesville, Maine (the "Haynesville Node"). Notwithstanding the foregoing, in the event Number Nine desires to proceed to the Easement Closing prior to the satisfaction of any of the foregoing Easement Closing Conditions, and if the Parties do not otherwise mutually agree to waive the condition, Number Nine may do so, and such condition to the Easement Closing shall be deemed waived, if Number Nine shall deliver to the Granting Parties an enforceable commitment on mutually agreeable terms to commence construction of the Houlton to Haynesville Generator Lead within sixty (60) days of the Easement Closing. In addition to the requirements as to title set forth below, Number Nine shall keep the Granting Parties reasonably and timely informed of the progress with respect to its satisfaction of the Easement Closing Conditions and shall inform the Granting Parties promptly when it learns that a Closing Condition cannot or will not be satisfied (unless Number Nine is prepared to deliver an enforceable commitment to commence construction of the Houlton to Haynesville Project as provided in the previous sentence), at which time the Parties shall meet and confer in good faith regarding appropriate actions to be taken; provided that, after meeting and conferring, the Granting Parties may terminate this Agreement unless such Easement Closing Condition is otherwise waived by written agreement of the Parties. If the parties terminate this Agreement after such good faith discussions, the Granting Parties shall retain the Deposit. All of

the Easement Closing Conditions shall be satisfied by Number Nine at its sole cost and expense.

1.4 **Title**.

(a) Within ninety (90) days of the execution of this Agreement, Number Nine shall obtain a commitment to issue an ALTA Owner's title insurance policy insuring Number Nine's interests under the Houlton to Haynesville Easement (the "Number Nine Title Commitment"). Number Nine shall thereupon provide a copy to the Granting Parties, together with copies of all exceptions to title noted therein. Within thirty (30) days after delivery of the Number Nine Title Commitment to the Granting Parties, Number Nine shall notify the Granting Parties in writing (the "Title Objection Notice") of any exceptions, defects, encroachments or other objections to title, except for those matters of title described in Exhibit A-3 attached hereto (hereinafter, "Permitted Exceptions"), that occur of record or otherwise affect title, to which Number Nine objects, including any exceptions to title that Number Nine reasonably determines would materially impact Number Nine's ability to exercise its rights under the Easement Agreement, including its ability to construct, own, use, operate, maintain, repair or rebuild the Number Nine Generator Lead within its easement area as set forth in the Houlton to Haynesville Easement (each, a "Title Defect"). Any exception shown on the Number Nine Title Commitment that is not a Title Defect shall be a Permitted Exception.

(b) Number Nine shall have no right to object to: (i) mortgages and financing documents granted or executed by the Granting Parties to continue or secure financing ("Monetary Encumbrances"), provided such Monetary Encumbrances are subordinated to Number Nine's rights hereunder and its rights with respect to the Houlton to Haynesville Project hereunder, including Number Nine's right to construct, own, use, operate, maintain, repair, rebuild, or finance the Houlton to Haynesville Project, or (ii) routine crossing, corridor access and other similar agreements granted in the ordinary course of business by either or both of the Granting Parties, so long as such agreements do not affect Number Nine's right to construct, own, use, operate, maintain, repair, rebuild, or finance the Number Nine Project, all of which shall be deemed Permitted Exceptions and not Title Defects as to which Buyer may object, provided that the Granting Parties, upon request by Number Nine, shall notify their respective lender(s) having a Monetary Encumbrance, if any, of this Agreement and each agrees to use commercially reasonable efforts to obtain non-disturbance agreements with respect to the easement area subject to the Easement Agreement, and lender consent, with respect to any existing or new financing encumbering the Houlton to Haynesville Corridor to the extent necessary to permit either party to execute and deliver the Houlton to Haynesville Easement and perform its obligations thereunder. Any such consent or non-disturbance agreement shall be in recordable form and executed by such lenders with respect to Number Nine's interests under any easement pertaining to the Easement Agreement within sixty (60) days after Number Nine's delivery of the Number Nine Title Objection Notice, or in the event of a Granting Parties' financings that occur after the effective date of the Number Nine Title Commitment but prior to the Closing, at the closing of such financing. Such non-disturbance agreements shall be held in escrow and recorded with the Houlton to Haynesville Easement Agreement at the Easement Closing.

(c) In the event that Number Nine objects to one or more Title Defect(s) shown in the Title Commitment, the Granting Parties shall use commercially reasonable efforts at its or their respective sole expense to cure any such Title Defects, except for Permitted Exceptions (which,

with respect to Monetary Encumbrances shall be handled as provided in paragraph (b) above) that encumber the easement area under the Houlton to Haynesville Easement Agreement within a reasonable period of time, not to exceed sixty (60) days after the Granting Parties receive the Title Objection Notice, unless a later time period is agreed to in writing by the Parties, provided that, the Granting Parties shall have no obligation to expend more than $5,000 to cure any individual Title Defect or $50,000 in the aggregate as to all Title Defects, unless otherwise agreed to in writing by the Granting Parties. If the Granting Parties are unable to cure such Title Defects within said sixty (60) days, or such later period agreed to in writing, the Granting Parties shall provide written notice to Number Nine ("Granting Parties' Title Response"). Number Nine, as it sole remedy, may either (i) terminate this Agreement by written notice to the Granting Parties delivered within sixty (60) business days of receipt of Granting Parties' Title Response and have the Initial Deposit returned, in which event the Parties shall have no further recourse against one another under this Agreement, nor any right to damages or other liability on the part of the Granting Parties; or (ii) if Number Nine does not terminate within such time period, Number Nine shall be deemed to have accepted title to the easement interests under the Easement Agreement subject to such Title Defect(s), in which event such Title Defects shall be deemed Permitted Exceptions. Number Nine may in any case seek to remove, remedy or cure any uncured Title Defects, at its sole cost and expense, provided that in the event such action involves the grant, conveyance or release of rights within the Houlton to Haynesville Corridor, the Granting Parties may require that any such grant, conveyance or release of rights be granted or conveyed to, or released in favor of, the Granting Parties, but any such property or rights granted or conveyed to, or released in favor of, the Granting Parties shall be part of the Houlton to Haynesville Easement to be granted and assigned by the Granting Parties to Number Nine at the Easement Closing, provided further that if the Granting Parties require such action, Granting Parties shall pay Number Nine its actual out of pocket costs incurred to cure the Title Defect at the time such property or rights are granted or conveyed to, or released in favor of, the Granting Parties.

(d) Notwithstanding the foregoing, prior to the execution of this Agreement, the Parties identified three encroachments and two other title matters which could affect Number Nine's use of the Houlton to Haynesville Easement, each as identified and described on Exhibit A-4 (the "Known Exceptions"). With respect to the Known Exceptions, the Granting Parties shall use their best efforts to undertake those agreed upon actions set forth on Exhibit A-4 to resolve the Known Exceptions at their sole expense and without regard to the limitation on amounts that the Granting Parties are obligated to spend to remove Title Defects under Section 1.4(c).

1.5 **Conditions**. Number Nine is obligated to design, permit, construct and operate the Houlton to Haynesville Project at its sole cost and expense. Each Party will use commercially reasonably efforts to cooperate with the other Parties to obtain any necessary governmental or regulatory consents and approvals as are necessary for any other Party to satisfy any precondition for said Party to exercise its rights hereunder or under the Houlton to Haynesville Easement, the Option Agreement or the Right of First Refusal, as the case may be, including, without limitation, to the extent necessary the Granting Parties' shall obtain any such Permits as may be necessary for them to convey the Houlton to Haynesville Easement to Number Nine; provided, however, that, except with respect to the Permits and governmental or regulatory consents and approvals necessary for Granting Parties to convey the Houlton to Haynesville Easement to Number Nine, the Granting Parties shall have no obligation to fund or incur any cost or expense with respect to any portion of

the Houlton to Haynesville Project. In the event that cooperation requested of the Granting Parties would require any out-of-pocket costs or expenses with respect to the Houlton to Haynesville Project, the Granting Parties shall first obtain the written approval of Number Nine before incurring such expense, and after receipt of an invoice and reasonable supporting documentation, Number Nine shall promptly reimburse such Granting Party all such costs, not to exceed the approved amount. The obligations to use commercially reasonable efforts to cooperate with the other Parties to obtain any necessary governmental or regulatory consents and approvals pertaining to the execution and delivery of the Houlton to Haynesville Easement shall survive the Easement Closing, and the reimbursement requirement shall survive the termination of this Agreement. Number Nine acknowledges, as contemplated by the Houlton to Haynesville Easement, that the easement to co-locate the Houlton to Haynesville Project within the Houlton to Haynesville Corridor will not limit the Granting Parties or their assigns from constructing or permitting other transmission projects within said corridor. Subject to the terms and conditions of and its rights under the Houlton to Haynesville Easement, Number Nine agrees that it shall not object to, nor interfere with, such other uses of the Houlton to Haynesville Corridor provided that such uses will not interfere with or impair its exercise of, or prevent it from exercising, the easement rights under the Houlton to Haynesville Easement.

1.6 **Construction of the Houlton to Haynesville Project**. Number Nine agrees – and the Houlton to Haynesville Easement shall require – as follows: (a) to use the Houlton to Haynesville Corridor solely for the construction, operation and maintenance of the Houlton to Haynesville Generator Lead and uses incidental thereto, and for no other purposes; (b) to construct the Houlton to Haynesville Project and the Houlton to Number Nine Mountain Generator Lead in full compliance with the "Plans and Specifications" as set forth on **Exhibit B** attached hereto and incorporated herein; (c) to construct the Houlton to Haynesville Project and the Houlton to Number Nine Mountain Generator Lead in full compliance with all Applicable Laws and Permits; (d) to operate and maintain the Houlton to Haynesville Project and the Houlton to Number Nine Generator Lead in accordance with Good Utility Practices and in full compliance with all Applicable Laws and Permits and the requirements of any applicable tariff and interconnection requirements, throughout the term of the Option and the Right of First Refusal; (e) to allow the Granting Parties to use any points of access and roadways constructed by Number Nine as part of the Houlton to Haynesville Project for its or their purposes in accordance with the terms and conditions of the Houlton to Haynesville Easement; (f) to permit the Granting Parties or their agents to inspect, upon reasonable advance notice to Number Nine, at the Granting Parties' expense, the Houlton to Haynesville Project during its construction and during the term of the Option and the Right of First Refusal in order to confirm compliance with this Agreement and in order to conduct due diligence with respect to the Option and the Right of First Refusal; provided that any such inspection shall be conducted in compliance with all applicable safety, security and other site rules and procedures. To the extent that the provisions of the Houlton to Haynesville Easement and this Agreement conflict, the Houlton to Haynesville Easement controls.

1.7 **Additional Property Rights from Third Parties**. The Granting Parties shall have no obligation to obtain additional rights and consents with respect to property outside the Houlton to Haynesville Corridor on Number Nine's behalf unless specifically required of a Party under Schedule 22 of the ISO-NE Tariff. The Parties agree that the Houlton to Haynesville Corridor is a continuous two-hundred and twenty-five (225) foot strip of land beginning on the lands now or formerly owned by E.A. Peabody and terminating at lands now for formerly owned by Wilder, each

listed and identified on Exhibit A-1. In the event that a survey reveals to the reasonable satisfaction the Parties that the Houlton to Haynesville Corridor is not a continuous strip of land and that additional property rights must be obtained to make it continuous, Number Nine hereby agrees that it may obtain any such agreed upon necessary rights or property within the Houlton to Haynesville Corridor at its sole cost and expense, unless the Granting Parties otherwise elect to undertake such action at their cost and expense; provided, however, that if the Easement Closing occurs, Number Nine shall be entitled to a credit against the Purchase Price equal to its actual out of pocket costs incurred in acquiring any such rights and property and agreed upon in writing by the Granting Parties at the time of the said acquisition. In the event that Number Nine shall acquire such additional rights and this Agreement is terminated, the Granting Parties shall have the right hereunder to require that such rights be conveyed, transferred or assigned, as the case may be, to the Granting Parties upon the payment to Number Nine of its actual out of pocket cost to acquire such rights. In the event that Number Nine elects to acquire additional property rights to access the Houlton to Haynesville Corridor or acquires rights abutting the Houlton to Haynesville Corridor for purposes of meeting any of its construction or permitting requirements, Number Nine shall obtain such rights or property at its sole cost and expense, and shall not be entitled to a credit against the Purchase Price with respect thereto, but the Granting Parties shall also not have the right to require that such rights be conveyed, transferred or assigned, as the case may be, to the Granting Parties.

1.8 **Title, Right or Interest**. The Granting Parties acknowledge and agree that it is the intent of this Agreement to give Number Nine sufficient title, right or interest in the Houlton to Haynesville Corridor such that Number Nine may apply for all necessary Permits with respect to the Houlton to Haynesville Project and the rest of the Number Nine Project and agree that Number Nine may use this Agreement for such Purpose. The Granting Parties agree to execute such additional documentation as may be reasonably necessary to evidence such title, right or interest. The Granting Parties agree that Number Nine may apply for and obtain Permits for the Houlton to Haynesville Project and/or the rest of the Number Nine Project prior to the Easement Closing, and the Granting Parties agree to cooperate with Number Nine in so doing.

1.9 **Termination**. In the event the Easement Closing has not occurred by January 1, 2018 for a reason other than a default by the Granting Parties, then this Agreement shall terminate and the Parties shall have no further obligations hereunder, except with respect to those obligations that expressly survive termination of this Agreement. Without limiting any other provision hereof, the Granting Parties may terminate this Agreement in the event that (i) Number Nine fails to close in accordance with the terms of its Closing Notice, and such failure is not cured on or before January 1, 2018; (ii) Number Nine has abandoned its efforts to develop the Houlton to Haynesville Project; (iii) Number Nine has provided written notice to the Granting Parties that it will be unable to meet an Easement Closing Condition which prevents Number Nine from exercising its rights under this Agreement; or (iv) if Number Nine (x) breaches any of its representations and warranties in any material respect, which breach is not cured within ten (10) business days after written notice thereof, or (y) defaults in the performance of any of its material covenants hereunder, which default is not cured within thirty (30) days after written notice thereof (or, if such default cannot reasonably be cured in 30 days, such additional time as is reasonably necessary so long as the cure is pursued with reasonable diligence). This Agreement may be terminated by Number Nine if Emera, CMP or MEPCO (i) breach any of their respective representations and warranties in any material respect, which breach is not cured within ten (10) business days after written notice thereof, or (ii) default in the performance of any of their respective material covenants and obligations hereunder which

default is not cured within thirty (30) days after written notice thereof (or, if such default cannot reasonably be cured in 30 days, such additional time as is reasonably necessary so long as the cure is pursued with reasonable diligence). In the event of a termination notice provided by a Party hereunder, neither Party shall have any obligation to the other, except with respect to rights and remedies for a breach or default by a Party and such obligations that are expressly stated hereunder to survive a termination. In the event that Number Nine shall have obtained additional easement rights and permissions from third parties in connection with clearing title exceptions, or to secure transmission easement rights or access rights to the Houlton to Haynesville Corridor where no such rights of record that previously existed, Number Nine shall promptly upon termination of this Agreement, at the election of any Granting Party, convey or assign such rights to Emera, MEPCO or CMP, as the case may be depending on the location thereof, in a recordable form reasonably acceptable to said Parties provided that the receiving party Pays to Number Nine its out-of-pocket costs to obtain such rights. The provisions of this Section 1.9, including subsections 1.9.1 and 1.9.2, shall survive the expiration or termination of this Agreement.

1.9.1 IF THIS AGREEMENT IS TERMINATED BY THE GRANTING PARTIES PURSUANT TO SECTION 1.9, OR IN THE CASE OF ANY UNCURED BREACH OR DEFAULT BY NUMBER NINE HEREUNDER THAT RESULTS IN THE TERMINATION OF OR EXERCISE OF REMEDIES UNDER THIS AGREEMENT, EMERA AND CMP SHALL BE ENTITLED TO RETAIN THE INITIAL DEPOSIT AND ANY ADDITIONAL DEPOSITS PAID THROUGH THE DATE OF TERMINATION AS LIQUIDATED DAMAGES AND AS THE GRANTING PARTIES' SOLE AND EXCLUSIVE REMEDY AT LAW OR IN EQUITY. THE PARTIES AGREE THAT THE GRANTING PARTIES' ACTUAL DAMAGES IN THE EVENT OF SUCH A BREACH WILL BE DIFFICULT OR IMPRACTICAL TO DETERMINE AND THAT THE AMOUNT OF THE INITIAL DEPOSIT AND ANY ADDITIONAL DEPOSITS PAID THROUGH THE DATE OF TERMINATION IS A REASONABLE ESTIMATE OF SUCH DAMAGES.

1.9.2 IF THIS AGREEMENT IS TERMINATED BY NUMBER NINE PURSUANT TO SECTION 1.9 NUMBER NINE SHALL BE ENTITLED TO SUCH REMEDIES AS IT MAY HAVE BY LAW, SUBJECT TO THE LIMITATIONS OF SECTION 5.8 AND IN NO EVENT MAY NUMBER NINE BE ENTITLED TO MONEY DAMAGES EXCEEDING THE AMOUNT OF THE INITIAL DEPOSIT AND ANY ADDITIONAL DEPOSITS PAID TO THE GRANTING PARTIES THROUGH THE DATE OF TERMINATION. IN ADDITION, THE PARTIES AGREE THAT THE HOULTON TO HAYNESVILLE EASEMENT TO BE CONVEYED BY THE GRANTING PARTIES IS UNIQUE AND THAT FAILURE TO CONVEY THE HOULTON TO HAYNESVILLE EASEMENT WILL CAUSE NUMBER IRREPARABLE INJURY THAT CANNOT BE ADEQUATELY COMPENSATED BY MONEY DAMAGES AND THAT NUMBER NINE SHALL NOT BE REQUIRED TO TERMINATE THIS AGREEMENT IN THE EVENT OF A BREACH BY EMERA, CMP OR MEPCO, BUT SHALL ALSO HAVE THE RIGHT TO SPECIFICALLY ENFORCE THIS AGREEMENT.

1.10 **Use of Houlton to Hayesville Corridor Prior to the Easement Closing**. Prior to the Easement Closing, Number Nine acknowledges and agrees that the Granting Parties may

from time to time use of the Houlton to Haynesville Corridor in connection with their operations, or with respect to any third party interconnection requests, and in addition may as part of their operations provide for routine crossing rights and access to the corridor. Number Nine agrees that it shall not interfere with, object to, or prevent such actions from occurring, provided that such Party shall not enter into any other agreement for use of the Houlton to Haynesville Easement Area that would prevent Number Nine from receiving the easement rights contemplated under the Houlton to Haynesville Easement or that would materially interfere with or impair Number Nine's rights under the Houlton to Haynesville Easement upon the granting thereof. Nothing in this Agreement shall be construed to prevent the Granting Parties from granting routine crossing, corridor access and other similar agreements on and across the Houlton to Haynesville Corridor in the ordinary course of their respective utility operations, or prevent such utility or a third party from co-locating another transmission line or facilities with said utility's lands if such agreements would be permissible under the Houlton to Haynesville Easement upon the granting thereof.

1.11 **Representations and Warranties of Number Nine**.

Number Nine represents and warrants to the Granting Parties as follows:

1.11.1 It is a limited liability company duly organized and existing under the laws of the State of Delaware and qualified to do business in Maine and has all necessary powers to enter into and perform this Agreement.

1.11.2 Its execution and delivery of this Agreement and its performance of the transactions contemplated hereby have been duly authorized by all necessary company action. This Agreement has been duly executed by it and constitutes its valid and binding obligation, enforceable in accordance with its terms, subject to limitations under bankruptcy, insolvency, reorganization or other laws affecting creditors' rights generally and general principles of equity.

1.11.3 Its execution and delivery of this Agreement and its performance of the transactions contemplated hereby do not violate or conflict with its organizational documents or with any Laws or agreements binding on it or its properties. It has obtained all internal consents and all Permits, consents and approvals of third parties and governmental agencies necessary to execute and deliver this Agreement and to perform its obligations hereunder.

The representations and warranties of Number Nine under Sections 1.11.1 through 1.11.3 shall survive for one year following the Easement Closing.

1.12 **Representations and Warranties of the Granting Parties**.

Each of the Granting Parties represent and warrant to Number Nine as follows:

1.12.1 It is a corporation duly organized and existing under the laws of the State of Maine and has all necessary powers to enter into and perform this Agreement.

1.12.2 Its execution and delivery of this Agreement and its performance of the transactions contemplated hereby have been duly authorized by all necessary internal consents and company action. This Agreement has been duly executed by it and constitutes its valid and binding

obligation, enforceable in accordance with its terms, subject to limitations under bankruptcy, insolvency, reorganization or other laws affecting creditors' rights generally and general principles of equity. Its execution and delivery of this Agreement and its performance of the transactions contemplated hereby do not violate or conflict with its organizational documents.

1.12.3 On information and belief, the execution and delivery of this Agreement and its performance of the transaction contemplated hereby do not violate or conflict with any Laws or agreements binding on it with respect to the Houlton to Haynesville Corridor. On information and belief, it has obtained all Permits, consents and approvals of third parties and governmental agencies necessary to execute and deliver this Agreement and to perform its obligations hereunder.

1.12.4 The real property, easements and associated rights and interests described on Exhibit A-2 constitute all of the real property rights owned by it in the Houlton to Haynesville Easement Area. It has not previously assigned, granted or conveyed any such rights or interests to, or granted or created any liens or encumbrances thereon in favor of, any Person other than Number Nine.

1.12.5 To its actual knowledge it has not received any notices from any Governmental Authority of any current violations pertaining to the unlawful release or disposal of Hazardous Substances by it with respect to the Houlton to Haynesville Corridor.

1.12.6 There are no legal proceedings pending or, to its respective actual knowledge, threatened in writing seeking to restrain, prohibit, or obtain damages or other relief in connection with the Houlton to Haynesville Corridor or its use or assignment of its real estate rights pertaining thereto.

1.12.7 To its actual knowledge it has received no notices of violation from any federal, state or local Governmental Authority affecting the Houlton to Haynesville Corridor that would prevent or materially restrict the assignment of easement rights contemplated under this Agreement or prevent or materially impair the construction of the Houlton to Haynesville Project.

The representations and warranties of the Granting Parties in Sections 1.12.1 through 1.12.7 shall survive for one year following the Easement Closing.

ARTICLE II

OPTION TO PURCHASE

2.1 **Grant of Option**. At the Easement Closing, Number Nine shall execute and deliver an option agreement granting to the Option Holder an option to purchase all, but not less than all, of the Houlton to Haynesville Project (the "Option"). The term of the Option will commence on the date granted, and shall expire automatically and without the need for any further act, notice or recording on the seventh (7th) anniversary of the date the Houlton to Haynesville Project is energized. The Option shall be in a form and substance substantially as the option attached hereto as **Exhibit C** and incorporated herein. Within 10 business days of the Houlton to Haynesville Project being energized, Number Nine shall provide the Granting Parties written notice of the date the Houlton to Haynesville Project was energized, and the parties to the Option shall record an amendment to the Memorandum of Option to reflect such date.

Notwithstanding the automatic expiration of this Option as provided above, within 10 business days after the expiration or earlier termination of the Option, the Parties shall execute and record an amendment to the Memorandum of Option to reflect the expiration or termination of the Option.

2.2 **Exercise of Option**. The Option Holder shall have the right to exercise the Option upon sixty (60) days advance written notice to Number Nine. The Option shall provide that the obligation of the Option Holder and Number Nine to close following the exercise of said option shall be conditioned on the following: (a) the Option Holder shall have obtained all necessary regulatory approvals to acquire the Houlton to Haynesville Project and to cause it to become part of the transmission system managed by ISO-NE; (b) the Option Holder shall have obtained all necessary approvals to recover the costs for and related to the acquisition of the Houlton to Haynesville Project on a regionalized basis under the ISO-NE Tariff; (c) Number Nine shall have amended the Number Nine Power Purchase Contract to change the "Delivery Point" thereunder to a new delivery point in or about Houlton, Maine, or the Parties shall have reached another mutually agreeable solution; (d) either (i) Number Nine and the Option Holder shall have entered into a new a standard form Large Generator Interconnection Agreement (with such changes as Number Nine and the Option Holder may mutually agree) with respect to the connection of the Number Nine Project to the Houlton to Haynesville Project at a point of interconnection in or about Houlton, Maine, or (ii) Number Nine and the Option Holder and/or MEPCO shall have amended the then existing Large Generator Interconnection Agreement to reflect the relocation of Number Nine's point of interconnection from the Haynesville Node to a new point of interconnection in or about Houlton, Maine, and (e) Number Nine shall have received approval from FERC under Section 203 of the Federal Power Act and any other necessary Permits and approvals from Governmental Authorities to sell the Houlton to Haynesville Project to the Option Holder. All costs of the new interconnection at Houlton, including for any necessary interconnection studies and transmission system upgrades required to permit the relocation of the interconnection to Houlton, shall be the Option Holder's responsibility, excepting any costs related to specific facilities necessary to interconnect Number Nine's remaining generator lead to the new facilities near Houlton, Maine, which shall be at Number Nine's cost. Number Nine shall seek approval from FERC under Section 203 of the Federal Power Act and any other necessary Permits and approvals from Governmental Authorities to sell the Houlton to Haynesville Project to the Option Holder at Number Nine's sole cost and expense, and Number Nine shall have a good faith obligation to seek such Permits and approvals upon the written request of the Option Holder certifying that the conditions to the exercise of the Option have been satisfied or the Option Holder expects them to be satisfied within ninety (90) days and that the Option Holder intends to exercise the Option as soon as any unsatisfied conditions are satisfied. During the term of this Agreement and the Option, any conveyance by Number Nine of any interest in all or any portion of the Houlton to Haynesville Project to a third party shall be subordinate to the Option Holder's rights under the Option.

2.3 **Option Purchase Price**. The purchase price for the Option (the "Option Purchase Price") shall be paid by the Option Holder to Number Nine at the "Option Closing" (as defined in the Option) in immediately available funds and shall be calculated as follows: the sum of (a) 80% of the "Net Book Value" of the Houlton to Haynesville Project (not including the Haynesville Substation) as of the date of the Option Closing, or such lesser amount that the

Parties may agree in order for the Option Holder to obtain all necessary regulatory approvals and the recovery of the costs for and related to the acquisition of the Houlton to Haynesville Project on a regionalized basis under the ISO-NE Tariff, plus (b) 100% of the unamortized balance (calculated in the same manner as "Net Book Value"), as of the date of the Option Closing, of Number Nine's capitalized costs of the substation owned by MEPCO in Haynesville, Maine where the Houlton to Haynesville Project interconnects to the existing MEPCO transmission line (the "Haynesville Substation"). "Net Book Value" is defined as Number Nine's original cost for the Houlton to Haynesville Project, including the costs of real property rights and easements, the cost of all structures, conductors, equipment and facilities, and all costs, including internal costs, of designing, permitting, financing, procuring equipment, constructing and commissioning the Houlton to Haynesville Project, less accumulated depreciation, as calculated under applicable FERC accounting requirements and standards.

2.4 **Obligations of Number Nine.** Number Nine shall have no obligation to fund or incur any expenses or incur any cost or expense in connection with the Option Holder's exercise of the Option or the Right of First Refusal except as necessary to perform its own obligations thereunder

ARTICLE III

RIGHT OF FIRST REFUSAL

3.1 **Right of First Refusal**. At the Easement Closing, Number Nine shall grant to the Option Holder a right of first refusal with respect to the Houlton to Haynesville Project (the "Right of First Refusal"). The term of the Right of First Refusal will commence on the expiration or termination of the Option, and shall expire on the third anniversary of the date the Right of First Refusal commences; provided that if the Option Holder acquires the Houlton to Haynesville Project prior to the commencement of the term of the Right of First Refusal, the Right of First Refusal will terminate upon the closing of such acquisition. The form of the Right of First Refusal is attached hereto as **Exhibit D** and incorporated herein.

3.2 **Procedure**. During the term of the Right of First Refusal, if Number Nine (or an Affiliate thereof to which ownership of the Houlton to Haynesville Project has been transferred) proposes to enter into any agreement to convey the Houlton to Haynesville Project, or any portion thereof, to a third party (a "Third Party Transfer"), Number Nine shall first give written notice thereof to the Option Holder (the "Transfer Notice"). The Transfer Notice shall include a copy of the proposed purchase and sale agreement; provided however, that if no purchase and sale agreement exists, then the Transfer Notice shall include the name and identity of the prospective purchaser, the date upon which such sale is to be consummated, and the price and terms of the sale. The Option Holder will have the irrevocable and exclusive right of first refusal to enter into an agreement for any such transfer at the price and on the terms specified in the Transfer Notice, which Right of First Refusal is exercisable by providing written notice to Number Nine within 60 days after the Option Holder receives the Transfer Notice (such period, the "ROFR Exercise Period"). If the Option Holder fails to affirmatively exercise the Right of First Refusal within the ROFR Exercise Period, Number Nine will have the right to enter into the transaction contemplated by the Transfer Notice on terms equal to or more favorable than (from

Number Nine's perspective) those set forth in the Transfer Notice and upon consummation of such Third Party Transfer, the rights of the Option Holder under the Right of First Refusal shall be terminated. Should such a sale to a third party not be timely consummated as aforesaid within one hundred eighty (180) days after the date of the Transfer Notice, then the Houlton to Haynesville Project (or such portion thereof) shall again become subject to the Right of First Refusal; provided, however, that if there is a binding purchase and sale agreement in effect as of the end of such one hundred eighty (180) day period, Number Nine shall have ninety (90) additional days to complete such sale, and the Houlton to Haynesville Project shall not again become subject to the Right of First Refusal until the earlier of the expiration of such ninety (90) period or the termination of such purchase and sale agreement.

3.3 **Limitations**. Notwithstanding anything herein to the contrary, the Right of First Refusal shall not apply to, and no Transfer Notice shall be required with respect to, (a) any assignment, conveyance or transfer to an Affiliate of Number Nine, or (b) any sale, lease, assignment, transfer, mortgage, pledge or granting of a security in the Houlton to Haynesville Project in connection with any financing transactions, including without limitation the granting of any liens or security interests to secure indebtedness, the sale of interests in connection with equity (including tax equity) financing transactions, and the sale of the Houlton to Haynesville Project in connection with a sale-leaseback or other lease financing transactions.

ARTICLE IV

CERTAIN RIGHTS, COVENANTS AND OBLIGATIONS

4.1 **Collateral Assignment of Project Documents**. To secure their right to the following documents in connection with the purchase of the Houlton to Haynesville Project as provided below, Number Nine hereby collaterally assigns, to the Granting Parties, which assignment shall survive the termination of this Agreement, all the right, title and interest of Number Nine in and to the following (collectively the "Houlton to Haynesville Project Documents"):

a. all Permits now or hereafter granted or issued in connection with the construction, development or operation of the Houlton to Haynesville Project (but only to the extent such Permits relate to the Houlton to Haynesville Project if they relate to other parts of the Number Nine Project also, in which case the Parties will enter into a mutually acceptable arrangement to share the use of such Permits).

b. all plans, specifications, drawings, surveys, renderings and models prepared for the construction of the Houlton to Haynesville Project in existence at the time of such purchase, together with all revisions and modifications thereof and all sketches and notes related thereto then in existence.

This Assignment is made in consideration for this Agreement, and the applicable Granting Parties may exercise the assigned rights only upon the purchase of the Houlton to Haynesville Project by (a) the Option Holder pursuant to the Option or the Right of First Refusal, (b) the Granting Parties pursuant to Reservation Two set forth on Exhibit B to the Houlton to

Haynesville Easement, or (c) the termination of this Agreement for any reason other than default of the Granting Parties. It shall be a condition of the Granting Parties' exercise of these assigned rights that the Granting Parties reimburse Number Nine for Number Nine's actual out-of-pocket cost for creating, developing, obtaining or otherwise related to any Houlton to Haynesville Project Document that the Granting Parties acquire or assume.

4.2 **Access Pending Easement Closing; Diligence**. From and after the date of this Agreement, Number Nine shall have access to the Houlton to Haynesville Corridor to the full extent of the Granting Parties' rights therein to conduct such inspections, surveys, tests, investigations and similar activities at reasonable times and upon reasonable advance notice to the Granting Parties. Number Nine and its representatives and contractors shall comply with all applicable site safety and security rules and procedures in accessing the Houlton to Haynesville Corridor. To the extent it has not already done so, within fifteen (15) days after execution of this Agreement, the Granting Parties will deliver to Number Nine complete copies of all surveys, tests, studies, reports, inspections, assessments and similar documents regarding the Houlton to Haynesville Easement Area in its possession or control; including any soils reports and reports regarding the existence or non-existence of Hazardous Substances. Number Nine and its representatives, agents and contractors will also have the right to make inquiries of Governmental Authorities and other persons or entities and seek such information as Number Nine may elect regarding the Houlton to Haynesville Easement Area and Number Nine's intended use thereof and any matters related thereto.

4.3 **Insurance**. Prior to the Easement Closing, and without limiting any insurance obligations of a Party under any other agreement between one or more of the Parties including those listed in Section 5.4 hereof, each of the Parties will carry, or cause its Affiliate(s), as applicable, to carry, comprehensive general liability insurance and other insurance consistent with its past practices and Good Utility Practices covering all of the acts or omissions of such Party or its Affiliate(s), and any of their respective representatives, employees, invitees, consultants, contractors or subcontractors conducting activities in, on or about the Houlton to Haynesville Corridor. After the Easement Closing, each of the Parties to the Large Generator Interconnection Agreement for the Number Nine Project will carry, or cause its Affiliate(s), as applicable, to carry, comprehensive general liability insurance and other insurance consistent with the insurance requirements of the Large Generator Interconnection Agreement for the Number Nine Project, covering all of the acts or omissions of such Party or its Affiliate(s), and any of their respective representatives, employees, invitees, consultants, contractors or subcontractors conducting activities in, on or about the Houlton to Haynesville Corridor. However, neither the failure of a Party to carry such insurance nor the amount of insurance carried by a Party shall limit such Party's obligations or liabilities under this Agreement.

4.4 **Financing Assistance**. The Granting Parties shall cooperate, as Number Nine may reasonably request from time to time before or after the Easement Closing, in connection with Number Nine obtaining financing for the Number Nine Project or any part thereof or any Affiliate's generation project that uses the Houlton to Haynesville Project, including executing such consents to assignment (including customary notice and extended cure rights and rights to foreclose on and assume the Houlton to Haynesville Easement) and providing such disclosure, certifications, representations and opinions of counsel as may be reasonably requested by the

financing parties, provided that nothing in such instruments shall conflict with this Agreement, the Option, the Right of First Refusal or the Houlton to Haynesville Easement. Number Nine shall reimburse the Granting Parties for their costs associated with such cooperation, subject to a mutually agreed cap to be determined at the time. The provisions of this Section 4.4 shall survive the Easement Closing and the expiration of this Agreement, provided, however, that nothing in this Section 4.4 shall be construed to modify or increase Assignor's obligations set forth in the Easement Assignment with respect to matters set forth therein.

4.5 **Guaranty**. At the Easement Closing, Number Nine shall cause EDPRNA to deliver the "Guaranty" to the Option Holder to secure Number Nine's obligations with respect to (i) the granting and exercise of the Option, (ii) the granting and exercise of the Right to Purchase and Rights Upon Abandonment set forth in "Reservation Two" in Exhibit B to the Houlton to Haynesville Easement, and (iii) the payment of the "Value Payments" set forth in Section 4.10 of this Agreement. The form of the Guaranty is attached hereto as **Exhibit F**. The "Guaranty Cap" (as defined in the Guaranty) shall be equal to one hundred twenty-five percent (125%) of the estimated amount, based on information reasonably available at the time of the Easement Closing, of the Option Purchase Price as it would be determined under Section 2.3 as of the date of the Easement Closing. Once the Houlton to Haynesville Project has been constructed, the Guaranty will be amended (or the original Guaranty will be returned to EDPRNA and a new Guaranty will be issued) so that the Guaranty Cap equals one hundred twenty-five percent (125%) of the Option Purchase Price as it would be determined under Section 2.3 as of the date of completion of construction. The provisions of this Section 4.5 shall survive the Easement Closing and the expiration of this Agreement.

4.6 **Assignment.** Except as otherwise provided herein, no Party may assign this Agreement or any portion thereof without the prior written consent of the other Parties, which consent shall not be unreasonably withheld or delayed. Notwithstanding the foregoing, Number Nine shall have the right to assign this Agreement in whole and on such terms and conditions as it may elect, but in all instances subordinate to the obligation to grant the Option and the Right of First Refusal, without prior written consent of the Granting Parties, (i) to an Affiliate of Number Nine, including any Affiliate that will share the use of the Houlton to Haynesville Project; (ii) to a person or entity that is also purchasing the Number Nine Wind Farm Project or to an Affiliate of such purchaser so long as the purchaser can reasonably demonstrate to the Granting Parties that it has, whether directly, through Affiliates or under contract, the financial capacity and capability to operate the Houlton to Haynesville Project; or (iii) for security or collateral purposes, including a collateral assignment, sale or other transfer for financing purposes, to one or more parties providing debt, equity or lease financing to such party and/or such party's surety in connection with the financing of the Number Nine Project or any part thereof or any Affiliate's generation project that uses the Houlton to Haynesville Project. Number Nine and its successors and assigns shall have the right, without prior consent of the other Parties, to sell equity interests in Number Nine or the Number Nine Project to any equity investor or investors, provided that sale of more than 50% of the equity interests in Number Nine that is not in connection with a tax equity, sale-leaseback or other financing shall be considered an assignment hereunder that is subject to the consent of the other Parties if not otherwise permitted hereunder without such consent. If Number Nine seeks to assign this agreement pursuant to clause (ii) of the immediately preceding sentence, EDPRNA may only be relieved of its liability under the Guaranty if a substitute guarantor reasonably satisfactory to the Granting Parties grants a new

guaranty on the same terms (or on other terms reasonably satisfactory to the Granting Parties) to the Granting Parties.

4.7 **Regulatory Status.** Notwithstanding anything herein to the contrary, nothing in this Agreement shall be interpreted or applied in a manner that adversely affects Number Nine's status as an "exempt wholesale generator" under federal and state law, its market based rate authority as approved by the Federal Energy Regulatory Commission or its compliance with any other requirements of the Federal Energy Regulatory Commission, including mandatory reliability requirements applicable to the Number Nine Project, and any provision or interpretation of this Agreement that would do so shall be void.

4.8 **Obligations of Transmission Owner and Transmission Operator**. Number Nine and Emera will negotiate in good faith a separate agreement under which Emera, or its designee, will perform the duties of a "Transmission Operator" under the applicable rules and regulations of the North American Electric Reliability Corporation ("NERC") on behalf of Number Nine during the period that Number Nine owns the Houlton to Haynesville Project on such terms and conditions as Number Nine and Emera may agree.

4.9 **Maintenance of Houlton to Haynesville Easement Area Prior to Easement Closing**. From and after the date this Agreement is executed through the date of the Easement Closing, the Granting Parties, to the extent under their control, shall maintain the Houlton to Haynesville Easement Area in substantially the same condition as it is on the date of execution of this Agreement, normal wear and tear excepted. Without limiting the generality of the foregoing, the Granting Parties shall (a) not make any material alterations or changes to the Houlton to Haynesville Easement Area without Number Nine's prior written consent, which shall not unreasonably be withheld, (b) not commit waste or damage to the Property, and (c) not use the Houlton to Haynesville Easement Area in a manner that could reasonably be expected to interfere with or impair Number Nine's rights to acquire or use the Easement Area as contemplated herein. Should the Granting Parties fail to pay or fail to cause to be paid any real property taxes, other taxes and assessments, rents, loan payments or similar items which, if left unsatisfied, could reasonably be expected to create a lien on the Houlton to Haynesville Easement Area or adversely affect Number Nine's rights to acquire or use the Houlton to Haynesville Easement Area as contemplated herein, Number Nine may pay or otherwise satisfy such unpaid taxes, assessments, rents or other items, and the Granting Parties shall reimburse Number Nine for any such amounts immediately on demand.

4.10 **Value Payments**. If Emera, CMP or their designee acquire the Houlton to Haynesville Project from Number Nine or its successor or assign pursuant to the Option, the Right of First Refusal or otherwise, at the closing of such purchase and subject to such closing occurring and Number Nine being paid the purchase price for the Houlton to Haynesville Project, Number Nine shall pay to Emera and CMP a "Value Payment" reflecting a portion of the savings Number Nine will realize as a result of the sale of the Houlton to Haynesville Project. The Value Payment will be equal to 10% of the purchase price paid for the Houlton to Haynesville Project and shall be divided between CMP and Emera in such proportion as they shall jointly designate by written notice to Number Nine. The Value Payment constitutes consideration for the efforts of CMP and Emera to create value regionally for New England customers by facilitating the efficient development of transmission facilities in Northern Maine which improve market conditions across Maine and New England and allow the transmission of

renewable generation resources to the ISO-NE transmission system. Number Nine's obligation to make the Value Payment shall survive the Easement Closing and the expiration of this Agreement.

ARTICLE V

GENERAL PROVISIONS

5.1 **Expenses**. Except as otherwise provided in this Agreement, each Party shall be responsible for any expenses it incurs in connection with this Agreement and with respect to the Easement Closing and any closing with respect to the Option or the Right of First Refusal. No Party may obligate the other Party to expend sums without the written authorization of such other Party.

5.2 **Confidentiality**. This Agreement shall not be confidential. However, if any Party designates as confidential any documents or other information shared with other Parties pursuant to, or related to this Agreement, and such documents or other information otherwise qualifies as confidential information hereunder, all other Parties agree to honor such designation and to not share such information with third parties, excepting (a) third parties working for or on behalf of a Party in a professional capacity related to this Agreement including, without limitation, engineers, attorneys and accountants, and that are subject to an agreement or legal obligation to keep such documents or other information confidential, (b) as may be required by a court or other Governmental Authority, provided that the disclosing Party shall make reasonable efforts to obtain confidential treatment for such documents or information if available, and (c) current or prospective investors, lenders, purchasers, lessors or lessees in, to or of Number Nine, the Number Nine Wind Farm Project and/or the Houlton to Haynesville Project or current or prospective purchasers of power from the Number Nine Wind Farm Project or another project interconnected with the Houlton to Haynesville Project, and their respective representatives, agents, consultants and contractors, in each case that are subject to an agreement or legal obligation to keep such documents or other information confidential. A Party shall have no obligation with respect to documents or other information that (i) is or becomes publicly known through no act of the receiving Party; (ii) is approved for release by written authorization of the disclosing Party; (iii) is disclosed to a Governmental Authority as provided in clause (b) and is subsequently disclosed by the Governmental Authority; or (iv) has rightfully been disclosed to the receiving Party without and restriction on use or disclosure and not in violation of the rights of another Party. The obligations under this Section 5.2 shall survive the termination of this Agreement. This provision supersedes the Parties' obligations under that certain [Confidentiality Agreement] dated December 14, 2012 between Number Nine and CMP and that certain [Confidentiality Agreement] dated October 14, 2013 between Number Nine and Emera.

5.3 **Notices**. All notices and other communications required or permitted to be given hereunder shall be in writing at the addresses set forth below and shall be considered as properly given (a) if delivered in person; (b) if sent by a nationally recognized overnight delivery service; (c) if mailed by first class mail, postage prepaid, registered or certified with return receipt requested; or (d) if sent by telecopy or email with confirmation of receipt. Notice so given shall be deemed effectively given and received on the actual day of receipt by the addressee, except that communication or notice so transmitted by telecopy or other direct written electronic means,

including electronic mail, shall be deemed to have been validly and effectively given on the day (if a business day and, if not, on the next following business day) on which it is transmitted if transmitted before 4:00 p.m., recipient's time, and if transmitted after that time, on the next following business day; provided, however, that if any notice is tendered to an addressee and the delivery thereof is refused by such addressee, such notice shall be effective upon such tender. Any Party shall have the right to change its address for notice hereunder to any other location by giving ten (l0) days' prior written notice of the change to the other Parties in the manner set forth herein above.

If to Number Nine:

Number Nine Wind Farm LLC
c/o EDP Renewables North America LLC
808 Travis Street, Suite 700
Houston, Texas 77002
Attention: Executive Vice President, Eastern Region
CC: General Counsel
Email: legalnotices@edpr.com
Telephone: 713-265-0350
Facsimile: 713-356-2500

If to CMP:

Central Maine Power Company
83 Edison Drive
Augusta, ME 04336
Attention: Legal Department
Email: regulatoryservices@cmpco.com
Telephone: 207-626-9583
Facsimile: 207-621-4714

If to Emera Maine:

Mr. Gerard Chasse
President and Chief Operating Officer
Emera Maine
970 Illinois Avenue
Bangor, Maine 04401
Telephone:
Facsimile:

If to MEPCO:

Maine Electric Power Company, Inc.
83 Edison Drive
Augusta, ME 04336

Attention: Legal Department
Email: regulatoryservices@cmpco.com
Telephone: 207-626-9583
Facsimile: 207-621-4714

5.4 **Entire Agreement**. Except for such study agreements related to (i) interconnection requests by Number Nine including, without limitation, the Engineering and Procurement Agreement between Number Nine and MEPCO dated November 19, 2013, and (ii) a certain license agreement between Emera and Number Nine dated April 11, 2014, this Agreement constitutes the entire agreement among the Parties and it supersedes all prior communications, agreements and understandings, written or oral, with respect to the Parties' desires to coordinate the development, construction and ownership of the Houlton to Haynesville Project. The parties acknowledge and agree that this Agreement satisfies and supersedes the MOU and the MOU shall have no further force or effect.

5.5 **Amendment**. This Agreement may not be modified or amended except by the written agreement of the Parties.

5.6 **Waiver**. Any Party's failure to exercise any right or remedy under this Agreement, delay in exercising any such right or remedy, or partial exercise of any such right or remedy, shall not constitute a waiver of that or any other right or remedy hereunder. A waiver of any breach of any provision of this Agreement shall not constitute a waiver of any succeeding breach of such provision or a waiver of such provision itself. No waiver of any provision of this Agreement shall be binding on a Party unless it is set forth in writing and signed by such Party.

5.7 **Successors and Assigns**. This Agreement shall bind and inure to the benefit of the Parties and their respective successors and permitted assigns, provided that nothing in this subsection shall serve to authorize a transfer that is otherwise prohibited under the Easement, Option or Right of First Refusal.

5.8 **Waiver of Consequential Damages**. WHEREVER THIS AGREEMENT SPECIFIES THE MEASURE OF DAMAGES FOR A PARTICULAR COVENANT, BREACH OR TERMINATION EVENT, SUCH DAMAGES SHALL BE THE SOLE AND EXCLUSIVE MEASURE OF DAMAGES FOR SUCH COVENANT, BREACH OR TERMINATION EVENT. EXCEPT IN THE CASE OF FRAUD, IN NO EVENT SHALL ANY PARTY OR ANY OF ITS OFFICERS, DIRECTORS, MEMBERS, PARTNERS, SHAREHOLDERS, EMPLOYEES, AGENTS OR AFFILIATES BE LIABLE FOR SPECIAL, INDIRECT, EXEMPLARY, PUNITIVE OR CONSEQUENTIAL DAMAGES OF ANY NATURE WHATSOEVER CONNECTED WITH OR RESULTING FROM THE BREACH OF, OR ANY PERFORMANCE OR NON-PERFORMANCE OF ANY OBLIGATION UNDER, THIS AGREEMENT, INCLUDING DAMAGES OR CLAIMS FOR LOSS OF REVENUE, INCOME OR PROFITS, INCREASED COST OF CAPITAL OR SIMILAR CAUSES, IRRESPECTIVE OF WHETHER SUCH DAMAGES ARE REASONABLY FORESEEABLE AND IRRESPECTIVE OF WHETHER SUCH CLAIMS ARE BASED UPON NEGLIGENCE, STRICT LIABILITY, CONTRACT, OPERATION OF LAW OR ANY OTHER LEGAL

THEORY, AND EACH PARTY HEREBY WAIVES ANY CLAIM OR RIGHT TO ANY SUCH DAMAGES. NOTHING IN THIS PROVISION SHALL LIMIT ANY PARTY'S RIGHT TO SEEK INJUNCTIVE RELIEF, SPECIFIC PERFORMANCE OR SUCH OTHER REMEDIES AS MAY BE AVAILABLE AT LAW OR EQUITY. WITH RESPECT TO ANY DAMAGES RESULTING FROM A BREACH OF A REPRESENTATION OR WARRANTY BY THE GRANTING PARTIES, THE DAMAGES SHALL NOT EXCEED THE PURCHASE PRICE PAID TO THE GRANTING PARTIES SET FORTH IN SECTION 1.2 OF THIS AGREEMENT. THIS SECTION 5.8 SHALL SURVIVE THE EXPIRATION OR TERMINATION OF THIS AGREEMENT.

5.9 **Indemnification**. Each Party agrees to indemnify, defend, and hold each other Party and their respective Affiliates, members, partners, contractors, subcontractors, trustees, directors, officers, employees, and agents harmless from and against any and all claims, damages, fines, penalties and liabilities, costs and expenses (including attorneys' fees and disbursements) in tort, contract, or otherwise (collectively "Liabilities") (i) for personal injury or property damage resulting from the negligence or willful misconduct of the indemnifying Party in connection with the performance of that Party's obligations under this Agreement or in connection with any activities by such Party, its employees, representatives, agents and contractors in the Houlton to Haynesville Corridor; or (ii) otherwise resulting from claims of third parties arising, or claimed to have arisen, as a result of any acts or omissions of such Party under or related to this Agreement. Notwithstanding the foregoing, no such indemnification shall be provided for Liabilities that are caused by or arise out of the gross negligence, fraudulent, illegal, or willful misconduct of the Party claiming indemnification. The obligations in this Section 5.9 shall survive the Easement Closing and the expiration of this Agreement to the extent they relate to damages, injuries or claims arising from conduct occurring prior to the Easement Closing.

5.10 **Dispute Resolution**. The Parties agree to attempt to resolve any dispute, claim or controversy arising out of this Agreement informally through communications among the Parties' respective project managers responsible for the Houlton to Haynesville Project. In the event the Parties are unable to resolve any such dispute, claim or controversy in this manner, any Party may provide all other parties a written notice of dispute. Within thirty (30) days of the issuance of such notice, a senior officer of each Party shall meet and attempt to solve the dispute, claim or controversy by negotiation. Should the officers fail to resolve the dispute within ten (10) days of their initial meeting, then any Party has the right to bring a complaint in an appropriate state or federal court located in the State of Maine to pursue such remedies as it may have at law or equity, subject to the limitations set forth in this Agreement.

5.11 **Governing Law**. This Agreement shall be governed by and construed in accordance with the laws of the State of Maine, without giving effect to the conflicts of laws' provisions thereof.

5.12 **Counterparts**. This Agreement may be executed in multiple counterparts, each of which shall be deemed an original but all such counterparts shall together constitute one and the same instrument. A counterpart to this Agreement may be delivered by electronically or by facsimile.

5.13 **Cooperation.** Wherever in this Agreement a Party has an obligation to cooperate, in no instance shall such obligation to cooperate require a Party to undertake any action or inaction that would be in violation of Applicable Laws.

5.14 **Estoppels**. Each Party will, from time to time upon the reasonable request of another Party or Parties, sign estoppel certificates or similar documents confirming the terms of this Agreement, the amounts owed or owing under this Agreement, if any, that this Agreement is in good standing and not in default (or if it is not, describing the reason(s) why not) and such other matters as may be customary or reasonably requested by the Party seeking the estoppel certificate.

5.15 **Number Nine LGIA**. To the extent the obligation of any Party in this Agreement conflict with obligations of said Party under the Number Nine LGIA, the obligations under the Number Nine LGIA shall control.

5.16 **Survival.** Excepting those that expressly survive or that by their nature involve performance after the Easement Closing, all terms and conditions of this Agreement shall terminate as of the Easement Closing.

5.17 **Defined Terms:** When used in this Agreement, the following capitalized terms shall have the meanings set forth below:

"Affiliate" means, with respect to any specified Person, any Person directly or indirectly controlling, controlled by or under common control with such Party. The term "control" (including the terms "controlled by" or "under common control with") means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of a Person, whether through ownership, by contract, or otherwise. Any Person shall be deemed to be an Affiliate of any specified Person if such Person owns more than 50% of the voting securities of the specified Person, if the specified Person owns more than 50% of the voting securities of such Person, or if more than 50% of the voting securities of the specified Person and such Person are under common control.

"Applicable Laws" means all: (i) constitutions, statutes, laws, by-laws, rules, judgments, orders, decrees or regulations in effect from time to time and made or issued by any Governmental Authority; (ii) any similar form of decision of or determination by, or any interpretation or administration of any of the foregoing set forth in clause (i) by, any Governmental Authority, in each such case having jurisdiction; and (iii) the requirements of all Permits, licenses or codes, in the case of each of clauses (i), (ii) and (iii) binding on the Parties or on the property or activity in question.

"Environmental Laws" means all Applicable Laws pertaining to Hazardous Substances, the environment, human health, safety and natural resources, including, but not limited to, the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (42 U.S.C. § 9601 et seq.), and the Superfund Amendments and Reauthorization Act of 1986, the Emergency Planning and Community Right to Know Act (42 U.S.C. §§ 11001 et seq.), the Resource

Conservation and Recovery Act of 1976 (42 U.S.C. §§ 6901 et seq.), and the Hazardous and Solid Waste Amendments Act of 1984, the Clean Air Act (42 U.S.C. §§ 7401 et seq.), the Federal Water Pollution Control Act (also known as the Clean Water Act) (33 U.S.C. §§ 1251 et seq.), the Toxic Substances Control Act (15 U.S.C. §§ 2601 et seq.), the Safe Drinking Water Act (42 U.S.C. §§ 300f et seq.), the Endangered Species Act (16 U.S.C. §§ 1531 et seq.), the Migratory Bird Treaty Act (16 U.S.C. §§ 703 et seq.), the Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668 et seq.), the Oil Pollution Act of 1990 (33 U.S.C. §§ 2701 et seq.), the Hazardous Materials Transportation Act (49 U.S.C. §§ 1801 et seq.), and any similar or analogous state and local statutes or regulations promulgated thereunder and decisional law of any Governmental Authority, as each of the foregoing may amended or supplemented from time to time in the future, in each case to the extent applicable with respect to the property or operation to which application of the term "Environmental Laws" relates.

"Good Utility Practices" means the practices, methods and acts engaged in by a significant portion of the electric generation industry that, at a particular time, in the exercise of reasonable judgment in light of the facts known or that reasonably should have been known at a time a decision was made, would have been expected to accomplish the desired result in a manner consistent with Applicable Laws and standards relating to reliability, safety, environmental protection, economy and expedition. Good Utility Practices are not intended to be limited to the optimum practice, method or act, to the exclusion of all others, but rather to be a spectrum of possible practices, methods or acts that would reasonably be expected to accomplish the desired result.

"Governmental Authority" means any governmental department, commission, board, bureau, agency, court or other instrumentality of any country, state, county or municipality or other political subdivision thereof.

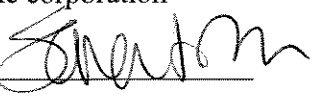
"Hazardous Substances" means (A) any hazardous materials, hazardous wastes, hazardous substances, toxic wastes, solid wastes, and toxic substances as those or similar terms are defined under any Environmental Laws; (B) any friable asbestos or friable asbestos containing material; (C) polychlorinated biphenyls ("PCBs"), or PCB containing materials or fluids; (D) radon; (E) any petroleum, petroleum hydrocarbons, petroleum products, crude oil and any fractions or derivatives thereof; and (F) any other hazardous, radioactive, toxic or noxious substance, material, pollutant, or contaminant that, whether by its nature or its use, is subject to regulation or giving rise to liability under any Environmental Laws.

"Permit" means any permit, license, approval, consent or authorization of or by any Governmental Authority.

"Person" means any individual, partnership, joint venture, company, corporation, limited liability company, limited duration company, limited life company, association, trust or other entity or organization, including a government or political subdivision or an agency or instrumentality thereof.

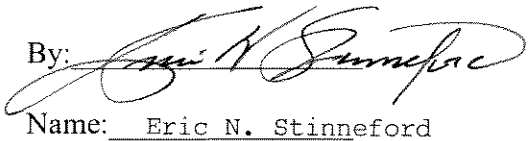
IN WITNESS WHEREOF the Parties hereto have caused their representatives to execute and deliver this Agreement as of the date first written above.

Central Maine Power Company
a Maine corporation

By: 

Name: Sara J. Burns

Title: President & CEO

By: 

Name: Eric N. Stinneford

Title: VP, Treasurer, Controller & Clerk

Emera Maine
a Maine corporation

By: 

Name: Gerard R. Chasse

Title: President and Chief Operating Officer

By: 

Name: Alan Richardson

Title: Vice President, Transmission

Maine Electric Power Company, Inc
a Maine corporation

By: _____

Name: Sara J. Burns

Title: President

By: _____

Name: Eric N. STinneford

Title: Director

Number Nine Wind Farm LLC
a Delaware limited liability company

By:_____

Name: Bernardo Goarmon

Title: Executive Vice President, Finance

By:_____

Name: Kenneth Ripper

Title: Executive Vice President, Technical

SCHEDULE OF EXHIBITS

EXHIBIT A	**EASEMENT**
EXHIBIT A-1	**HOULTON TO HAYNESVILLE CORRIDOR**
EXHIBIT A-2	**HOULTON TO HAYNESVILLE EASEMENT AREA**
EXHIBIT A-3	**PERMITTED EXCEPTIONS**
EXHIBIT A-4	**KNOWN EXCEPTIONS**
EXHIBIT B	**PLANS AND SPECIFICATIONS**
EXHIBIT C	**OPTION**
EXHIBIT D	**RIGHT OF FIRST REFUSAL**
EXHIBIT E	**MEMORANDUM OF AGREEMENT**
EXHIBIT F	**GUARANTY**

EXHIBIT A

ASSIGNMENT AND GRANT OF EASEMENT RIGHTS

THIS ASSIGNMENT AND GRANT OF EASEMENT RIGHTS ("Assignment Agreement") is made this ___ day of _____, 201_, by **EMERA MAINE** a Maine corporation with a place of business at Bangor, Maine ("Emera"), **CENTRAL MAINE POWER COMPANY,** a Maine corporation with a place of business at Augusta, Maine ("CMP"), and **MAINE ELECTRIC POWER COMPANY, INC.,** a Maine corporation with a place of business at Augusta, Maine ("MEPCO") (Emera, CMP and MEPCO are referred to herein collectively as "Assignor"), and **NUMBER NINE WIND FARM LLC** ("Number Nine"), a limited liability company organized under the laws of Delaware. CMP, Emera, MEPCO and Number Nine shall sometimes be referred to herein individually as a "Party" and collectively as the "Parties."

WHEREAS, Emera is the successor to Maine Public Service Company which is the holder of certain easement and other rights in and to a two hundred twenty-five foot (225') wide corridor located in the Towns of Houlton, Hodgdon, and Linneus, Township A, R.2 W.E.L.S., Township 3, R.2 W.E.L.S. (Forkstown), and the Town of Haynesville in Aroostook County, Maine, more particularly described in Schedule 1 attached hereto and made a part hereof (said 225'-wide corridor (inclusive of the strip of CMP and MEPCO lands described in the following recitals) hereinafter referred to as the "Houlton to Haynesville Corridor"), including rights acquired pursuant to the instruments listed on Schedule 2 attached and made a part hereof (the "Emera Deeds");

WHEREAS, CMP is the holder of certain easement and other rights with respect to the property located in the Town of Haynesville in Aroostook, County, Maine, more particularly described in a portion of Schedule 1 being a portion of the Houlton to Haynesville Corridor including rights acquired pursuant to the instruments listed on Schedule 2-A (the "CMP Deeds");

WHEREAS, MEPCO is the holder of certain easement and other rights with respect to the property located in the Town of Haynesville in Aroostook, County, Maine, more particularly described in a portion of Schedule 1 being a portion of the Houlton to Haynesville Corridor including rights acquired pursuant to the instruments listed on Schedule 2-B (the "MEPCO Deeds");

WHEREAS, there is currently no transmission line constructed within the Houlton to Haynesville Corridor;

WHEREAS, hereinafter the term "Assignor" shall mean collectively Emera, MEPCO and CMP, or individually Emera with respect to the assignment or grant of rights pertaining the Emera Deeds, MEPCO with respect to the assignment or grant of rights pertaining to the MEPCO Deeds and CMP with respect to the assignment or grant of rights pertaining to the CMP Deeds, as the context may suggest or require;

WHEREAS, Assignor may in the future erect, construct, maintain, repair, rebuild, respace, replace, operate, access and patrol a 345 kV or other electric line, consisting of suitable and sufficient poles, cables, and towers with sufficient foundations together with lines extending upon, within and between the same for the transmission of electric energy and intelligence related thereto, together with any fixtures, anchors, guys, crossarms, and other equipment and appurtenances (which, together with any and all repairs, replacements or upgrades, shall hereinafter be referred to as the "Emera Transmission Line") on the westerly portion of the Houlton to Haynesville Corridor and wishes to reserve and preserve all rights to do so;

WHEREAS, Number Nine is the owner of a 250 MW wind farm project under development known as Number Nine Wind Farm on Number Nine Mountain in Aroostook County, Maine (the "Number Nine Wind Farm Project") for which it is constructing a generator lead to facilitate delivery of its power to the transmission system operated by ISO New England, and Affiliates of Number Nine are also planning to develop and construct additional generation projects that will also deliver power into the ISO-New England transmission system;

WHEREAS, Number Nine desires to erect, construct, maintain, repair, rebuild, respace, replace, operate, access and patrol a 345 kV generator lead electricity transmission line for the use and benefit of the Number Nine Wind Farm Project and the additional generation facilities being developed or constructed by its Affiliates, consisting of suitable and sufficient poles, cables, and towers with sufficient foundations together with lines extending upon, within and between the same for the Number Nine Wind Farm Project and possibly additional generator facilities owned by Number Nine or one of its Affiliates , together with any fixtures, anchors, guys, crossarms, and other equipment and appurtenances (which, together with any and all repairs, replacements or upgrades thereto or necessary for said Number Nine Wind Farm Project or such other possible additional generator facilities, shall hereinafter be referred to as the "Houlton To Haynesville Generator Lead") on the easterly portion of the Houlton to Haynesville Corridor as more particularly described on Schedule 1 (the "Houlton to Haynesville Easement Area");

WHEREAS, Assignor is willing to assign to Number Nine a nonexclusive interest in Assignor's rights located within the Houlton to Haynesville Corridor, to allow for the construction by Number Nine of the Houlton To Haynesville Generator Lead in accordance with the following terms and conditions;

NOW THEREFORE, Assignor assigns, and as the case may be, grants to Number Nine, to the full extent of its right, title and interest therein, including without limitation under the existing grants of rights pursuant to the Emera Deeds, the MEPCO Deeds and the CMP Deeds, the easement rights and privileges in the Houlton to Haynesville Corridor more particularly described in Exhibit A, attached and made a part hereof. Assignor covenants, represents and warrants that it has not previously assigned, granted or conveyed the easement rights and privileges granted and assigned hereunder to, or granted or created any liens or encumbrances thereon in favor of, any Person, other than the grant and assignment hereunder to Number Nine, any encumbrances of record which have been subordinated to the rights granted and assigned

hereunder, and any routine crossing agreements permitted hereunder that do not materially interfere with, restrict or prevent the use and quiet enjoyment of the easement rights and privileges granted and assigned hereunder.

EXCEPTING AND RESERVING to Assignor, its successors and assigns, all rights and easements not assigned hereunder, including without limitation the easements and rights more particularly described in Exhibit B, attached and made a part hereof.

This assignment and grant and the rights reserved hereunder are made SUBJECT TO AND TOGETHER WITH the covenants, terms and conditions set forth in Exhibit A, Exhibit B, Exhibit C and the underlying deeds listed on Schedules 2 (Emera Deeds), 2-A (CMP Deeds) and 2-B (MEPCO Deeds) all attached and made a part hereof and subject to any underlying recorded instruments existing as of the date hereof.

This Assignment Agreement and all the rights, reservations and easements granted herein inure to the benefit of and are binding upon the respective successors and assigns of Assignor and Number Nine. Number Nine shall not assign this Assignment Agreement and the easement rights and privileges granted and assigned pursuant to this Assignment Agreement, except as set forth below. Any assignment permitted hereunder shall be conditioned upon the express assignment to any assignee of all of Number Nine's obligations under this Assignment Agreement, and upon written acceptance of all such obligations by any such assignee, and shall be subordinate and subject to the rights of Option Holder under the Option and the Right of First Refusal, each executed and recorded on or near the date hereof and memoranda of which are recorded in the registry of deeds. Number Nine shall have the right to assign this Assignment Agreement without the prior written consent of the Assignor, (i) to an Affiliate of Number Nine, including any Affiliate that will share the use of the Houlton to Haynesville Generator Lead; and (ii) to a person or entity that is also purchasing the Number Nine Wind Farm Project, or any interest therein, or to an Affiliate of such purchaser so long as the purchaser can reasonably demonstrate to the Assignor that it has, whether directly, through Affiliates and taking into consideration any contract for the operation of the Houlton to Haynesville Generator Lead, the financial capacity and capability to operate the Houlton to Haynesville Project; or (iii) for security or collateral purposes, including a collateral assignment, sale or other transfer for financing purposes of this Assignment Agreement and the interests acquired hereunder, to one or more parties providing debt, equity or lease financing to such party and/or such party's surety (individually, a "Financing Party" and collectively, the "Financing Parties", and such collateral assignment, sale or other transfer, a "Financing Transfer"). Assignor will cooperate in any such Financing Transfer, including the execution of consents reasonably requested by a Financing Party, including customary notice and extended cure rights and the right to elect to foreclose on and assume this Assignment Agreement. If the Financing Party elects to foreclose on and assume this Assignment Agreement, all terms of this Assignment Agreement shall be binding upon the Financing Party, and moreover, the terms and conditions of this Assignment Agreement shall be binding upon the recipient of a future transfer by or assignment from a Financing Transfer.

This Assignment Agreement may be executed in any number of counterparts, each of which shall be effective only upon delivery and thereafter shall be deemed an original, and all of which shall be taken to be one and the same instrument, for the same effect as if all parties hereto had signed the same signature page. Any signature page of this Assignment Agreement may be detached from any counterpart of this Assignment Agreement without impairing the legal effect of any signatures thereon and may be attached to another counterpart of this Assignment Agreement identical in form hereto but having attached to it one or more additional signature pages.

IN WITNESS WHEREOF, Emera Maine has caused this Assignment Agreement to be signed by _____, its duly authorized _____, this ____ day of _____, 201_

Emera Maine
Successor in interest to Maine Public Service Company

_____ By:_____
Witness: [name]
Date: [title]

COUNTY OF _____ _____, 201_
STATE OF MAINE

Personally appeared the above-named _____, _____ of Emera Maine, and acknowledged the foregoing to be his/her free act and deed in his/her said capacity and the free act and deed of said Emera Maine.

Before me,

_____
Notary Public
Printed Name:

IN WITNESS WHEREOF, Central Maine Power Company has caused this Assignment Agreement to be signed by _____, its duly authorized _____, this ____ day of _____, 201_

Central Maine Power Company

_____ By:_____
Witness: [name]
Date: [title]

_____ By:_____
Witness: [name]
Date: [title]

COUNTY OF _____ _____, 201_
STATE OF MAINE

Personally appeared the above-named _____, and _____ each of Central Maine Power Company, and each acknowledged the foregoing to be his or her free act and deed in his or her said capacity and the free act and deed of said Central Maine Power Company.

Before me,

_____
Notary Public
Printed Name:

Printed Name:

IN WITNESS WHEREOF, Maine Electric Power Company Inc. has caused this Assignment Agreement to be signed by _____, its duly authorized _____, this ____ day of _____, 201_

Maine Electric Power Company, Inc.

_____ By:_____

Witness: [name]

Date: [title]

COUNTY OF _____ _____, 201_

STATE OF MAINE

Personally appeared the above-named _____, _____ of Maine Electric Power Company Inc., and acknowledged the foregoing to be his/her free act and deed in his/her said capacity and the free act and deed of said Maine Electric Power Company Inc.

Before me,

_____

Notary Public

Printed Name:

Number Nine's Acceptance and Agreement:

Number Nine Wind Farm LLC hereby covenants and agrees to the terms and obligations set forth in this Assignment Agreement and has caused this acceptance and agreement to be signed by _____, its duly authorized _____, this _____ day of _____, 201_

NUMBER NINE WIND FARM LLC

_____ By:_____
Witness: [name]
Date: [title]

_____ By:_____
Witness: [name]
Date: [title]

COUNTY OF _____ _____, 201_
STATE OF MAINE

Personally appeared the above-named _____, _____ and _____, _____of Number Nine Wind Farm LLC, and acknowledged the foregoing to be his/her free act and deed in his/her said capacity and the free act and deed of said Number Nine Wind Farm LLC

Before me,

_____
Notary Public
Printed Name:

EXHIBIT A

Easement One: Houlton To Haynesville Easement

The right and easement for a period of sixty (60) years from and after the date hereof to erect, construct, maintain, repair, rebuild, respace, replace, operate, access, patrol access and remove the Houlton To Haynesville Generator Lead (all of the foregoing hereinafter collectively referred to as the "Houlton To Haynesville Easement"), over and across that portion of the Houlton to Haynesville Corridor, more particularly described as the "Houlton to Haynesville Easement Area" in Schedule 1 and as generally depicted in Schedule 1-A through Schedule 1-E-3 (cross section sketch), each schedule being attached hereto and made a part hereof; provided, however, that (a) the Houlton To Haynesville Generator Lead may only be used for the Number Nine Wind Farm Project and other wind generation projects owned by its Affiliates, unless otherwise agreed by written amendment to this Assignment Agreement, (b) except as provided in paragraph 4 of this Easement One, no portion of the Houlton To Haynesville Generator Lead (including, without limitation, guy wires) may encroach or overhang into the "Common Easement Area" or the "Emera Transmission Line Easement Area" described in Schedule 1, and shown on Schedule 1-A through Schedule 1-E-3, attached hereto, and (c) other than the Houlton To Haynesville Generator Lead (and all lines, poles, towers, roads, facilities and equipment related or incidental thereto) located within the Houlton To Haynesville Easement Area, Number Nine will not erect or agree to the erection of additional lines, poles or towers, together with lines extending upon, within and between the same, within the Houlton to Haynesville Corridor.

Notwithstanding anything to the contrary in this Assignment Agreement, except as otherwise agreed by a written amendment of this Assignment Agreement duly executed by Number Nine and Assignor (which amendment shall be recorded), Number Nine covenants and agrees with Assignor that the Houlton To Haynesville Generator Lead to be located, constructed, maintained and replaced at all times in a manner such that the centerline of the Houlton To Haynesville Generator Lead will be located as described in Schedule 1. Assignor shall have the right hereunder, but not the obligation, during planning and construction of the Houlton To Haynesville Generator Lead and any replacement thereof, to inspect, review and approve (which approval shall be given if in compliance with this Assignment Agreement and the Plans and Specifications defined below) any such location of the Houlton To Haynesville Generator Lead and any plans and specifications with respect to the construction of the Houlton To Haynesville Generator Lead for compliance with the foregoing. Any material changes to or deviations from the Plans and Specifications shall require the advance written approval of Assignor, which approval shall not be unreasonably withheld or delayed.

Number Nine (and with respect to clause (e), Assignor) covenants and agrees as follows: (a) to use the Houlton to Haynesville Easement solely for the construction, operation and maintenance of the Houlton to Haynesville Generator Lead, and uses and facilities incidental thereto, including engineering, permitting and financing, and for no other purposes; (b) to construct the Houlton To Haynesville Generator Lead in full compliance with the "Plans and Specifications" referenced in Schedule 4 attached hereto and incorporated herein by reference,

as the same may be amended from time to time by agreement of the Parties; (c) to construct the Houlton To Haynesville Generator Lead in compliance with all Applicable Laws and Permits; (d) to operate and maintain the Houlton To Haynesville Generator Lead in accordance with Good Utility Practices and in full compliance with all Applicable Laws and Permits and any applicable tariff and interconnection requirements; (e) that each Party hereto shall allow the other Party to use any points of access and roadways constructed by such Party, including those constructed by Number Nine as part of the Houlton To Haynesville Generator Lead, for its own purposes so long as such use complies with all Applicable Laws and the requirements of all Permits with respect to such point of access or roadway, and does not interfere in any material respect with the construction, use, operation, maintenance, repair or replacement of the Houlton to Haynesville Project by Number Nine or the use of the access or roadway by the other Party; and (f) to permit Assignor or its agents to inspect, upon reasonable advance notice to Number Nine, the Houlton To Haynesville Generator Lead during its construction and during the term of the Option and the Right of First Refusal in order to confirm compliance with this Assignment Agreement (including the Plans and Specifications) and in order to conduct due diligence with respect to the Option and the Right of First Refusal; provided that any such inspection shall be conducted in compliance with all applicable safety, security and other site rules and procedures.

The Houlton To Haynesville Easement shall include the following rights for the benefit of Number Nine and its successors and assigns with respect to the Houlton To Haynesville Generator Lead:

1. The right to enter upon the Houlton To Haynesville Easement Area at any time with workers and all necessary tools and machinery, to dig pole holes, to erect, construct, reconstruct, replace, remove, maintain, operate, repair, rebuild, upgrade, and use poles, towers, foundations, wires, conduits, ducts, switches, transformers, communication equipment (for internal substation to substation communication, communications between the Number Nine Wind Farm Project and schedulers and/or transmission providers, and other communications relating to the operation of the Number Nine Wind Farm Project and/or the electric transmission facilities), structures, and facilities and other structures and apparatus used or useful for the Houlton To Haynesville Generator Lead and electric lines and generation facilities connecting thereto, together with their strengthening supports, sufficient foundations and supports, all as Number Nine, its successors and assigns, may from time to time reasonably require in connection with the Houlton To Haynesville Generator Lead;

2. The right to transmit electricity (and data, communications and information with respect to the transmission of electricity) over said wires, cables or apparatus in a lawful manner and for such lawful purposes as Number Nine may from time to time reasonably require for purposes of the Number Nine Wind Farm Project and/or any other generation facilities using the Houlton To Haynesville Generator Lead; and

3. The right to control and limit access, subject to Assignor's reserved and allowed rights of access under this Assignment Agreement, to the Houlton To Haynesville Easement Area and to establish certain safety regulations for the Houlton To Haynesville Easement Area that are

necessary and proper for the operation of the rights herein granted and for the transmission of electricity (the "Safety Regulations"), which Safety Regulations shall be based upon the National Electric Safety Code, applicable OSHA standards for worker safety and health, Number Nine's company work standards and practices for safety and health, the standards governing operational reliability of the North American Energy Reliability Council (NERC), the Federal Energy Regulatory Commission (FERC) regulations and standards, the Independent System Operator - New England (ISO-NE) rules and standards, and/or any similar national, regional or state standards, and otherwise subject to normal and customary utility standards and practices. Number Nine hereby agrees to review any such safety standards to permit as reasonably practical general consistency with any Assignor safety standards with respect to the Houlton to Haynesville Corridor.

4. The right for the Houlton to Haynesville Generator Lead to have minor overhangs for fixtures, crossarms, and other equipment and appurtenances over the Common Easement Area on a temporary or, if approved by Assignor as part of the Plans and Specifications, permanent basis, and the right for the Houlton to Haynesville Generator Lead to encroach on a temporary basis on to the Common Easement Area (as described on Schedule 1) due to temporary movements of structures, equipment or conductors, wind, snow or other weather conditions, conductor blow outs and similar matters. These rights do not include the right to place permanent structures in the Common Easement Area.

Easement Two: Common Access

The non-exclusive right and easement, in common with Assignor and others, and subject to the conditions and limitations herein, for access by foot and vehicle along and across the entire Houlton to Haynesville Corridor for purposes related to the Houlton To Haynesville Generator Lead in connection with the exercise of the rights and easements granted and assigned hereunder, provided that the location of any access points shall be approved by Assignor, which approval shall not be unreasonably withheld or delayed, and any road construction shall be permitted solely in accordance with Easement Three hereunder.

Easement Three: Road Construction

The non-exclusive right and easement, in common with Assignor and others, to construct such roads within the Houlton To Haynesville Easement Area and the Common Easement Area (described in Schedule 1 attached hereto) as Number Nine may from time to time determine in connection with the construction, use, operation, maintenance, repair and/or replacement of the Houlton To Haynesville Generator Lead and the use of and access to and from the Houlton To Haynesville Easement for workers, tools or machinery and for other uses permitted hereunder. The location of any such road to be constructed outside of the Houlton To Haynesville Easement Area and the Common Easement Area shall be subject to the prior written consent of Assignor, which consent shall not be unreasonably withheld. Any such road constructed by Number Nine within the Emera Transmission Line Easement Area pursuant to the preceding sentence may be

relocated by Assignor at Assignor's expense to a reasonably equivalent location within the Houlton To Haynesville Corridor reasonably acceptable to Number Nine. Number Nine shall have no right to construct such roads within the Emera Transmission Line Easement Area without Assignor's prior written consent.

Easement Four: Vegetation Management

The non-exclusive right and easement, at the sole cost and expense of Number Nine, to clear and keep the Houlton to Haynesville Easement Area, the Common Easement Area and, to the extent provided below, the Emera Transmission Line Easement Area cleared of trees, brush and other vegetation by any lawful means. The "Vegetation Management Area" is described in Schedule 1.

In the event that Assignor fails to clear the fifty-four foot (54') portion of the Houlton to Haynesville Corridor located immediately alongside and westerly of the Houlton To Haynesville Easement Area (being the 33-foot Common Easement Area and the adjacent twenty feet (21') of the Emera Transmission Line Easement Area) as shown on Schedule 1-A attached hereto, in accordance with Assignor's vegetation management and clearing standards or as otherwise required by Applicable Law or Permits or by Good Utility Practices with respect thereto, and such failure continues after Number Nine affords Assignor written notice of such failure to clear or keep clear and Assignor either elects not to clear or fails to clear within a reasonable amount of time, Number Nine shall have the right and easement, but not the obligation, to clear and keep clear such fifty-four foot (54') portion of trees, brush and other vegetation in accordance with Assignor's vegetation management and clearing standards or as otherwise required by Applicable Law or Permits or by Good Utility Practices; and (b) Number Nine shall also have the right to cut dead trees and trees leaning toward the Houlton To Haynesville Easement Area which in falling would interfere with the exercise of the Houlton To Haynesville Easement in the judgment of Number Nine, to the extent such right is assignable by Assignor.

Easement Five – Construction and Laydown

The non-exclusive right and easement to use designated areas of the Houlton to Haynesville Corridor, upon advance written approval of Assignor as to the location thereof, which approval shall not be unreasonably withheld, on a temporary basis through December 31, 2017, or such later construction period as may be permitted by Assignor, as a construction laydown area for the temporary storage of construction equipment and materials related to the construction of the Houlton to Haynesville Generator Lead, provided that any such activity shall be in compliance with all existing Permits and Laws, and Number Nine shall clean up and remove all such material and restore the area to its original condition, reasonable wear and tear excluded, at its sole cost and expense. Notwithstanding the fact that this is a non-exclusive easement, during any period that Number Nine is constructing the Houlton to Haynesville Generator Lead, Number Nine shall have the right to use the aforesaid designated area for the foregoing purposes on an exclusive basis during such construction period.

Easement Six – Number Nine Crossing Easement Area

The right to erect, construct, maintain, repair, rebuild, respace, replace, operate, access, patrol and remove the Houlton to Haynesville Generator Lead, including all lines, poles, towers, roads, facilities, and equipment and temporary or permanent structures related or incidental thereto, within and crossing over the portions of the Common Easement Area and the Emera Transmission Line Easement Area described in part D of Schedule 1 and depicted in Schedule 1-D ("Number Nine Crossing Easement Area") and to exercise with respect to such area all other rights with respect to the Houlton to Haynesville Generator Lead granted or assigned to Number Nine hereunder.

No Unreasonable Interference

The exercise by Number Nine of any of the foregoing rights or easements shall not interfere in any material respect with or impair (i) the construction, maintenance or operations of Assignor's installations, or any other entity constructing, maintaining or operating a transmission line within the Emera Transmission Line Easement Area, or (ii) the exercise by Assignor of any of its reserved rights within the Houlton to Haynesville Corridor; provided that nothing herein shall be construed to prevent Number Nine from constructing, owning and operating of the Houlton To Haynesville Generator Lead within the Houlton To Haynesville Easement Area. Without limiting the generality of the foregoing, no Party, nor its agents representatives and contractors, shall conduct their activities within the Houlton to Haynesville Corridor in a manner that (a) interferes in any material respect with (i) the construction, operation, maintenance or repair of the other party's facilities within the Houlton to Haynesville Corridor, or (ii) the other party's access to its facilities in the Houlton to Haynesville Corridor or (b) could reasonably be expected to cause the other party's facilities to violate any Applicable Law, Permit or contractual or property right. The Parties use of their respective easement and other rights granted or retained hereunder shall also be subject to Section 3 of Exhibit C to this Assignment Agreement.

EXHIBIT B
Assignor's Reserved Rights

Reservation One: Activities within the Houlton to Haynesville Corridor

Without limiting its rights and remedies under this Assignment Agreement, Assignor reserves all rights within the Houlton to Haynesville Corridor: (i) not expressly assigned hereunder, including without limitation any rights with respect to the Emera Transmission Line Easement Area; and (ii) all of its rights within the Common Easement Area, subject to Number Nine's rights to use and enjoy the Common Easement Area as provided in this Assignment Agreement. Without limiting the generality of the foregoing, Assignor reserves the following rights:

1. The non-exclusive right and easement, in common with Number Nine and others and subject to the conditions and limitations herein, for access by foot and vehicle along and across the Houlton to Haynesville Corridor (including the Houlton To Haynesville Easement Area) for purposes related to the Emera Transmission Line.

2. The non-exclusive right and easement, in common with Number Nine and others, to construct such roads within the Houlton to Haynesville Corridor (including the Houlton To Haynesville Easement Area) as Assignor may from time to time reasonably require in connection with the Emera Transmission Line; provided, however, that Assignor shall advise Number Nine of the location and size of any such roads and shall not construct any roads within the Houlton to Haynesville Easement Area without Number Nine's consent, which will not be unreasonably withheld; provided, further, any such road constructed by Assignor within the Houlton To Haynesville Easement Area may be relocated to a reasonably equivalent location by Number Nine at Number Nine's expense.

3. The non-exclusive right and easement, at the sole cost and expense of Assignor, to clear and keep the Houlton to Haynesville Corridor cleared of trees, brush and other vegetation by any lawful means; provided, however, that Assignor may not perform any such clearing within the Houlton To Haynesville Easement Area unless it has first given Number Nine written notice that such area needs to be cleared and Number Nine fails to clear the area within a reasonable amount of time. All such work shall be done in a manner that does not interfere in any material respect with or materially impair the construction, use, operation, maintenance, repair or replacement of Number Nine's installations made pursuant to the Houlton To Haynesville Easement, or the exercise by Number Nine of any of its rights under the Houlton To Haynesville Easement.

Reservation Two: Rights to Purchase and Rights Upon Abandonment.

Assignor shall have the right but not the obligation to purchase the Houlton To Haynesville Generator Lead, including the Houlton to Haynesville Easement and such facilities and improvements as may have been constructed therein, at the purchase price set forth below in the event any one of the following conditions occur:

1) Number Nine or its successors and assigns at any time provides written notice to Assignor of its election not to proceed with or to suspend or terminate construction of the Houlton To Haynesville Generator Lead.
2) Before the energization of the Houlton To Haynesville Generator Lead, but after December 31, 2017, (i) Number Nine or its successors and assigns fail to pay an Opportunity Cost Payment (as defined below) as and when due, subject to Number Nine's right to cure such failure within ten (10) business days after written notice; or (ii) the Houlton To Haynesville Generator Lead is not energized by January 31, 2020 or by January 31 of any subsequent year unless Number Nine has made an Opportunity Cost Payment for the previous calendar year on or before such date.
3) After energization of the Houlton To Haynesville Generator Lead, Number Nine or its successors and assigns do not to use the Houlton To Haynesville Generator Lead for the transmission of any electricity for a period of twelve (12) consecutive months except as the result of a Force Majeure event (in which case the twelve (12) month period shall be extended by the period of time required to resolve and remedy the event causing a Force Majeure).
4) If Number Nine or its successors and assigns fails to use the Houlton To Haynesville Generator Lead or to use the Houlton to Haynesville Easement for the purpose of the development and operation of the Houlton To Haynesville Generator Lead for a period of three (3) consecutive years, upon not less than one hundred eighty (180) days prior written notice. For purposes of this clause (4), use of the Houlton To Haynesville Generator Lead or the Houlton to Haynesville Easement shall include the submission and pursuit of applications for permits and other governmental or regulatory approvals, application for and pursuit and negotiation of interconnection agreements for the Number Nine Wind Farm Project, and the design and engineering of the Houlton To Haynesville Generator Lead, as well as the commencement of construction of the Houlton To Haynesville Generator Lead, and Number Nine shall not be considered to have failed to use the Houlton To Haynesville Generator Lead or the Houlton to Haynesville Easement because there have been delays in obtaining necessary permits and other governmental or regulatory approvals so long as Number Nine is pursuing such permits and approvals.

These Rights to Purchase under this Reservation Two are in addition to, and do not replace, modify or supplant, any rights Assignor has under the "Option" as defined and described in the Transmission Corridor Rights Agreement.

In the event that Number Nine fails to energize the Houlton To Haynesville Generator Lead by December 31, 2017, Number Nine shall pay Assignor $250,000 annually to compensate Assignor for the opportunity costs resulting from the delay in the completion of the Houlton To Haynesville Generator Lead. These annual payments are hereinafter defined as an "Opportunity Cost Payment." The Opportunity Cost Payments shall be payable in arrears and shall be due on the 15th of January of the subsequent year, starting on January 15, 2018, for each calendar year beginning with calendar year 2017 in which the Houlton to Haynesville Generator Lead is not

energized. For the avoidance of doubt, the obligation to pay an Opportunity Cost Payment is triggered for any given year if the Houlton to Haynesville Generator Lead is not energized for the first time by December 31 of that year.

The purchase price for Assignor to purchase the Houlton To Haynesville Generator Lead, including the Houlton to Haynesville Easement and such facilities and improvements as may have been constructed therein, pursuant to these Rights to Purchase set forth in this Reservation Two shall be the sum of the following two components and shall be calculated as follows:

- Houlton to Haynesville Easement: Prior to January 1, 2020, the purchase price paid by Number Nine to Assignor for this Assignment Agreement in accordance with the agreement referenced on Schedule 3 attached hereto and incorporated herein by reference (the "Base Easement Price"); for purchases after January 1, 2020, the Base Easement Price shall be reduced by $250,000 for each year after calendar year 2019 except for years for which Number Nine has made an Opportunity Cost Payment.
- Any Facilities and Improvements: Pursuant to the unit prices set forth on Schedule 3 attached hereto.

Notwithstanding the foregoing, if Assignor exercises its right to purchase under clause (4) of this Reservation Two and the Houlton to Haynesville Project is only partially constructed at that time, Number Nine shall, if requested by Assignor, remove at its sole cost and expense, all facilities and improvements that have been constructed within the Houlton to Haynesville Easement, Such removal shall be completed within six (6) months of the date of the removal notice and in the event such removal is not completed within this time period, Assignor shall have the right but not the obligation to undertake such removal and be reimbursed by Number Nine or its successor and assigns for all reasonable costs and expenses associated therewith.

Reservation Three: Rights to Convey Remaining Interest

Assignor reserves the right to convey, grant or otherwise dispose of any of its remaining rights or property interests in and to the Houlton to Haynesville Corridor, provided that any such conveyance, grant or transfer shall be subject to Number Nine's rights and privileges under this Assignment Agreement and the Transmission Corridor Rights Agreement, including without limitation all rights and obligations with respect to non-interference with the use of the Houlton to Haynesville Easement by Number Nine and its successors and assigns, and to receive all of the proceeds from the same, including without limitation all rights and property interests acquired pursuant to the Emera Deeds as set forth in Schedule 2 attached hereto.

Reservation Four: Rights Upon Conveyance of Houlton To Haynesville Generator Lead

In the event that all of the Houlton To Haynesville Generator Lead is conveyed to Assignor, all rights granted or assigned by Assignor under this Assignment Agreement shall revert, at Assignor's election, to Assignor.

Reservation Five: Vegetation Management

The right and easement, at the sole cost and expense of Assignor to clear and keep all lands within the Haynesville To Houlton Corridor, except the Houlton to Haynesville Easement Area, cleared of trees, brush and other vegetation by any lawful means.

In the event that Number Nine shall fail to keep and clear the twenty one foot (21') strip of the Houlton to Haynesville Corridor located at all points immediately alongside and easterly of the Common Easement Area, as depicted and shown on Schedule 1-A hereto, in accordance with Assignor's vegetation management and clearing standards or as otherwise required by Applicable Law or Permits or by Good Utility Practices with respect thereto, and such failure continues after Assignor affords Number Nine written notice of such failure to clear or keep clear and Number Nine either elects not to clear or fails to clear within a reasonable amount of time, Assignor shall have and retain the right and easement, but not the obligation, to clear and keep clear such twenty one foot (21') portion of trees, brush and other vegetation in accordance with Assignor's vegetation management and clearing standards or as otherwise required by Applicable Law or Permits or by Good Utility Practices; and (b) Assignor shall also have the right to cut dead trees and trees leaning toward the Emera Maine Transmission Easement Area and Assignor's remaining easement areas which in falling would interfere with the Emera Transmission Line, in the judgment of Assignor, to the extent such right is permitted by any underlying rights and easements assigned hereunder.

Reservation Six – Construction and Laydown

The non-exclusive right and easement to use designated areas of the Houlton to Haynesville Easement Area, upon advance written approval of Number Nine as to the location thereof, which approval shall not be unreasonably withheld, on a temporary basis during any reasonable period of construction of the Emera Transmission Line, as a construction laydown area for the temporary storage of construction equipment and materials related to the construction of the Emera Transmission Line, provided that any such activity shall be in compliance with all existing Permits and Laws, and Assignor shall clean up and remove all such material and restore the area to its original condition, reasonable wear and tear excluded, at its sole cost and expense. Assignor shall have the right to use the aforesaid designated area for the foregoing purposes on an exclusive basis during such construction period.

No Unreasonable Interference

The exercise by Assignor of any of the foregoing rights or easements shall not interfere in any material respect with or impair (i) the construction, maintenance or operations of the Houlton to Haynesville Project within the Houlton to Haynesville Easement Area, or (ii) the exercise by Number Nine of any of its rights within the Houlton to Haynesville Corridor; provided that nothing herein shall be construed to prevent Assignor from constructing, owning

and operating of a transmission line within the Emera Transmission Line Easement Area in accordance with this Assignment Agreement. Without limiting the generality of the foregoing, no Party, nor its agents representatives and contractors, shall conduct their activities within the Houlton to Haynesville Corridor in a manner that (a) interferes in any material respect with (i) the construction, operation, maintenance or repair of the other party's facilities within the Houlton to Haynesville Corridor, or (ii) the other party's access to its facilities in the Houlton to Haynesville Corridor or (b) could reasonably be expected to cause the other party's facilities to violate any Applicable Law, Permit or contractual or property right. The Parties use of their respective easement and other rights granted or retained hereunder shall also be subject to Section 3 of Exhibit C to this Assignment Agreement.

EXHIBIT C
Covenants, Terms and Conditions

The Parties hereby acknowledge, covenant and agree to the following terms and conditions:

1. Compliance with Laws

(a) Any use or activities performed by or on behalf of Assignor within the Houlton to Haynesville Corridor shall be performed in accordance with the requirements of all Applicable Laws and Permits and Good Utility Practices, and, to the extent any such use or activities necessitate alterations or improvements to the Houlton To Haynesville Generator Lead, as reasonably determined by Number Nine, then Assignor shall be responsible for the cost of such alterations or improvements.

(b) Any use or activities performed by or on behalf of Number Nine within the Houlton to Haynesville Corridor shall be performed in accordance with all Applicable Laws and Permits and Good Utility Practices, and, to the extent any such use or activities necessitate alterations or improvements to the Emera Transmission Line, as reasonably determined by Assignor, then Number Nine shall be responsible for the cost of such alterations or improvements.

2. Damage to Property, Equipment or Facilities.

(a) Number Nine shall be responsible for all physical damage to or destruction of its equipment and facilities within the Houlton to Haynesville Easement Area except to the extent such physical damage or destruction is caused by the willful misconduct or gross negligence of Assignor or an entity comprising Assignor, its employees, agents, representatives or contractors. In the event of any damage to or destruction of Number Nine's equipment or facilities that could reasonably be expected to have an adverse impact upon the Emera Transmission Line, Number Nine shall promptly repair its equipment and facilities in a manner that will minimize any adverse impact upon the Emera Transmission Line and in accordance with good utility practice. If the damage or destruction of Number Nine's equipment or facilities was caused by the willful misconduct or gross negligence of Assignor or an entity comprising Assignor or its employees, agents, representatives or contractors, Assignor will promptly reimburse Number Nine for the reasonable costs incurred by Number Nine in effecting such repairs.

(b) Assignor shall be responsible for all physical damage to or destruction of its equipment and facilities within the Emera Transmission Line Easement Area except to the extent such physical damage or destruction is caused by the willful misconduct or gross negligence of Number Nine, its employees, agents, representatives or contractors. In the event of any damage to or destruction of Assignor's equipment or facilities that could reasonably be expected to have an adverse impact upon the Houlton To Haynesville Generator Lead, Assignor shall promptly repair its equipment and facilities in a manner that will minimize any adverse impact upon the

Houlton To Haynesville Generator Lead and in accordance with good utility practice. If the damage or destruction of Assignor's equipment or facilities was caused by the willful misconduct or gross negligence of Number Nine or its employees, agents, representatives or contractors, Number Nine will promptly reimburse Assignor for the reasonable costs incurred by Assignor in effecting such repairs.

(c) Nothing contained herein shall be deemed a release by either Party of any claim against a third party for any damage to or destruction of equipment or facilities within the Houlton to Haynesville Corridor caused by such third party.

3. Construction Activities.

The Parties and their respective successors and assigns shall: (a) cooperate with each other and coordinate their respective construction activities on or near the Houlton to Haynesville Corridor so that they will avoid or minimize any interference with the other's construction activities; (b) conduct all activities in compliance with all Applicable Laws and Permits; (c) carry at least the level of insurance coverage specified in Section 4(e) below; and (d) include provisions in all of its contracts with its contractors carrying out any activities in or around the Property requiring such contractors and any subcontractors to comply with clauses (a), (b) and (c); provided, however, that nothing herein shall obligate the Parties or their respective successors and assigns to share ownership or use of any facilities, equipment or improvements.

4. Indemnification.

(a) From and after the date hereof, Number Nine shall defend, save harmless, protect and indemnify Assignor and its officers, directors and shareholders from and against any and all losses, liabilities, damages, claims, suits, demands, actions, judgments, costs and expenses (including court costs and reasonable attorneys' fees) resulting from damage to any property or death or injury to any person that arise from, grow out of, or are attributable to (i) the possession, use or control by Number Nine of its equipment or facilities within the [Number Nine] Houlton to Haynesville Corridor, except to the extent resulting from or caused by any willful misconduct or gross negligence of Assignor or its employees, agents, representatives or contractors, or (ii) any willful act or gross negligence of Number Nine or its employees, agents, representatives or contractors.

(b) From and after the date hereof, Assignor shall defend, save harmless, protect and indemnify Number Nine and its officers, directors and shareholders from and against any and all losses, liabilities, damages, claims, suits, demands, actions, judgments, costs and expenses (including court costs and reasonable attorneys' fees) resulting from damage to any property or death or injury to any person that arise from, grow out of, or are attributable to (i) the possession, use or control by Assignor of its equipment or facilities within [the west half of] the Houlton to Haynesville Corridor, except to the extent resulting from or caused by any willful misconduct or gross negligence of Number Nine or its employees, agents, representatives or contractors, or (ii)

any willful act or gross negligence of Assignor or its employees, agents, representatives or contractors.

(c) If either Party intends to seek indemnification under this Assignment Agreement from the other Party with respect to any claim or action, the Party seeking indemnification shall give the other Party notice of such claim or action within fifteen (15) days of the commencement of, or the acquisition of actual knowledge of, such claim or action. Such notice shall describe the claim in reasonable detail and shall indicate the amount (estimated if necessary) of the claim that has been or may be sustained by the Party seeking indemnification. To the extent the other Party shall be actually and materially prejudiced as a result of the failure of the Party seeking indemnification to provide such timely notice, such notice shall be a condition precedent to any liability of the other Party under the provisions for indemnification contained in this Assignment Agreement. Neither Party shall settle or compromise any claim which is the subject of this Assignment Agreement without the prior written consent of the other Party, provided that such consent shall not be unreasonably withheld or delayed.

(d) The indemnification obligations of each Party hereunder shall continue in full force and effect regardless of whether rights granted or reserved herein have been terminated and shall not be limited in any way by any limitation on insurance or by any compensation or benefits payable by the Parties under Worker's Compensation Acts, disability benefit acts or other similar employee protection acts.

(e) Each of the Parties hereto that are also parties to the Large Generator Interconnection Agreement for the Number Nine Project will carry, or cause its Affiliate(s), as applicable, to carry, comprehensive general liability insurance and other insurance consistent with the insurance requirements of the Large Generator Interconnection Agreement for the Number Nine Project, covering all of the acts or omissions of such Party or its Affiliate(s), and any of their respective representatives, employees, invitees, consultants, contractors or subcontractors conducting activities in, on or about the Houlton to Haynesville Corridor. However, neither the failure of a Party to carry such insurance nor the amount of insurance carried by a Party shall limit such Party's obligations or liabilities under this Agreement.

5. Roads. Each Party will maintain roads on which both Parties have access to the extent of the using Party's use. Upon completing use, the using Party will leave the road in substantially the same or better condition as before use began. Neither Party will have any obligation to maintain any road not being used by that Party.

6. Access. Each Party will provide access to the other Party through any gates through which the other Party has access by means of duplicate keys or dual locks.

7. Governmental Restrictions. Number Nine will use its commercially reasonable efforts to avoid subjecting the Common Easement Area or any portion of the Emera Transmission Line Easement Area to any stipulation or permit condition pertaining to vegetation management,

equipment access, buffers or other environmental restrictions, including but not limited to stipulations and permit conditions of the Maine Department of Environmental Protection. However, in the event the Common Easement Area or any portion of the Emera Transmission Line Easement Area is subjected to such a stipulation or permit condition, Number Nine agrees to reimburse Assignor for any and all additional costs to Assignor resulting from compliance with any such stipulation or condition as applicable to that portion of the Common Easement Area or Emera Transmission Line Easement Area being maintained or as may be maintained by Assignor in the future. In the event the Common Easement Area or any portion of the Houlton To Haynesville Easement Area is subjected to any stipulation entered into by Assignor or any Assignor permit condition pertaining to vegetation management, equipment access, buffers or other environmental restrictions, including but not limited to stipulations and permit conditions of the Maine Department of Environmental Protection as a result of Assignor's use of the Houlton to Haynesville Corridor, Assignor agrees to reimburse Number Nine for any and all additional costs to Number Nine resulting from compliance with any such stipulation or condition as applicable to that portion of the Common Easement Area or Houlton To Haynesville Easement Area being maintained or as may be maintained by Number Nine in the future.

8. Prevailing Party Entitled to Attorneys' Fees. In the event that either party shall bring an action against the other by reason of a breach or violation of any of the agreements, covenants, terms or conditions set forth in this Assignment Agreement, the substantially prevailing party in such action (as determined by the judge, arbitrator or similar party) shall be entitled to recover its reasonable attorneys' fees and court costs incurred in such action from the substantially non-prevailing party.

9. Personal and Property Taxes.

(a) Number Nine shall be responsible for payment of any real or personal property taxes, assessments and other governmental charges levied upon, assessed against, and applicable to the Houlton to Haynesville Generator Lead and all facilities and equipment relating thereto. Without limiting the foregoing, in the event that real or personal property tax or assessment increase and such increases are attributable to the Houlton to Haynesville Generator Lead, and any improvements and use of the Houlton to Haynesville Corridor by Number Nine or its Affiliates, Number Nine shall be responsible for payment of such increased taxes or assessments.

(b) Assignor shall be responsible for payment of any real or personal property taxes, assessments and other governmental charges levied upon, assessed against, and applicable to any and all rights retained by Assignors in the Houlton to Haynesville Corridor, or the Emera Transmission Line and all facilities and equipment relating thereto Without limiting the foregoing, in the event that real or personal property tax or assessment increase and such increases are attributable to the Emera Transmission Line, and any improvements and use of the Houlton to Haynesville Corridor by CMP, Emera or MEPCO or their respective Affiliates, CMP, Emera or MEPCO, as applicable, shall be responsible for payment of such increased taxes or assessments.

(c) In the event that any Party shall fail to pay to pay any taxes for which it is responsible when due to any Governmental Authority, the other Parties shall have the right but not the obligation to pay such taxes, and the Party that failed to pay such taxes hereby agrees that it shall reimburse the other Party or Parties, as applicable, for any such payments made on behalf of the Party that failed to pay such taxes.

10. Defined Terms: When used in this Assignment Agreement, the following capitalized terms shall have the meanings set forth below:

"Affiliate" means, with respect to any specified Person, any Person directly or indirectly controlling, controlled by or under common control with such Party. The term "control" (including the terms "controlled by" or "under common control with") means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of a Person, whether through ownership, by contract, or otherwise. Any Person shall be deemed to be an Affiliate of any specified Person if such Person owns more than 50% of the voting securities of the specified Person, if the specified Person owns more than 50% of the voting securities of such Person, or if more than 50% of the voting securities of the specified Person and such Person are under common control.

"Applicable Laws" means all: (i) constitutions, statutes, laws, by-laws, rules, judgments, orders, decrees or regulations in effect from time to time and made or issued by any Governmental Authority; (ii) any similar form of decision of or determination by, or any interpretation or administration of any of the foregoing set forth in clause (i) by, any Governmental Authority, in each such case having jurisdiction; and (iii) the requirements of all Permits, licenses or codes, in the case of each of clauses (i), (ii) and (iii) binding on the Parties or on the property or activity in question.

"Force Majeure" means any event or circumstance which wholly or partly prevents or delays the performance of any material obligation arising under this Agreement but only to the extent (1) such event is not within the reasonable control, directly or indirectly, of the Party seeking to have its performance obligation(s) excused thereby, (2) the Party seeking to have its performance obligation(s) excused thereby has taken all reasonable precautions and measures in order to prevent or avoid such event or mitigate the effect of such event on such Party's ability to perform its obligations under this Agreement and which by the exercise of due diligence such Party could not reasonably have been expected to avoid and which by the exercise of due diligence it has been unable to overcome, and (3) such event is not the direct or indirect result of the fault or negligence of the Party seeking to have its performance obligations excused thereby.

"Good Utility Practices" means the practices, methods and acts engaged in by a significant portion of the electric generation industry that, at a particular time, in the exercise of reasonable judgment in light of the facts known or that reasonably should have been known at a time a decision was made, would have been expected to accomplish the desired result in a manner consistent with Applicable Laws and standards relating to reliability, safety, environmental

protection, economy and expedition. Good Utility Practices are not intended to be limited to the optimum practice, method or act, to the exclusion of all others, but rather to be a spectrum of possible practices, methods or acts that would reasonably be expected to accomplish the desired result.

"Governmental Authority" means any governmental department, commission, board, bureau, agency, court or other instrumentality of any country, state, county or municipality or other political subdivision thereof.

"Permit" means any permit, license, approval, consent or authorization of or by any Governmental Authority.

"Person" means any individual, partnership, joint venture, company, corporation, limited liability company, limited duration company, limited life company, association, trust or other entity or organization, including a government or political subdivision or an agency or instrumentality thereof.

List of Schedules

Schedule 1	Legal Descriptions
Schedule 1-A	Haynesville to Houlton Cross Section/Plan
Schedule 1-B	Haynesville Lakeville Shores Cross Section/Plan
Schedule 1-C	Haynesville Wilder Cross/Section/Plan
Schedule 1-D	Number Nine Crossing Area – Plan
Schedule 1-E-1	Gough Encroachment Area –Plan
Schedule 1-E-2	Peabody Encroachment Area – Plan
Schedule 1-E-3	Stronsnider Encroachment Area – Plan
Schedule 2	Emera Deeds
Schedule 2-A	CMP Deeds
Schedule 2-B	MEPCO Deeds
Schedule 3	Reference to Unit Cost Schedule
Schedule 4	Reference to Plans and Specs

SCHEDULE 1

DESCRIPTIONS OF HOULTON TO HAYNESVILLE EASEMENT AREAS

Schedule 1 is comprised of legal descriptions describing the Houlton to Haynesville Easement Area, the Common Easement Area(s), the Vegetation Management Easement Area(s) over the lands described in the Emera Deeds, the CMP Deeds and the MEPCO deeds. At the Granting Parties' request, Number Nine shall prepare an ALTA survey of these easement areas prior to the Closing, and the parties may mutually agree in writing at the Closing to substitute these legal descriptions with more detailed metes and bounds or coordinate-based legal descriptions prepared from such survey provided that in any event the legal descriptions and required location of the Houlton to Haynesville Generator Lead shall be consistent with the following descriptions.

1. Houlton to Haynesville Corridor

As used in this Assignment Agreement and legal description, the "Houlton to Haynesville Corridor" shall mean:

(1) that certain two hundred twenty-five foot (225') wide corridor located in the Towns of Houlton, Hodgdon, and Linneus, Township A, R.2 W.E.L.S., Township 3, R.2 W.E.L.S. (Forkstown), and the Town of Haynesville in Aroostook County, Maine, generally shown on the survey plan set recorded at the Southern Aroostook County Registry of Deeds in Plan Book 41, Pages 66A through 79A (the "Corridor Survey Plan Set"), beginning in the Town of Houlton, near the Mullen Substation Lot (so-called), at baseline station 503+45 as shown on the Corridor Survey Plan Set, and ending in the Town of Haynesville, near the north side of a transmission line corridor operated by Maine Electric Power Company, Inc., at baseline station 198+33.5 as shown on the Corridor Survey Plan Set, all as more particularly described in the Emera Deeds listed on Schedule 2 attached hereto and made a part hereof;

(2) the lands located in the Town of Haynesville, Maine and described in the CMP Deeds listed on Schedule 2-A attached hereto and made a part hereof; and,

(3) the lands located in the Town of Haynesville, Maine and described in the MEPCO Deeds listed on Schedule 2-B attached hereto and made a part hereof.

Said 225'-wide corridor listed on Schedule 2, together with the lands in the Town of Haynesville listed in Schedule 2-A and 2-B herein referred to as the "Houlton to Haynesville Corridor" and being the same lands referred to as the Houlton to Haynesville Corridor in recitals to this Assignment and Grant of Easement Rights.

The Parties acknowledge that the Corridor Survey Plan Set showing the Houlton to Haynesville Corridor, except for those portions of which are described in the deeds listed on Schedules 2-A and 2-B, depicts a survey line referenced in most of the Emera Deeds, measuring seventy-five feet (75') from the east sideline of the Houlton to Haynesville Corridor, and one hundred fifty feet (150') from the west sideline of the Houlton to Haynesville Corridor (the "Original Survey Line").

2. Houlton To Haynesville Easement Area

A. Houlton to Haynesville Easement Area included within the lands described in the Emera Deeds.

Ninety-Six Foot (96') Easement Area

The "Houlton to Haynesville Easement Area" across the lands described in the Emera Deeds listed in Schedule 2 is herein described as a strip of land ninety-six feet (96') in width for its entire length and being the easternmost and southeastern most ninety-six feet (96') of the Houlton to Haynesville Corridor as measured and determined by reference to the Original Survey Line, except as noted below with respect to the "Encroachment Areas". The centerline of the Houlton To Haynesville Generator Lead shall be located, constructed, maintained and replaced on the Original Survey Line for the entire length of the Houlton to Haynesville Corridor, except as described under B, C, D, and the encroachment areas described below, such that the centerline of the Compact H-Frame Houlton To Haynesville Generator Lead shall be seventy-five feet (75') from the east sideline of the Houlton to Haynesville Corridor and one hundred fifty feet (150') from the west sideline of the Houlton to Haynesville Corridor, each distance shall be as measured perpendicularly, from the Original Survey Line.

Common Easement Area

The "Common Easement Area" (described as Easement Two in the Assignment Agreement) across the lands described in the Emera Deeds listed in Schedule 2 is herein described to be a thirty-three foot (33') foot wide strip of land for its entire length located at the center of this portion of the Houlton to Haynesville Corridor between the above described Houlton to Haynesville Easement Area and the Emera Transmission Line Easement Area (described below), the easterly bound of said strip shall abut at all points the western sideline of the above described Houlton to Haynesville Easement Area. The westerly bound of the Common Easement Area shall at all points be a line that is parallel to and one-hundred and twenty nine feet (129') westerly of, measured perpendicular from, the easterly sideline of the Houlton to Haynesville Corridor. The Common Easement Area with respect to the Houlton to Haynesville Easement Area included within the lands described in the Emera Deeds listed on Schedule 2, shall be thirty-three feet (33') in width for its entire length within the lands at the center of the Houlton to Haynesville Corridor between the Houlton to Haynesville Easement Area and the Emera Transmission Line Easement Area, as generally shown on Schedule 1-A, shall be the "Common Easement Area" as used herein (except as otherwise described below).

Vegetation Management Area

The "Vegetation Management Area" (described as Easement Four in the Assignment Agreement) across the lands described in the Emera Deeds listed in Schedule 2 shall be one hundred and fifty feet (150') feet in width at all points and is comprised of the above described Houlton to Haynesville Easement Area, the above described Common Easement Area, and an additional twenty-one feet (21') abutting and adjoining at all points the western sideline of the above described Common Easement Area. The westerly bound of the Vegetation Management Area shall at all points be a line that is parallel to and one-hundred and fifty-feet (150') westerly of, measured perpendicular from, the easterly sideline of the Houlton to Haynesville Corridor.

The Houlton to Haynesville Easement Area, the Common Easement Area, the Vegetation Management Area, and the required location of the Houlton To Haynesville Generator Lead, shall be as depicted on the cross-section sketch shown on Schedule 1-A attached hereto and made a part hereof. The Common Easement Area and the Vegetation Management Area lie within the bounds of the lands and easement rights retained by the Granting Parties within the Houlton to Haynesville Corridor, including in the case of a portion of the Vegetation Management Area, the lands described below as the Emera Maine Transmission Line Easement Area.

Emera Transmission Line Easement Area

Without limiting any rights under the Emera Deeds retained or reserved under the Assignment Agreement but for purposes of further description and delineation of the Common Easement Area, the Emera Transmission Line Easement Area with respect to the lands described in the Emera Deeds shall be the westernmost and northwestern most ninety-six (96') feet of the Houlton to Haynesville Corridor, as determined by the Original Survey Line and as generally shown on Schedule 1-A attached hereto and made a part hereof.

Encroachment Areas

Due to certain encroachments, the above described ninety-six (96') foot easement area shall be described as follows with respect to three parcels located along the Haynesville to Houlton Corridor between Houlton and Haynesville unless otherwise agreed by the Parties:

1. Gough Parcel

In the event that prior to the execution of this Assignment Agreement, Emera Maine has acquired additional easement rights abutting the easterly or southeasterly sideline of the Houlton to Haynesville Corridor over lands now or formerly owned by Roger A. and Linda W. Callnan which abuts lands now or formerly owned by Michael and Carolyn Gough, and additional easement land or easement rights over lands now or formerly owned by Helen B. Hagan abutting and northerly of said lands of Gough and Callnan, as contemplated under the Transmission Corridor Rights Agreement (and Exhibit A-4 thereto), in order to resolve a certain encroachment on the westerly side of the Houlton to Haynesville Corridor and ensure adequate clearances for two lines to be located within the Houlton to Haynesville Corridor, the "Houlton to Haynesville Easement Area", the "Houlton To Haynesville Generator Lead", together with the "Common Easement Area" and the "Vegetation Management Area" , shall, at the request of Emera Maine, be determined such that the ninety-six (96') foot easement area in which the Houlton to Haynesville Generator Lead will be constructed shall be the easternmost and southeastern most ninety-six feet (96') portion of the Houlton to Haynesville Corridor as measured and determined by reference to the easternmost and southern most sideline of the new easement area acquired by Emera Maine. In such event, the "Houlton To Haynesville Generator Lead", together with the "Common Easement Area" and the "Vegetation Management Area will be modified accordingly to correspond with the Houlton to Haynesville Easement Area as so defined. Emera Maine shall have the right to require an acceptable survey and modification of any plans submitted to ensure compliance with this description and ensure adequate clearances exists for a second transmission line as permitted and reserved under the Easement Agreement. The area affected hereby is generally as shown on Schedule 1-E-1 hereto.

[The final recorded legal description of such easement areas will be based upon a recordable survey provided to Emera Maine by Number Nine, which shall be accompanied by a cross section diagram showing the above noted easement areas consistent with Schedule 1-A and acceptable to Emera Maine. Said survey and cross section shall be provided to Emera Maine in compliance herewith and the Transmission Corridor Rights Agreement (Exhibit A-4), including any relocation of such areas as may be required thereunder.]

2. Peabody Parcel

In the event that Emera Maine shall have acquired additional easement rights abutting the easterly or southeasterly sideline of the Houlton to Haynesville Corridor as contemplated under the Transmission Corridor Rights Agreement over lands now or formerly owned by F.A. Peabody (and Exhibit A-4 hereto) in order to resolve a certain encroachment on the westerly side of the Houlton to Haynesville Corridor and ensure adequate clearances for two lines to be located within the Houlton to Haynesville Corridor. The "Houlton to Haynesville Easement Area", the "Houlton To Haynesville Generator Lead", together with the "Common Easement Area" the "Vegetation Management Area" (Easement Four of the Assignment Agreement) and the corresponding Emera Maine Transmission Line Area shall be determined such that the ninety-six (96') foot easement area shall be the easternmost and southeastern most ninety-six feet (96') of the Houlton to Haynesville Corridor as measured and determined by reference to the easternmost and southern most sideline of the new easement area acquired by Emera Maine from said F.A. Peabody. In such event, the "Houlton To Haynesville Generator Lead", together with the "Common Easement Area" and the "Vegetation Management Area will be modified accordingly to correspond with the Houlton to Haynesville Easement Area as so defined. Emera Maine shall have the right to require Number Nine to provide an acceptable recordable survey and modification of any plans submitted to ensure compliance with this description and ensure adequate clearances exists for a second transmission line as permitted and reserved under the Assignment Agreement. The area affected hereby is generally as shown on Schedule 1-E-2 hereto.

[The final legal description of such easement areas will be based upon a recordable survey provided to Emera Maine by Number Nine, which shall be accompanied by a cross section diagram showing the above noted easement areas consistent with Schedule 1-A and acceptable to Emera Maine. Said survey and cross section shall be provided to Emera Maine in compliance herewith and the Transmission Corridor Rights Agreement (Exhibit A-4).]

3. Stonsnider Prior Encroachment Area

The "Houlton to Haynesville Easement Area", the "Houlton To Haynesville Generator Lead", together with the "Common Easement Area" and the "Vegetation Management Area" defined as Easement Four of the Agreement, (and corresponding Emera Maine Transmission Line Area) over those easements lands located in Linneus and identified on Schedule 2 (MPS Deeds) as Parcel 20, now for formerly owned by Merton F. and Jean C. Little, Parcel 21, now or formerly owned by Samuel and Emma Sanders, and Parcel 22, now or formerly owned by Irving T. and Gertrude S. Henderson shall be described as the same easement areas, distances and clearances as set forth under 2(A) and the cross section shown on Schedule 1-A above provided that all such distances shall be determined from and in reference to the easterly and southeasterly sidelines as relocated and described in the Registry in Book 2312, Pages 9, 12 and 15 and as affected by the deeds described the footnotes in Schedule 2. The Houlton To Haynesville Corridor

affected by these deeds is generally shown on the plan shown on Schedule 1-E-3 attached hereto and made a part hereof. Emera Maine shall have the right to require Number Nine to provide an acceptable recordable survey to ensure compliance with this description and ensure adequate clearances exists for a second transmission line as permitted and reserved under the Assignment Agreement.

[**The final legal description of such easement areas will be based upon a recordable survey provided to Emera Maine by Number Nine, which shall be accompanied by a cross section diagram showing the above noted easement areas consistent with Schedule 1-A and acceptable to Emera Maine. Said survey and cross section shall be provided to Emera Maine in compliance herewith and the Transmission Corridor Rights Agreement (Exhibit A-4).**]

B. Houlton to Haynesville Easement Area located in the Town of Haynesville within the lands described in the CMP Deeds listed on Schedule 2-A.

Lakeville Shores LLC Parcel, Town of Haynesville, Aroostook County, Maine
One Hundred Ten Foot (110') Easement Area
and MEPCO Corridor

The "Houlton to Haynesville Easement Area" across the lands described in the CMP Deeds listed in Schedule 2-A is herein described as a strip of land one hundred and ten feet (110') in width at all points extending over a parcel of land located northwesterly of, but not adjacent to, US Route 2A (aka Military Road) in the Town of Haynesville, Aroostook County, Maine, being a portion of the easement area acquired by Central Maine Power Company from Lakeville Shores by easement deed dated November 26, 2014 and recorded in the Southern Aroostook Registry of Deeds in Book 5377, Page 10, across the lands now or formerly of Lakeville Shores LLC ("Lakeville Shores/CMP Easement"), said one hundred and ten foot easement area being more particularly described as follows:

Beginning at a point on the northerly line of a 225-foot wide easement for electric transmission lines as described in a deed from Diamond International Corporation to Maine Public Service Company recorded in said Registry in Book 1033, Page 233 and conveyed by assignment of easements to Maine Power Electric Company by deed recorded in the Registry in Book 1058, Page 105 (the "MEPCO Corridor"), at the west line of said MEPCO Corridor and the east line of land formerly of Andrew Lezak as described in a deed recorded in said Registry in Book 812, Page 496 and now of Earl F. and Janice L. Wilder as described in a deed in said Registry recorded in Book 2093, page 16;

thence northerly along said land of Wilder on a bearing of N 19° 00'W a distance of one hundred ten feet (110') to a point being the northerly bound of the said lands acquired by Central Maine Power Company from Lakeville Shores;

thence northeasterly along on a bearing of N 75° 22'E on a line that is parallel to and one hundred and ten feet (110') northerly of the northerly line of the MEPCO Corridor a distance of [to be determined by survey prior to execution of the Assignment Agreement]___ feet, more or less, to a point at the westerly line of a 225-foot wide easement for electric transmission lines as described in a deed from Diamond International Corporation to Maine Public Service Company recorded in said Registry in Book 1033, Page 233 and reserved in the above referred deed to MEPCO recorded in the Registry in Book 1058, Page 105 (the MPS Corridor");

thence continuing southwesterly along the northwesterly line of the MPS Easement on a bearing of S 19° 26'W to the northwesterly sideline of the MEPCO Corridor, being the point of intersection of the MPS Corridor and the MEPCO Corridor;

thence along on the northerly sideline of the MEPCO Corridor a distance of 600 feet, more or less, to the point of beginning on the east line of said land of Wilder;

Bearings are magnetic, observed 1966.

The above described easement area over the Lakeville Shores parcel is subject to the easements and vegetation management areas retained by the Granting Parties as set forth below.

The Houlton to Haynesville Generator Lead shall be located, constructed, maintained and replaced within the above described easement area across the Lakeville Shore parcel such that the centerline of the Houlton to Haynesville Generator Lead shall be located at all points thirty-five feet (35') northwesterly, as measured perpendicularly, from the northwesterly sideline of the MEPCO Corridor, and seventy five feet (75') southeasterly, as measured perpendicularly, from the northwesterly sideline of the above described one hundred and ten foot (110') wide easement area.

Common Easement Area

The "Common Easement Area" across the lands described in the CMP Deeds listed in Schedule 2-A shall consist of two strips of land located on either side of, and running parallel to, the northwesterly sideline of the MEPCO Corridor: (i) a fourteen foot (14') wide strip of land within the one hundred and ten foot (110') wide easement area described above, abutting and running along the northwesterly sideline of the MEPCO Corridor; and, (ii) a fourteen foot (14') wide strip of land within the MEPCO Corridor described above, said strip abutting and running along the northwesterly sideline of the MEPCO Corridor.

Houlton to Haynesville Vegetation Management Area and Reservations – Lakeville Shores Parcel and MEPCO Corridor

The "Vegetation Management Area" across the lands described in the CMP Deeds listed in Schedule 2-A shall consist of the entire one-hundred ten (110') foot easement area described above and an additional forty foot (40') strip within the MEPCO corridor running along the boundary of the MEPCO Corridor and said easement across the Lakeville Shores parcel.

The Common Easement Areas and Vegetation Management Areas across the Lakeville Shores parcel shall be used in common with the Granting Parties as set forth in the Assignment Agreement. The Granting Parties hereby further expressly reserve the right to locate a transmission line within so much of the above described one-hundred and ten foot (110') wide easement area as lies within a strip of land twenty one (21') feet in width running along the northwesterly bounds of the above describe easement. The Granting Parties also hereby further expressly reserve rights to a common easement area within so much of the above described one-hundred and ten foot (110') wide easement area which is thirty-three feet (33') in width and is abutting and running along the southeasterly boundary of the twenty-one foot (21') reserved transmission line area described above.

The Houlton to Haynesville Easement Area, the Common Easement Area, the Houlton to Haynesville Vegetation Management Area, and the required location of the Houlton To Haynesville Generator Lead,

described herein with respect to the Lakeville Shores parcel shall be as depicted on the cross-section sketch shown on Schedule 1-B attached hereto and made a part hereof.

C. Houlton to Haynesville Easement Area located in the Town of Haynesville within the lands described in the MEPCO Deeds listed on Schedule 2-B.

Wilder Parcel, Town of Haynesville, Aroostook County, Maine
One Hundred Ten Foot (110') Easement Area
and MEPCO Corridor

The "Houlton to Haynesville Easement Area" across the lands described in the MEPCO Deeds listed in Schedule 2-B is herein described is a strip of land one hundred and ten feet (110') in width for its entire length extending over a parcel of land located northwesterly of, but not adjacent to, US Route 2A (aka Military Road) in the Town of Haynesville, Aroostook County, Maine, being a portion of the lands acquired by MEPCO, as above described, from Earl F. and Janice L. Wilder by deed dated _____ __, 201_ and recorded in the Southern Aroostook Registry of Deeds in Book __, Page ___ ("Wilder Parcel"), said strip of land beginning at the southwesterly bound of the above described one-hundred and ten foot (110') easement over the Lakeville Shores parcel and extending in a generally southwesterly direction along and at all points parallel to the northwesterly sideline of the MEPCO Corridor to a point [to be determined on the Haynesville Substation Lot easterly boundary that allows for area to enter the substation which may slightly deviate from and be at an angle to the above described parallel path in order to access the said substation]:

The above described strip of land is subject to the easements and vegetation management areas retained by the Granting Parties as set forth below.

The Houlton to Haynesville Generator Lead shall be located, constructed, maintained and replaced within the above described easement area across the said Wilder parcel such that the centerline of the Houlton to Haynesville Generator Lead shall be located at all points thirty-five feet (35') northwesterly, as measured perpendicularly, from the northwesterly sideline of the MEPCO Corridor, and seventy five feet (75') southeasterly, as measured perpendicularly, from the northwesterly sideline of the above described one hundred and ten foot wide easement area.

Common Easement Area

The "Common Easement Area" across the lands described in the MEPCO Deeds listed in Schedule 2-B shall consist of two strips of land located on either side of, and running parallel to, the northwesterly sideline of the MEPCO Corridor: (i) a fourteen foot (14') wide strip of land within the one hundred and ten foot (110') wide easement area described above, abutting and running along the northwesterly sideline of the MEPCO Corridor; and, (ii) a fourteen foot (14') wide strip of land within the MEPCO Corridor described above, said strip abutting and running along the northwesterly sideline of the MEPCO Corridor.

Houlton to Haynesville Vegetation Management Area and Reservations – Wilder Parcel and MEPCO Corridor

The "Houlton to Haynesville Vegetation Management Area" across the lands described in the MEPCO Deeds listed in Schedule 2-B shall consist of the entire one-hundred ten (110') foot easement area

described above and an additional forty foot (40') strip within the MEPCO corridor running along the boundary of the MEPCO Corridor and said easement across the Lakeville Shores parcel.

The Common Easement Areas and Vegetation Management Areas across the Wilder parcel shall be used in common with the Granting Parties as set forth in the Assignment Agreement. The Granting Parties hereby further expressly reserve the right to locate a transmission line within so much of the above described one-hundred and ten foot (110') wide easement area as lies within a strip of land twenty one (21') feet in width running along the northwesterly bounds of the above describe easement. The Granting Parties also hereby further expressly reserve rights to a common easement area within so much of the above described one-hundred and ten foot (110') wide easement area which is thirty-three feet (33') in width and is abutting and running along the southeasterly boundary of the twenty-one foot (21') reserved transmission line area described above.

The Houlton to Haynesville Easement Area, the Common Easement Area, the Vegetation Management Area, and the required location of the Houlton To Haynesville Generator Lead, described herein with respect to the Wilder parcel shall be as depicted on the cross-section sketch and plan shown on Schedule 1-B attached hereto and made a part hereof.

D. Easement – Number Nine Crossing Area, Town of Haynesville.

Houlton to Haynesville Easement Area shall also include a "Number Nine Crossing Area" located over the southern portion of the 225-foot wide easement for electric transmission lines as described in a deed from Diamond International Corporation to Maine Public Service Company recorded in said Registry in Book 1033, Page 233, said crossing area shall be shall be generally as depicted on the plan shown on Schedule 1-D attached hereto and made a part hereof.

Emera shall have the right to approve the final legal description for and location of the "Number Nine Crossing Area" in Haynesville prior to the execution of the Assignment Agreement.

The final descriptions with respect to the Peabody Parcel, the Gough Parcel, the Stronsider Parcel and the Number Nine Crossing Area shall ensure that there is at least ninety-six feet (96') of Emera Transmission Line Easement Area for the location of any future Emera Transmission Line, One Hundred Fifty feet (150') of vegetation management area and thirty-three feet (33') of Common Easement Area, on the westerly portion of the above said parcels (and/or any additional parcels or easement rights as may be acquired in order to accommodate the foregoing) all in the same manner and with the same distances as depicted on Schedule 1-A with respect to the remainder of the Houlton to Hayneville Corridor, except as may be affected by any crossing area approved by Emera as referenced above.

Emera and Number Nine agree to work together in good faith to accommodate the foregoing requirements in a manner that does not require modification or relocation of the Houlton to Haynesville Generator Lead. However, unless otherwise agreed by in writing prior to the execution of the Assignment Agreement as an amendment hereto, the following language will be included as part of the final crossing legal description: Without limiting any other rights retained by Granting Parties under the Assignment Agreement with respect to the "Number Nine Crossing Area", Emera shall retain the right to locate poles and transmission lines, wires and communications facilities, repair and relocate poles, guys, anchors and other appurtenances to its facilities on or over the Number Nine Crossing Area, including the right to locate its transmission facilities above the Number Nine facilities, and may at Number Nine's cost require

Number Nine to modify or relocate its transmission lines and facilities in order to accommodate the location of the installation of the Emera Maine Transmission Line in accordance with Good Utility Practices on over or adjacent to the Number Nine Crossing Area.

SCHEDULE 1-A

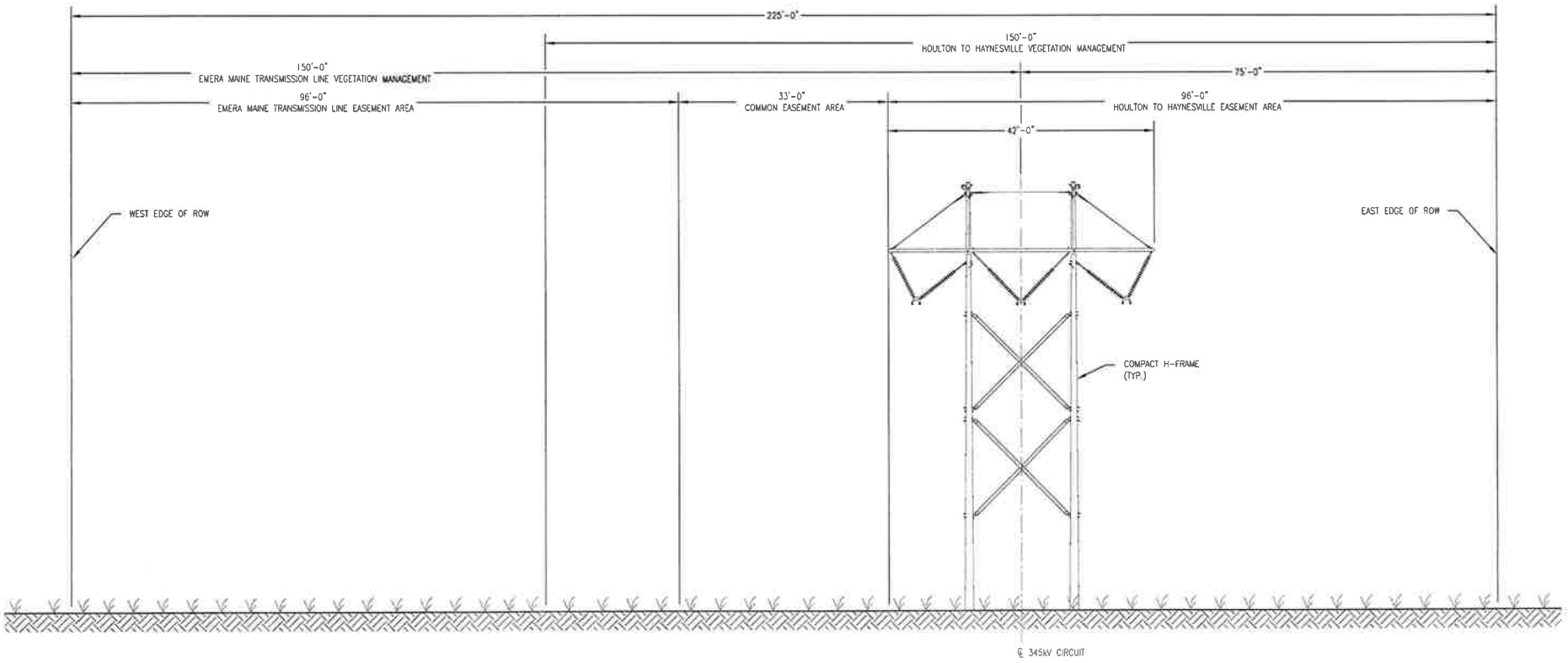
CROSS SECTION

HOULTON TO HAYNESVILLE

(Approximately 26 miles, except portions shown on Schedules 1-B through 1-E-3)

Depiction of alignment detail showing Houlton To Haynesville Generator Lead and associated easement areas

(See Attached)



NORTHWARD VIEW OF HOULTON TO HAYNESVILLE CORRIDOR

ISSUED FOR DISCUSSION

SGC Engineering, LLC
a part of Senergy

Emera Maine

THIS INFORMATION CONTAINED HEREIN IS STRICTLY CONFIDENTIAL AND IS THE SOLE PROPERTY OF THE PROJECT OWNER

DATE	SCALE	DRAWN	CHECK	APPD
SEPTEMBER 26, 2014	N.T.S.	SJF	DLH	JHF

NO.	REVISION	APPD	DATE
A	ISSUED FOR DISCUSSION	JHF	09/29/2014

TITLE: HOULTON TO HAYNESVILLE CORRIDOR EASEMENT CONFIGURATIONS
RIGHT-OF-WAY CROSS SECTION

PROJECT: AROOSTOOK COUNTY, MAINE

OWNER: EMERA MAINE
TELCOM AVE, BANGOR, MAINE 04401

SGC PROJECT NUMBER: 275025
DRAWING NUMBER: 275-13-1002
REVISION: 1
SHEET NUMBER: 1 OF 1

Cross Section - Schedule 1-A

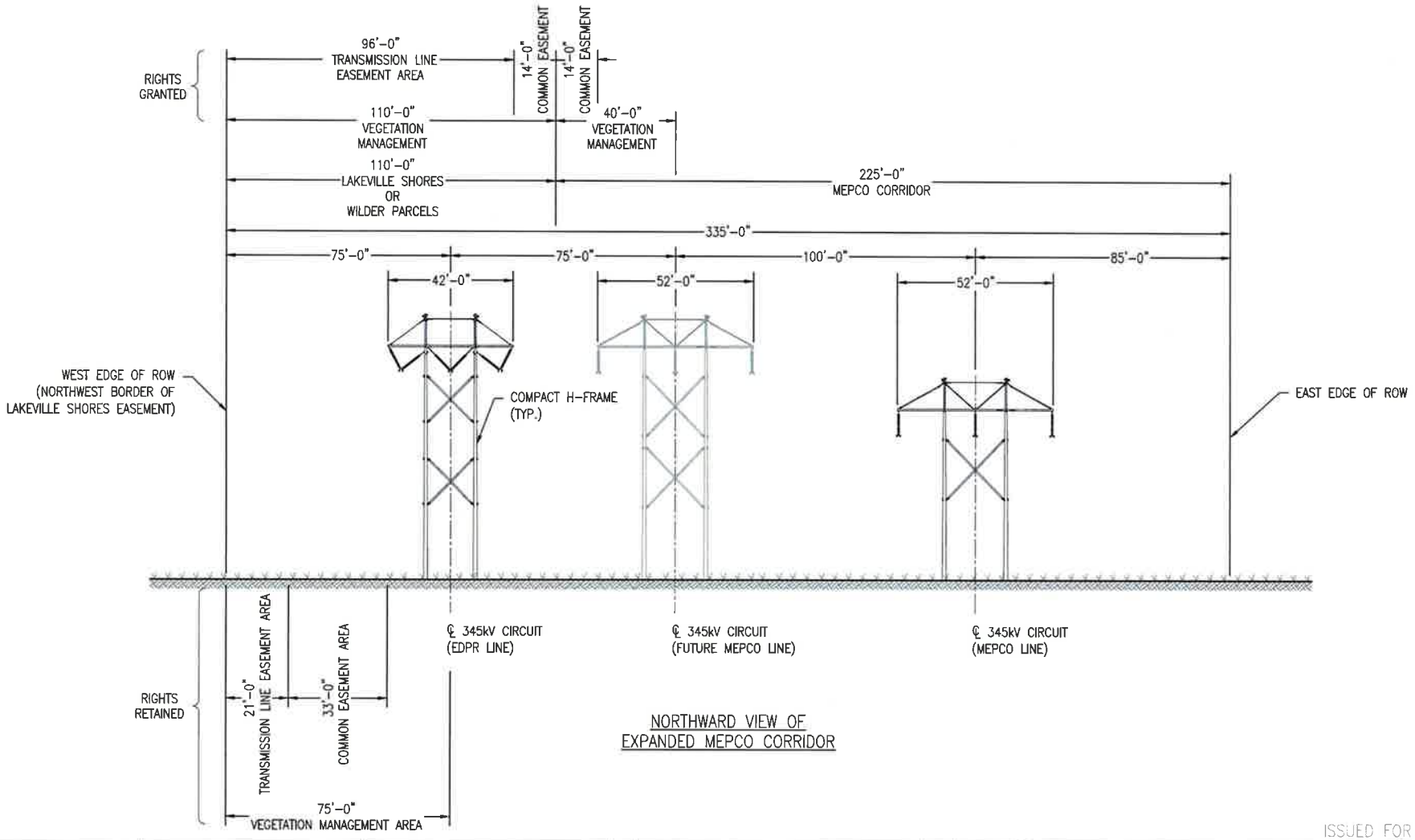
SCHEDULE 1-B

CROSS SECTION

CMP DEED LANDS – LAKEVILLE SHORES PARCEL - HAYNESVILLE

Depiction of alignment detail showing Houlton To Haynesville Generator Lead across lands described in the CMP Deeds (Lakeville Shores Parcel) and associated easement areas

(See Attached)



NORTHWARD VIEW OF
EXPANDED MEPCO CORRIDOR

ISSUED FOR DISCUSSION

SGC Engineering, LLC
a part of Senergy

Emera Maine

THIS INFORMATION CONTAINED HEREIN IS STRICTLY CONFIDENTIAL AND IS THE SOLE PROPERTY OF THE PROJECT OWNER.

DATE	SCALE	DRAWN	DESIGN	APPD
NOVEMBER 4, 2014	N.T.S.	SJF	DLH	JHF

NO.	REVISION	APPD:	DATE:
A	ISSUED FOR DISCUSSION	JHF	12/4/2014

EXPANDED MEPCO CORRIDOR – HAYNESVILLE
RIGHT-OF-WAY CROSS SECTION

AROOSTOOK COUNTY, MAINE

EMERA MAINE
TELCOM AVE, BANGOR, MAINE 04401

SGC PROJECT NUMBER 275025
DRAWING NUMBER 275-13-1005
REVISION A
SHEET NUMBER 1 OF 1

Cross Section - Schedule 1-B (and 1-C)

SCHEDULE 1-C

CROSS SECTION

MEPCO DEED LANDS - WILDER PARCEL – HAYNESVILLE

Depiction of alignment detail showing Houlton To Haynesville Generator Lead across lands described in the MEPCO Deeds (Wilder Parcel) and associated easement areas

(See Attachment to Schedule 1-B)

SCHEDULE 1-D

NUMBER NINE CROSSING AREA – HAYNESVILLE- PLAN

Depiction of alignment detail or plan showing area of crossing for Houlton To Haynesville Generator Lead at Haynesville

(See Attached Overview – to be replaced by survey plan/cross section prior to closing)

SCHEDULE 1-D


6
5
4
3
2
© 2014 DigitalGlobe Image courtesy of USGS Earthstar Geographics SIO © 2014 Microsoft Corporation

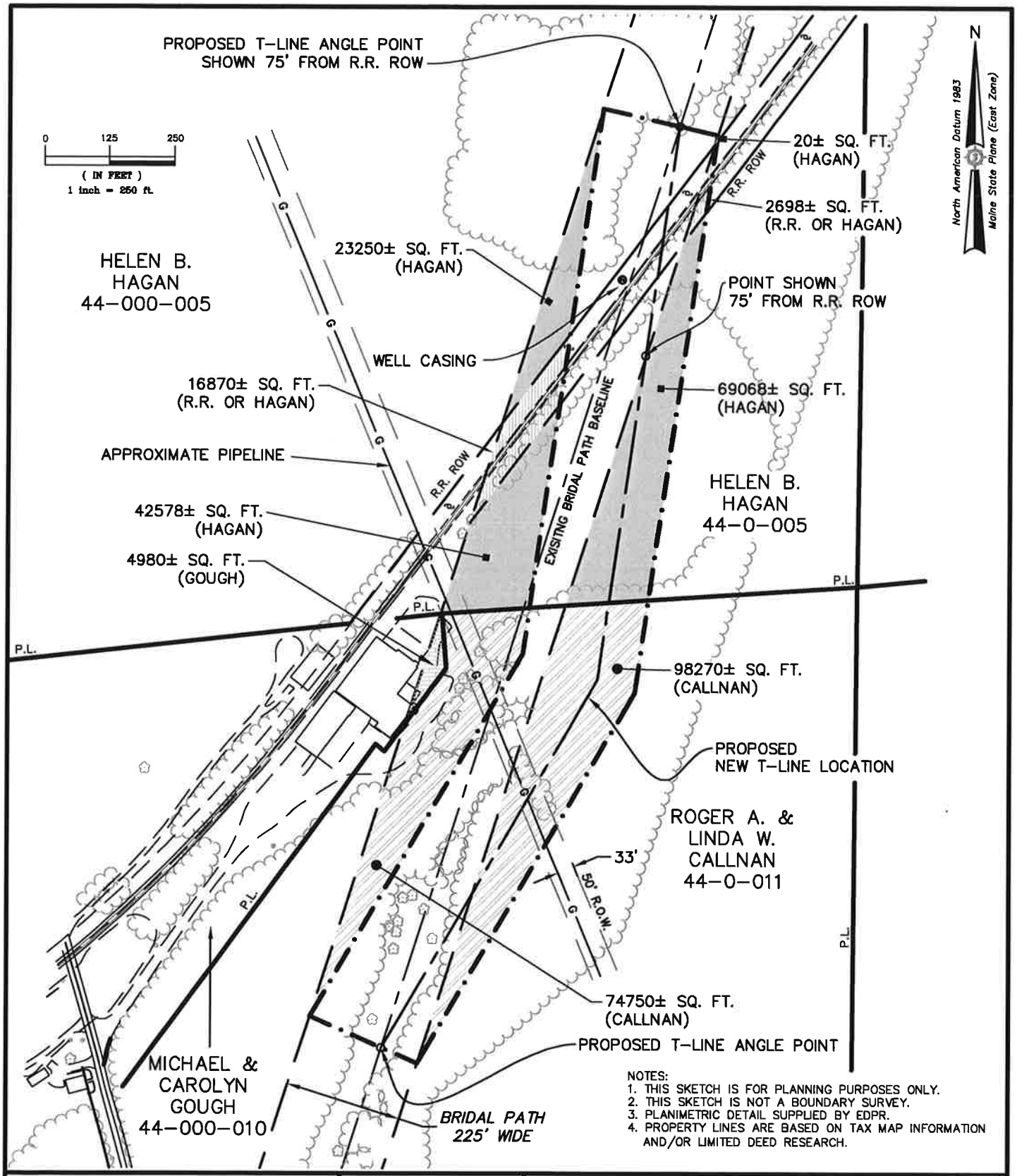
SCHEDULE 1-E-1

GOUGH PARCEL – PLAN

Depiction of alignment detail or plan showing Houlton To Haynesville Generator Lead across lands described in the Emera Deeds and the so-called current or former Gough Parcel and associated easement areas

(See Attached – to be replaced by survey plan/cross section prior to closing)

SCHEDULE 1-E-1



NOTES:
1. THIS SKETCH IS FOR PLANNING PURPOSES ONLY.
2. THIS SKETCH IS NOT A BOUNDARY SURVEY.
3. PLANIMETRIC DETAIL SUPPLIED BY EDPR.
4. PROPERTY LINES ARE BASED ON TAX MAP INFORMATION AND/OR LIMITED DEED RESEARCH.

SEWALL
JAMES W. SEWALL COMPANY / *Since 1880*
SEWALL.COM 800 648 4202
AN INTEGRATED TEAM OF GEOSPATIAL, ENGINEERING, SURVEYING AND NATURAL RESOURCE CONSULTANTS

SKETCH OF PROPOSED T-LINE RELOCATION

TOWN OF HOULTON, AROOSTOOK COUNTY, MAINE

LOCATION: N 46-06-35.1, W 67-52-28.7 (NAD83)

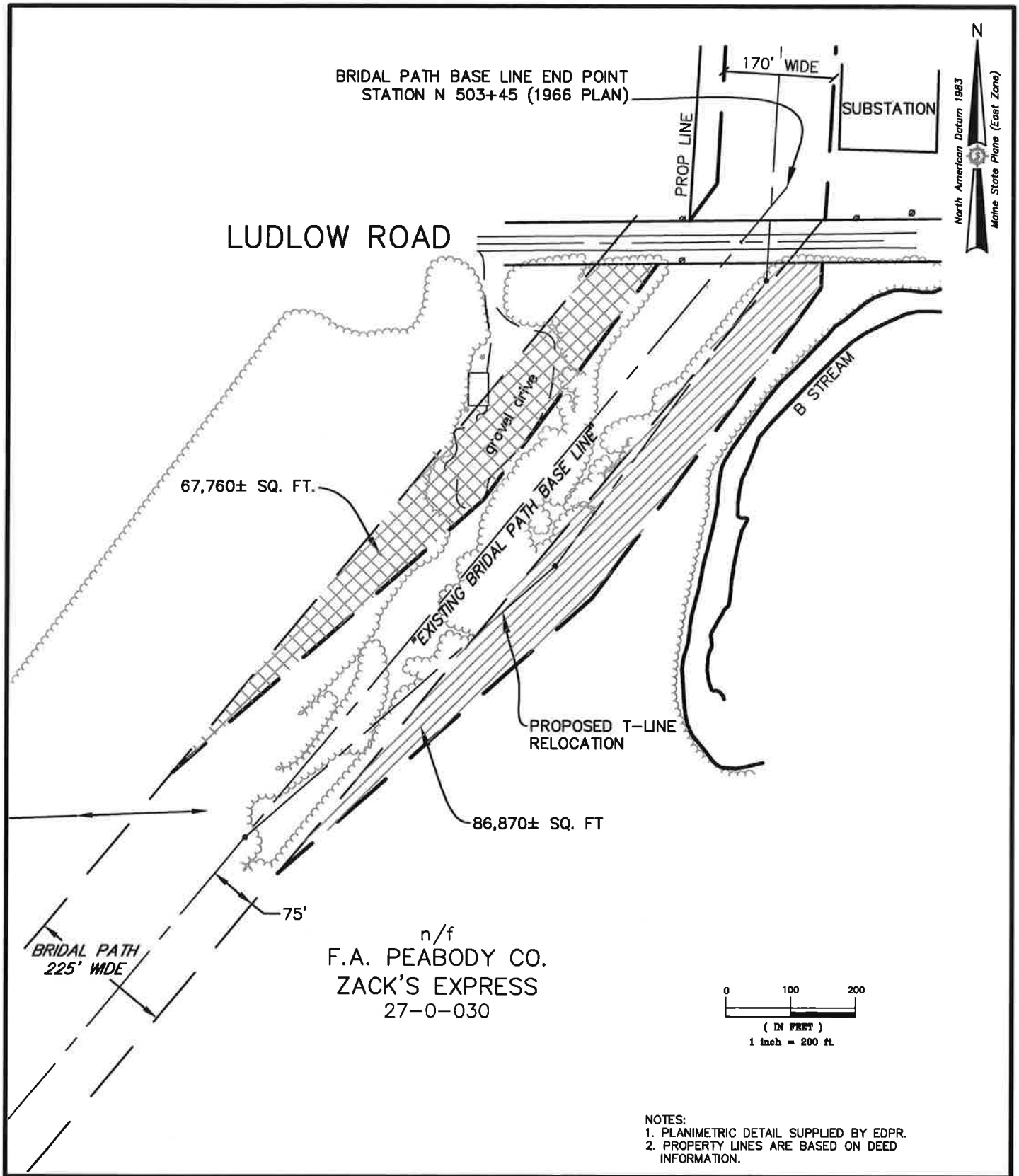
SCALE: 1" = 250' | DATE: DECEMBER 24, 2014

SCHEDULE 1-E-2

PEABODY PARCEL – HOULTON PLAN

Depiction of alignment detail or plan showing Houlton To Haynesville Generator Lead across lands described in the Emera Deeds and the so-called current or former Peabody Parcel at Houlton and associated easement areas

(See Attached – to be replaced by survey plan/cross section prior to closing)



NOTES:
1. PLANIMETRIC DETAIL SUPPLIED BY EDPR.
2. PROPERTY LINES ARE BASED ON DEED INFORMATION.

SEWALL
JAMES W. SEWALL COMPANY / *Since 1880*
SEWALL.COM 800 648 4202
AN INTEGRATED TEAM OF GEOSPATIAL, ENGINEERING, SURVEYING AND NATURAL RESOURCE CONSULTANTS

SKETCH OF PROPOSED T-LINE RELOCATION

LUDLOW ROAD, HOULTON, MAINE

LOCATION: N 46-08-27.3, W 67-51-09.9 (NAD83)

SCALE: 1" = 100'

DATE: DECEMBER 23, 2014

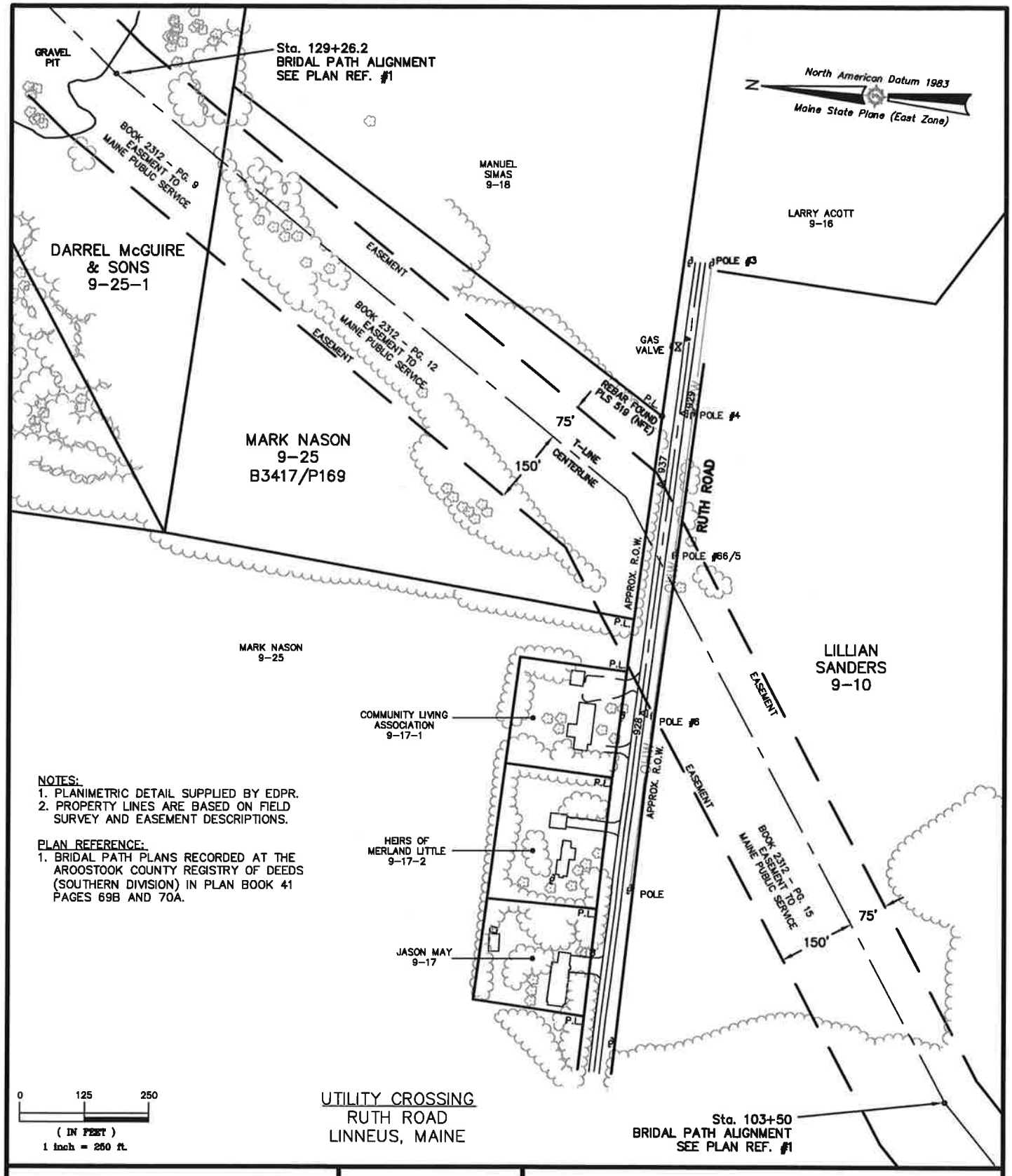
SCHEDULE 1-E-3

STROSNIDER PARCEL – LINNEOUS - PLAN

Depiction of alignment detail or plan showing Houlton To Haynesville Generator Lead across lands described in the Emera Deeds and the so-called current or former Strosnider Parcel at Houlton and associated easement areas

(See Attached – to be replaced by survey plan/cross section prior to closing)

SCHEDULE 1-E-3



NOTES:
1. PLANIMETRIC DETAIL SUPPLIED BY EDPR.
2. PROPERTY LINES ARE BASED ON FIELD SURVEY AND EASEMENT DESCRIPTIONS.

PLAN REFERENCE:
1. BRIDAL PATH PLANS RECORDED AT THE AROOSTOOK COUNTY REGISTRY OF DEEDS (SOUTHERN DIVISION) IN PLAN BOOK 41 PAGES 69B AND 70A.

UTILITY CROSSING
RUTH ROAD
LINNEUS, MAINE

SEWALL
JAMES W. SEWALL COMPANY / *Since 1880*
SEWALL.COM 800 648 4202
AN INTEGRATED TEAM OF GEOSPATIAL, ENGINEERING, SURVEYING AND NATURAL RESOURCE CONSULTANTS

SKETCH OF T-LINE RELOCATION
RUTH ROAD, LINNEUS, MAINE

LOCATION: N 46-03-28.1, W 67-56-35.1 (NAD83)

SCALE: 1" = 250' | DATE: DECEMBER 24, 2014

SCHEDULE 2

EMERA DEEDS

(ATTACH LIST)

(Note: Final list prior to recording shall include easements and lands acquired with respect to encroachment areas with respect to Peabody Parcel and Gough Parcel)

SCHEDULE 2 – MPS DEEDS

The recording information set forth below is for the "MPS Deeds" recorded at the Southern Aroostook County Registry of Deeds. The parcel number set forth in the first column below corresponds with those shown on the survey plan set recorded at said Registry in Plan Book 41, Pages 66A through 79A.

Parcel	Original (1966) Land Owner	Town	Book	Page
1	Putnam, Fred	Houlton	1010	48
2	VanTassel, Helen	Houlton	1010	168
3	Callnan, Lewis and Paula	Houlton	987	310
4	Putnam, Willard & Nora	Houlton	987	312
5	Annett, Fred and Martha	Houlton	1035	573
5A	Hagan, Donald A. and Phyllis	Houlton	1010	358
6	Houlton Ready Mix, Inc.	Houlton	987	467
7	Hagan, Fred P., Mildred Hagan	Houlton	1008	314
		Houlton	997	91
7A	Holmes, Glenn & Shirley	Houlton	989	245
8	Wiggins, Bert K., et al	Houlton	985	41
9	McGinley, Cecil H.	Houlton	984	264
9A	Boutilier, Mary A. and James W.	Houlton	997	178
10	Long, Charles S. and Edith E.	Houlton		
		Hodgdon	990	130
11	Long, Harvey and Irene	Houlton	984	262
12	Gough, Lawrence W. & Barbara	Linneus	984	260
13	Kervin, Frank D.	Linneus	986	115
14	Kervin, Margaret, Eugene F. and Vera A.	Linneus	984	427
15	Folsom, Miles et al	Linneus	989	54
16	Bither, Vincent 1.	Linneus	986	463
17	Nason, Philip and Florence M.	Linneus	986	191
17A	Clark, Lionel	Linneus	1059	150
18	Smith, Ronald and Marietta L.	Linneus	1027	666
20	Little, Merton F. and Jean C.	Linneus	1010	360[1]
			2312	9
21	Sanders, Samuel and Emma	Linneus	1037	57[2]
			2312	15

[1] As affected by Releases dated August 22, 1990 and recorded at the Southern Aroostook County Registry of Deeds in Book 2312, Pages 1, 3 and 5.

[2] As affected by Release dated August 22, 1990 and recorded at the Southern Aroostook County Registry of Deeds in Book 2312, Page 7.

22	Henderson, Irving T. and Gertrude S.	Linneus	1010	166[3]
		Linneus	993	108
		Linneus	2312	12
23	Hutchinson, Roger and Frances	Linneus	986	113
23A	Scott, Roger A. and Patricia A.	Linneus	1027	664
24	Alexander, Perley and Margaret A.	Linneus	987	200
25	Smith, Garfield and Vallie M.	Linneus	1011	132
26	Logie, Paul W. and Phyllis; Thelma	Linneus	1012	317
27	Young, Robert and Elsie	Linneus	1010	356
28	Richards Realty Company	Linneus	987	461
29	Bither, Maurice H. and Beryl	Linneus	986	417
30	Doescher, J. Frederick II and Virginia C.	Linneus	987	100
31	Gove, Vaughn L. and Audrey M. Gove	Linneus	989	247
32	Byron, Melissa E.	Linneus	986	419
33	Davis, Jr., Walter D.	Linneus	987	104
34	Boyd, Arthur and Mildred	Linneus	986	453
35	Clark, Lionel R. and Ada	Linneus	986	459
36	Lawlis, Alice F. M.	Linneus	987	102
37	Cole, George and Phyllis	Linneus	986	457
38	Tapley, Vincent and Birdena	Linneus	986	455
39	Chambers, Thomas	Linneus	988	151
42	Great Northern Paper Company et al	TA R2	1018	351
44	State of Maine	T3 R2	990	214, 217
45	Great Northern Paper Company, James M. Pierce, Ina N. Moulton, Virginia M. Emery, Robert M. Moulton, Gardner N. Moulton	T3 R2	1018	351
46	Eastman, Lizzie M.	T3 R2	988	283
47	State of Maine	T3 R2	990	214, 217
48	Webber, Anne et al	T3 R2	996	150
48A	St Croix Pulpwood Co.	Haynesville	1031	188
			1127	21
			1627	91
			2614	270
			3908	146
50	Fitzpatrick, Don E. and Masha N.	Haynesville	1039	463
50A	Malone, Arthur J. and Catherine E.	Haynesville	1027	660
51	Diamond International Corporation	Haynesville	1033	233

Further reference is made to the instrument between Maine Electric Power Company, Inc. and Maine Public Service Company dated December 28, 1967 and recorded at said Registry in Book 1019, Page 35.

[3] As affected by Release dated August 22, 1990 and recorded at the Southern Aroostook County Registry of Deeds in Book 2312, Page 3.

SCHEDULE 2-A

CMP DEEDS

Property described in a deed from Lakeville Shores, Inc. to Central Maine Power Company dated November 26, 2014 and recorded in the Southern Aroostook Registry of Deeds in Book 5377, Page 10.

Property is also described in and pertaining to a Memorandum of Option by and between Lakeville Shores, Inc. and Central Maine Power Company dated January 28, 2014, as from time to time amended or extended, and recorded in the Southern Aroostook Registry of Deeds in Book 5277, Page 149.

SCHEDULE 2-B

MEPCO DEEDS

Property described in a deed from Earl F. Wilder and Janice L. Wilder to Maine Electric Power Company dated ____ ___, 2014 and recorded in the Southern Aroostook Registry of Deeds in Book __, Page __.

Property to be acquired prior to closing on Assignment Agreement. Property is described in and pertaining to a Memorandum of Option by and between Earl F. and Janice L Wilder, dated November 16, 2011, as from time to time amended or extended, and recorded in the Southern Aroostook Registry of Deeds in Book 5241, Page169.

SCHEDULE 3

AGREED COST OF FACILITIES AND EQUIPMENT

The Base Easement is the "Purchase Price" set forth and defined in Section 1.2 of that certain Transmission Corridor Rights Agreement dated as of December 30, 2014. The "Unit Prices" shall be agreed upon by the Granting Parties and Number Nine prior to the Easement Closing based *unit costs and the actual design of the Houlton to Haynesville Generator Lead.*

SCHEDULE 4

PLANS AND SPECIFICATIONS

Plans and Specifications shall be those referenced on Exhibit B to the Transmission Corridor Rights Agreement dated as of December 30, 2014, as such plans may have been amended and approved in accordance with said agreement and this Assignment Agreement.

EXHIBIT A-1

HOULTON TO HAYNESVILLE CORRIDOR

CMP Property: described in a deed from Lakeville Shores, Inc. to Central Maine Power Company dated November 26, 2014 and recorded in the Southern Aroostook Registry of Deeds in Book 5377, Page 10.

MEPCO Property: to be acquired prior to closing on Assignment Agreement. Property is described in and pertaining to a Memorandum of Option by and between Earl F. and Janice L Wilder, dated November 16, 2011, as from time to time amended or extended, and recorded in the Southern Aroostook Registry of Deeds in Book 5241, Page169.

Emera Property: Is described on the deeds referenced in the attached tables:

The recording information set forth below is for the "MPS Deeds" recorded at the Southern Aroostook County Registry of Deeds. The parcel number set forth in the first column below corresponds with those shown on the survey plan set recorded at said Registry in Plan Book 41, Pages 66A through 79A.

Parcel	Original (1966) Land Owner	Town	Book	Page
1	Putnam, Fred	Houlton	1010	48
2	VanTassel, Helen	Houlton	1010	168
3	Callnan, Lewis and Paula	Houlton	987	310
4	Putnam, Willard & Nora	Houlton	987	312
5	Annett, Fred and Martha	Houlton	1035	573
5A	Hagan, Donald A. and Phyllis	Houlton	1010	358
6	Houlton Ready Mix, Inc.	Houlton	987	467
7	Hagan, Fred P., Mildred Hagan	Houlton	1008	314
		Houlton	997	91
7A	Holmes, Glenn & Shirley	Houlton	989	245
8	Wiggins, Bert K., et al	Houlton	985	41
9	McGinley, Cecil H.	Houlton	984	264
9A	Boutilier, Mary A. and James W.	Houlton	997	178
10	Long, Charles S. and Edith E.	Houlton		
		Hodgdon	990	130
11	Long, Harvey and Irene	Houlton	984	262
12	Gough, Lawrence W. & Barbara	Linneus	984	260
13	Kervin, Frank D.	Linneus	986	115
14	Kervin, Margaret, Eugene F. and Vera A.	Linneus	984	427
15	Folsom, Miles et al	Linneus	989	54
16	Bither, Vincent I.	Linneus	986	463
17	Nason, Philip and Florence M.	Linneus	986	191
17A	Clark, Lionel	Linneus	1059	150
18	Smith, Ronald and Marietta L.	Linneus	1027	666
20	Little, Merton F. and Jean C.	Linneus	1010	360[1]
			2312	9
21	Sanders, Samuel and Emma	Linneus	1037	57[2]
			2312	15

[1] As affected by Releases dated August 22, 1990 and recorded at the Southern Aroostook County Registry of Deeds in Book 2312, Pages 1, 3 and 5.

[2] As affected by Release dated August 22, 1990 and recorded at the Southern Aroostook County Registry of Deeds in Book 2312, Page 7.

22	Henderson, Irving T. and Gertrude S.	Linneus	1010	166[3]
		Linneus	993	108
		Linneus	2312	12
23	Hutchinson, Roger and Frances	Linneus	986	113
23A	Scott, Roger A. and Patricia A.	Linneus	1027	664
24	Alexander, Perley and Margaret A.	Linneus	987	200
25	Smith, Garfield and Vallie M.	Linneus	1011	132
26	Logie, Paul W. and Phyllis; Thelma	Linneus	1012	317
27	Young, Robert and Elsie	Linneus	1010	356
28	Richards Realty Company	Linneus	987	461
29	Bither, Maurice H. and Beryl	Linneus	986	417
30	Doescher, J. Frederick II and Virginia C.	Linneus	987	100
31	Gove, Vaughn L. and Audrey M. Gove	Linneus	989	247
32	Byron, Melissa E.	Linneus	986	419
33	Davis, Jr., Walter D.	Linneus	987	104
34	Boyd, Arthur and Mildred	Linneus	986	453
35	Clark, Lionel R. and Ada	Linneus	986	459
36	Lawlis, Alice F. M.	Linneus	987	102
37	Cole, George and Phyllis	Linneus	986	457
38	Tapley, Vincent and Birdena	Linneus	986	455
39	Chambers, Thomas	Linneus	988	151
42	Great Northern Paper Company et al	TA R2	1018	351
44	State of Maine	T3 R2	990	214, 217
45	Great Northern Paper Company, James M. Pierce, Ina N. Moulton, Virginia M. Emery, Robert M. Moulton, Gardner N. Moulton	T3 R2	1018	351
46	Eastman, Lizzie M.	T3 R2	988	283
47	State of Maine	T3 R2	990	214, 217
48	Webber, Anne et al	T3 R2	996	150
48A	St Croix Pulpwood Co.	Haynesville	1031	188
			1127	21
			1627	91
			2614	270
			3908	146
50	Fitzpatrick, Don E. and Masha N.	Haynesville	1039	463
50A	Malone, Arthur J. and Catherine E.	Haynesville	1027	660
51	Diamond International Corporation	Haynesville	1033	233

Further reference is made to the instrument between Maine Electric Power Company, Inc. and Maine Public Service Company dated December 28, 1967 and recorded at said Registry in Book 1019, Page 35.

[3] As affected by Release dated August 22, 1990 and recorded at the Southern Aroostook County Registry of Deeds in Book 2312, Page 3.

EXHIBIT A-2

HOULTON TO HAYNESVILLE EASEMENT AREA

The Houlton to Haynesville Easement Area shall be the easement areas as defined in the Easement attached hereto as Exhibit A

EXHIBIT A-3

PERMITTED EXCEPTIONS

1. Monetary Encumbrances satisfying the requirements of Section 1.4(b).

EXHIBIT A-4
KNOWN EXCEPTIONS

1. Encroachment Areas.

The Parties have identified three known areas within the Houlton to Haynesville Corridor which require certain actions in order to accommodate the Houlton To Haynesville Generator Lead and any future Emera transmission line. These areas and the actions are set forth below.

A. Houlton – F.A. Peabody Company Parcel.

Encroachment involves easement Parcel #1 of the MPS Deeds listed on Exhibit A-1 hereof. Said easement is described in an easement from Fred L. Putman to Maine Public Service recorded in the Southern Aroostook Registry of Deeds ("Registry) in Book 1010, Page 48. The encroachment is depicted on Exhibit A to a certain Memorandum of Real Estate Purchase and Sale Agreement dated November 17, 2014 and recorded in the Registry in Book 5377, Page 47. On or by December 31, 2014, unless otherwise extended, Emera shall arrange to close at its cost on the acquisition of the additional easement rights on the terms and as set forth and described in said Memorandum of Real Estate Purchase and Sale Agreement and the agreement referenced therein. With respect to this parcel, the Houlton to Haynesville Easement Area shall be generally as shown on the sketch attached hereto as Exhibit A-4(A) unless otherwise agreed in writing by the Parties. A more precise legal description shall be prepared from a recordable survey to be obtained by Number Nine, at its sole cost and expense, and provided to Emera within 30 days following the date of this Agreement. Said survey shall be accompanied by a cross section sketch similar to the sketch attached to as Schedule 1-A to the Houlton to Haynesville Easement containing the same easement areas (e.g., Emera Transmission Line Easement Area, Houlton to Haynesville Easement Area, Common Easement Area and Vegetation Management Area) and widths as are shown on said Schedule 1-A.

B. Houlton - Gough Parcel

Encroachment involves easement Parcel # 9 of the MPS Deeds listed on Exhibit A-1 hereof. Said easement is described in an easement deed from Cecil H. McGinley to Maine Public Service recorded in the Registry in Book 984, Page 264. The current owners are Michael and Carolyn Gough who have entered into a purchase and sale agreement to acquire a parcel abutting the easterly or southeasterly sideline of the Houlton to Haynesville Corridor by January 2, 2015 now or formerly owned by Roger A. and Linda W. Callnan. The Goughs have agreed to grant to Emera an easement over said parcel and along the easterly or southeasterly side line of the Houlton to Haynesville Corridor upon the completion of the Gough acquisition of the Callnan property based upon a surveyed legal description. Additional easement area may also need to be purchased by or through the Goughs on Emera's behalf over property adjoining and northerly of the Gough parcel, which lands are now or formerly owned by Helen B. Hagan, in order to address the encroachment and accommodate location of the Emera Transmission Line and the

Houlton to Haynesville Generator Lead consistent with Schedule 1-A to the Houlton to Haynesville Easement. The easement area to be acquired from Hagan shall be based upon a surveyed legal description. The herein referenced surveys to be used for the easements over the Callnan and Hagan properties shall be obtained by Number Nine at its sole cost and expense and provided to Emera within 30 days following the date of this Agreement. Said survey shall be accompanied by a cross section sketch similar to the sketch attached to as Schedule 1-A to the Houlton to Haynesville containing the same easement areas (e.g., Emera Transmission Line Easement Area, Houlton to Haynesville Easement Area, Common Easement Area and Vegetation Management Area) and widths as are shown on said Schedule 1-A. All of the additional easement area to be acquired by Emera through Gough, including over the Hagan and Callnan parcels, is hereinafter referred to as the "Gough Easement Area". The encroachment, additional easement areas and anticipated revised sidelines are generally as shown on Exhibit A-4(B).

Emera intends to acquire or cause to be acquired the Gough Easement Area by or about January 2, 2015 in the case of the Callnan parcel but no earlier than its receipt of the above referenced survey from Number Nine and in the case of the Hagan parcel as soon as is possible following receipt of the above referenced survey, and thereby widen the Houlton to Haynesville Corridor and shift the easterly sideline thereof to the east. If Number Nine is able to obtain the necessary environmental permits to locate the Houlton to Haynesville Generator Lead in the Easement Area as defined by reference to the sideline of the Gough Easement Area, as described below and generally as shown on Exhibit A-4(B), the legal description in the Easement Agreement shall be modified to describe the Houlton to Haynesville Easement Area as the easternmost most ninety six feet (96') of the Houlton to Haynesville Corridor as measured from the easternmost sideline of the Gough Easement Area, with corresponding adjustments to the descriptions of the common easement area and vegetation management area.

Following notice by Emera to Number Nine that it has acquired the Gough Easement Area, Number Nine hereby covenants and agrees it will promptly revise as necessary any permit applications to seek approval to locate the line in accordance with the revised Easement Area description and provide the Granting Parties with any updated plans for approval together with and evidence that the application has been amended or modified for this purpose. In the event that Number Nine is unable to obtain the necessary environmental permits to locate the Houlton to Haynesville Generator Lead in the Easement Area as defined by reference to the sideline of the Gough Easement Area, as aforesaid, Number Nine shall indemnify and hold harmless Emera for any and all costs (including without limitation permitting and added design and construction costs) necessary for Emera or any affiliate or assignee to locate a second transmission line over the Gough Parcel and Hagan property in a manner reasonably acceptable to Emera , and shall if necessary relocate at its cost the Houlton to Haynesville Generator Lead as needed to accommodate said second transmission line; provided, however, that the Parties agree to work together in good faith to accommodate the foregoing requirements in a manner that does not require modification or relocation of the Houlton to Haynesville Generator Lead before modifying or relocating, or requiring the modification or relocation of, the Houlton to Haynesville Generator Lead.

The parties hereto agree that prior to the Easement Closing, the Houlton to Haynesville Easement will be modified to conform with these requirements. For purposes of clarity, it is the intent of the Parties, without limiting the foregoing obligations, that the Houlton to Haynesville Generator Lead will be located so as to permit location of the Emera Transmission Line (as defined in the Houlton to Haynesville Easement) across the Gough parcel and Hagan property with at least the same centerline to centerline distances as those occurring across the parcels immediately to the north and south of the Gough Parcel.

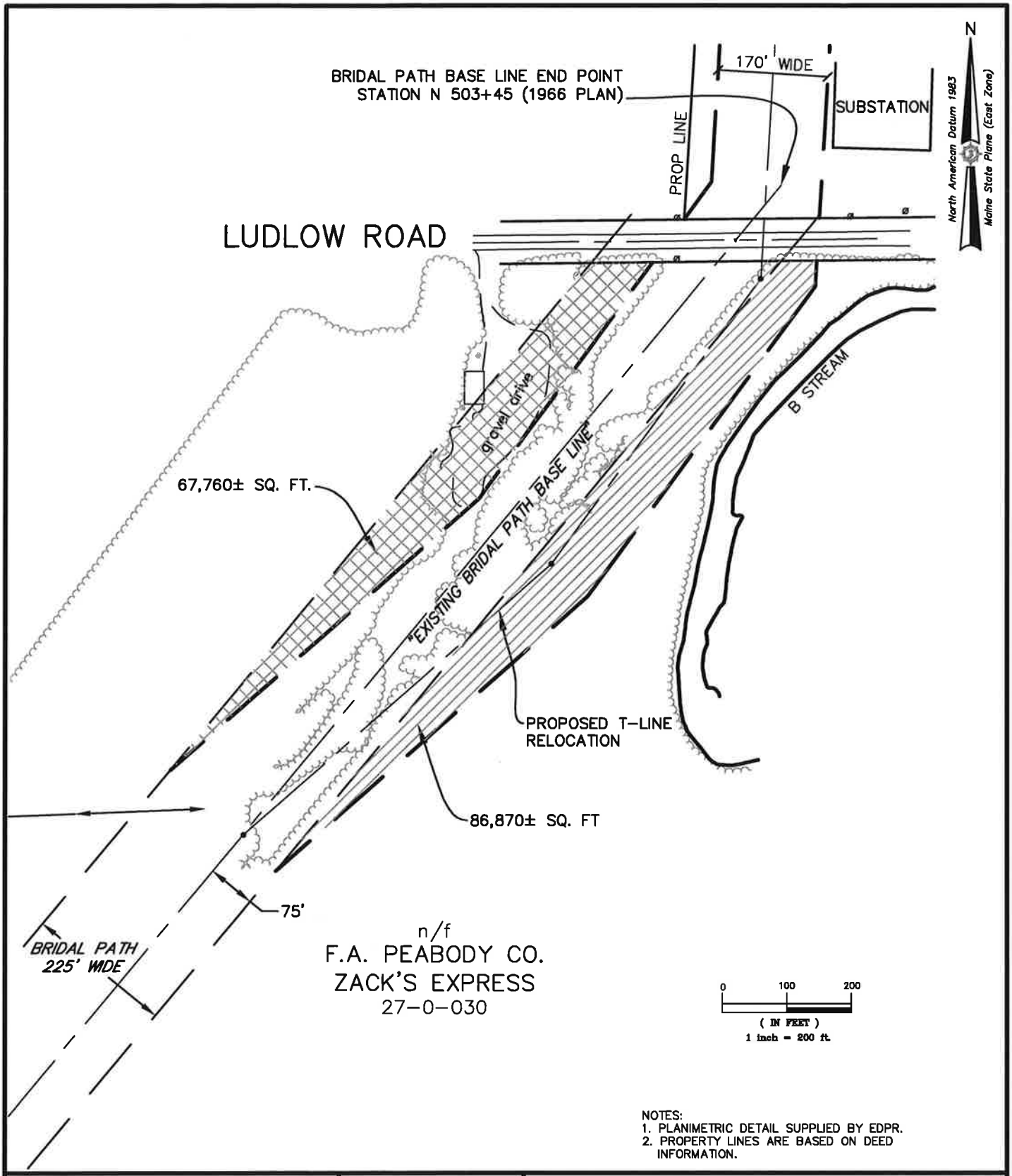
C. Linneus – Ruth Road Encroachment

Encroachment involves a house now or formerly owned by C.A. Stronsnider and Floy S. Stronsnider located within or affecting easement Parcels #20, #21 and #22 of the MPS Deeds listed on Exhibit A-1 hereof. Said encroachment was resolved in 1990 by the re-establishment of the easement line as reflected in easement deeds (and footnotes) as shown on the list of MPS Deeds. No further action is required by the Granting Parties. The Parties agree that the Houlton to Haynesville Easement Area shall be generally as shown on the plan attached hereto as Exhibit A-4(C) with respect to these areas. A more precise legal description shall be prepared from a recordable survey to be obtained by Number Nine, at its sole cost and expense, and provided to Emera within 30 days following the date of this Agreement. Said survey shall be accompanied by a cross section sketch similar to the sketch attached to as Schedule 1-A to the Houlton to Haynesville containing the same easement areas (e.g., Emera Maine Transmission Line, Houlton to Haynesville Easement Area, Common Easement Area and Vegetation Management Area) and widths as are shown on said Schedule 1-A.

2. Wilder Parcel.

Unless otherwise agreed in writing by the Parties, MEPCO shall within the option period close on that certain parcel of land described in and pertaining to a Memorandum of Option by and between Earl F. and Janice L Wilder, and MEPCO dated November 16, 2011, as from time to time amended or extended, and originally recorded in the Southern Aroostook Registry of Deeds in Book 5005, Page 21.

EXHIBIT A-4(A)



NOTES:
1. PLANIMETRIC DETAIL SUPPLIED BY EDPR.
2. PROPERTY LINES ARE BASED ON DEED INFORMATION.

SEWALL
JAMES W. SEWALL COMPANY / *Since 1880*
SEWALL.COM 800 648 4202

AN INTEGRATED TEAM OF GEOSPATIAL, ENGINEERING, SURVEYING AND NATURAL RESOURCE CONSULTANTS

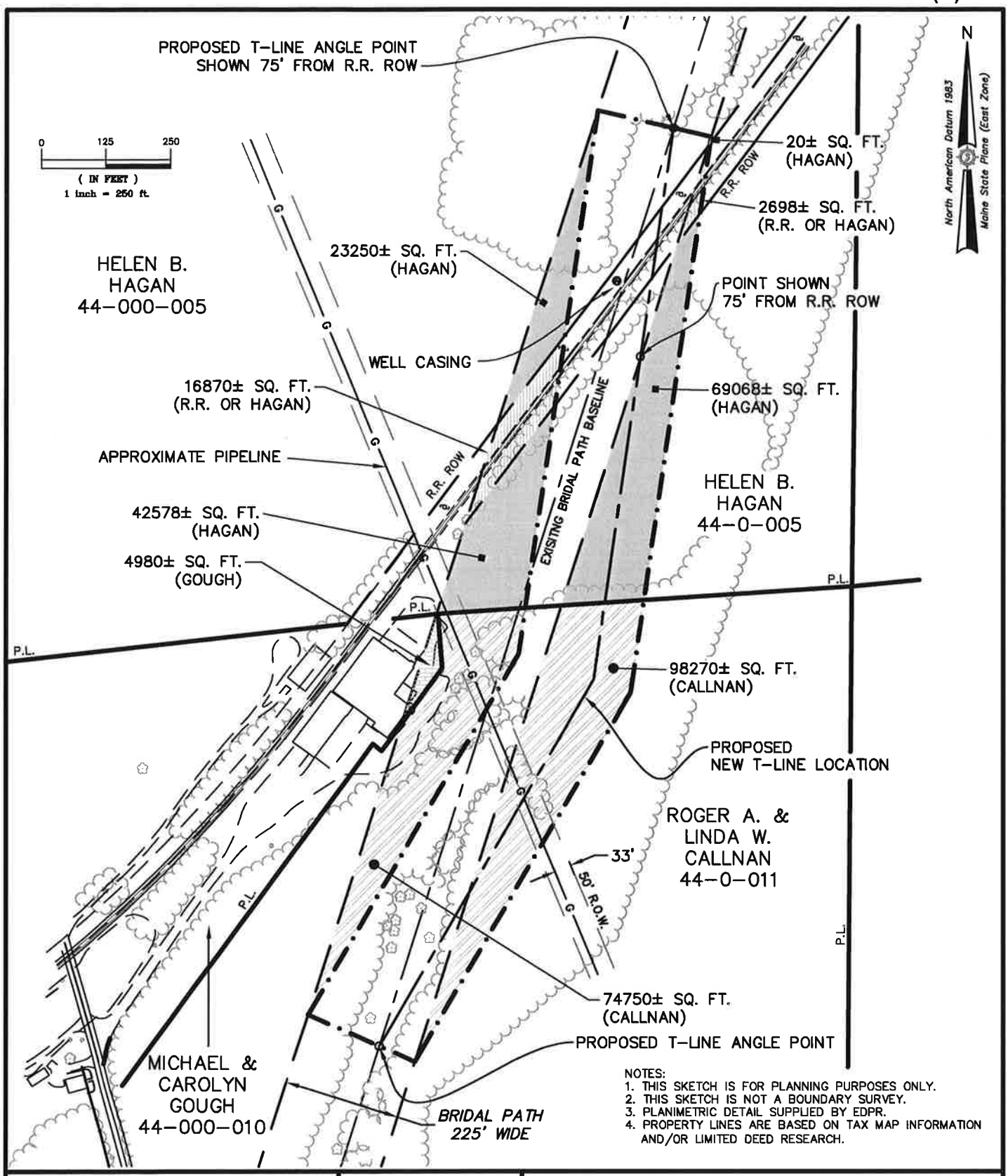
SKETCH OF
PROPOSED T-LINE RELOCATION

LUDLOW ROAD, HOULTON, MAINE

LOCATION: N 46-08-27.3, W 67-51-09.9 (NAD83)

SCALE: 1" = 100' | DATE: DECEMBER 23, 2014

EXHIBIT A-4(B)



NOTES:
1. THIS SKETCH IS FOR PLANNING PURPOSES ONLY.
2. THIS SKETCH IS NOT A BOUNDARY SURVEY.
3. PLANIMETRIC DETAIL SUPPLIED BY EDPR.
4. PROPERTY LINES ARE BASED ON TAX MAP INFORMATION AND/OR LIMITED DEED RESEARCH.

SEWALL
JAMES W. SEWALL COMPANY / *Since 1880*
SEWALL.COM 800 648 4202
AN INTEGRATED TEAM OF GEOSPATIAL, ENGINEERING, SURVEYING AND NATURAL RESOURCE CONSULTANTS

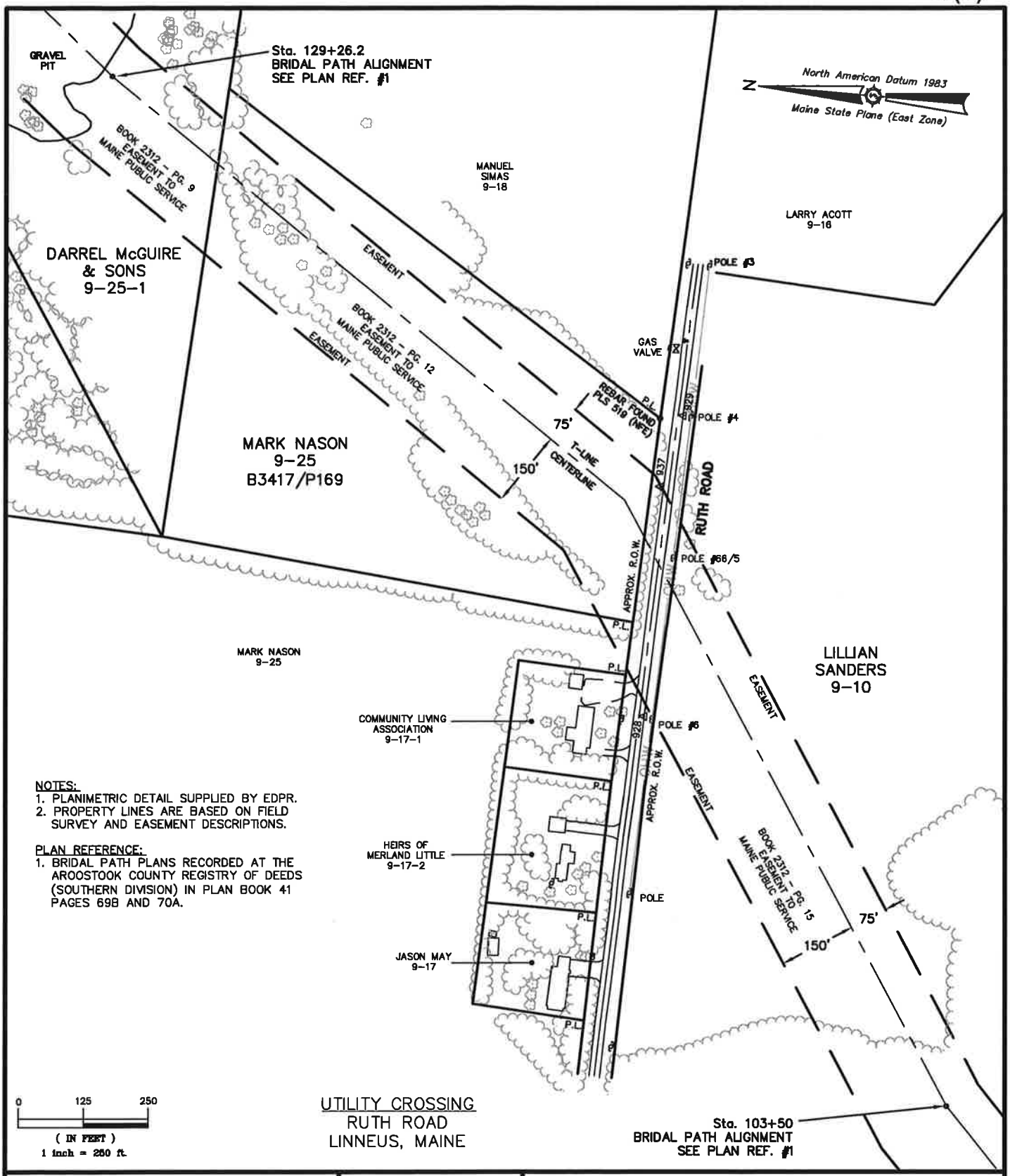
SKETCH OF PROPOSED T-LINE RELOCATION

TOWN OF HOULTON, AROOSTOOK COUNTY, MAINE

LOCATION: N 46-06-35.1, W 67-52-28.7 (NAD83)

SCALE: 1" = 250' | DATE: DECEMBER 24, 2014

EXHIBIT A-4(C)



NOTES:
1. PLANIMETRIC DETAIL SUPPLIED BY EDPR.
2. PROPERTY LINES ARE BASED ON FIELD SURVEY AND EASEMENT DESCRIPTIONS.

PLAN REFERENCE:
1. BRIDAL PATH PLANS RECORDED AT THE AROOSTOOK COUNTY REGISTRY OF DEEDS (SOUTHERN DIVISION) IN PLAN BOOK 41 PAGES 69B AND 70A.

UTILITY CROSSING
RUTH ROAD
LINNEUS, MAINE

SEWALL
JAMES W. SEWALL COMPANY / *Since 1880*
SEWALL.COM 800 648 4202
AN INTEGRATED TEAM OF GEOSPATIAL, ENGINEERING, SURVEYING AND NATURAL RESOURCE CONSULTANTS

SKETCH OF T-LINE RELOCATION
RUTH ROAD, LINNEUS, MAINE

LOCATION: N 46-03-28.1, W 67-56-35.1 (NAD83)

SCALE: 1" = 250' | DATE: DECEMBER 24, 2014

CENTRAL MAINE POWER COMPANY
&
EMERA MAINE

345 kV Transmission Line Project
Design Criteria/Construction Guidelines

Project Number:
275025

Project Contact:
Jeffrey Fenn P.E.
Email:
jfenn@sgceng.com
Phone:
207-217-6763

November 14, 2014
Revision G - Final

{W4469867.1}

Revision Index

Revision	Description	Date
A	Issued for Review	7/16/14
B	Revision associated with in-span clearance	7/18/14
C	Update table references	7/18/14
D	Updated tension limits, shield wire section, ROW clearances	7/29/2014
E	Incorporated CMP Legal comments, updated PP7 info, updated overload factors, updated grounding section	10/17/2014
F	Combined Construction Guidelines to this Document	10/24/2014
G	Final changes to grounding from Emera	11/14/2014

SGC Engineering, LLC
a part of Senergy

40 Harlow Street, Suite 2
Bangor, Maine 04401
207.217.6769

www.sgceng.com
www.senergyworld.com

1 INTRODUCTION AND SCOPE OF SPECIFICATION

The purpose of this document is to provide design specifications and construction guidelines for the design of a 345 kV transmission line to be built by Number Nine Wind Farm LLC (Number Nine) in a transmission corridor from Houlton to Haynesville, Maine under the Utilitiesship and control of Emera Maine and Central Maine Power Company (CMP) (collectively the "Utilities") as a generator lead to serve Number Nine's wind generation facility on Number Nine Mountain in Aroostock County, Maine. This document is an express part of the Transmission Corridor Rights Agreement between Number Nine and the Utilities and is intended to provide a framework and overall philosophy for the design of the Number Nine generator lead. This document does not take the place of good engineering judgment and this document is not intended to supersede the provisions of any applicable laws, ordinances, codes, or standards.

Should Number Nine determine that any specifications within this document do not meet project specific requirements, Number Nine shall notify the Utilities for resolution.

2 CODES, STANDARDS, AND REFERENCES

The following requirements shall be utilized for the transmission line design:

All work shall be in accordance with the prevailing standards of skill and care of each trade and shall be per the latest codes, applicable laws and ordinances at the time of permit approval unless noted otherwise below. The project shall be based on the latest version of the following codes:

- ANSI C2, National Electrical Safety Code (NESC)
- Design of Steel Transmission Pole Structures, American Society of Civil Engineers, Latest Edition.
- Guidelines for Electrical Transmission Line Structural Loading, American Society of Civil Engineers, ASCE Manual No. 74
- IEEE Guide for Improving the Lightning Performance of Transmission Lines, IEEE Std 1243
- EPRI Transmission Line Reference Book, 345kV and Above
- EPRI Transmission Line Reference Book, 200kV and Above
- Advisory Circular AC 70/7460-1K Obstruction Marking and Lighting, U.S. Department of Transportation Federal Aviation Administration
- Procedures for Determining and Implementing Transmission Facility Ratings in New England, ISO New England PP7

3 GENERAL REQUIREMENTS

3.1 Transmission Line Requirements

The transmission line design shall incorporate the following requirements:

3.1.1 Single circuit structures shall be arranged in either a single pole delta configuration or h-frame flat configuration. Both options will utilize a minimum of one OPGW in the shield position. The number of fibers, number of OPGW shield wires, and size of the OPGW to be determined by the Utilities.

3.1.2 A Corona evaluation shall be incorporated into the design for all installations.

3.1.3 A Vibration analysis shall be performed on the phase conductor and OPGW to determine if dampers need to be installed.

3.1.4 Conductor phasing shall be coordinated with the substation design. A transmission line phase transposition shall be provided, if required to maintain required substation phasing.

3.1.5 Phasing shall be designated on transmission line design documents.

3.1.6 For all Transmission Line crossings of public or private roads structures shall be located to avoid poles or anchors being installed in the road ROW

3.1.7 The point of interface between the Transmission Line scope of work and the Interconnection Substation scope of work shall be agreed on a project specific basis for the conductor and shield wires. The interface discussion shall also include an agreement on the need to provide isolation between the interconnection substation and transmission line shielding and grounding systems.

4 DESIGN

4.1 Transmission Line Structures

The transmission line structure design shall incorporate the following requirements:

4.1.1 Structures shall be constructed of steel or wood poles. Lattice steel structures shall not be used unless specifically agreed with the Utilities.

4.1.2 Steel structures may be direct embedded or supported on foundations. Wood structures shall be direct embedded. Direct embedded structures shall have butts sleeved/shored if necessary depending on soil conditions.

4.1.3 The embedment depth for direct embedded structures shall be 10% of the pole length plus 2 feet unless a more stringent criterion is required due to soil conditions.

4.1.4 Steel structures shall be weathering or galvanized steel per the Utilities' requirements.

4.1.5 Typical Structures shall utilize horizontal line post insulators, braced post insulators, or conductor support arms with suspension or V-string insulators.

4.1.6 Steel structures shall be furnished with clips for a climbing device.

4.1.7 Each transmission structure shall have an identification tag in accordance with the Utilities' requirements.

4.1.8 Transmission Pole Spotting Criteria shall be as follows:

- Minimize contact with environmentally sensitive areas, streams, or other valuable natural habitats.
- Minimize contact with property parcels that have incompatible zoning or land use planning classifications.
- Minimize contact with areas where terrain or drainage would interfere with transmission line construction and maintenance.
- Avoid buildings or other structures that would have to be removed for transmission line construction.
- Minimize clear views of the transmission line from residential concentrations, recreational areas, heavily traveled highways, and other areas of maximum use.
- Minimize number of structures located in farm fields. Locate structures on farm fence lines where possible.
- Avoid locations that contain underground utilities, pipelines, or any other sensitive sub-surface objects, verify as necessary.

4.1.9 Additional study efforts shall be completed in the event of line location near parallel path pipes.

4.1.10 Final structure locations shall be approved by the Utilities.

4.1.11 Structure design will be based on CMP's Maine Power Reliability Program Structures and Bill of Materials which are listed below and attached to this document as **Appendix A**. Pole and phase spacing may be modified subject to the final configuration of the right of way and space available.

- EAR-3 Compact Tangent Structure
- EBR-1 0°-3° Angle Structure
- EBR-2 3°-10° Angle Structure
- EBR-3 10°-20° Angle Structure
- ECR-1 20°-30° Angle Structure
- ECR-2 30°-45° Angle Structure
- EDR-1 & EDR-2 0°-75° Angle Structure (Dead-end)
- EDR-3 75°-90° Angle Structure (Dead-End)

4.1.12 Typical ruling spans are to be 500' - 800' in length.

4.1.13 Full dead-end structures shall be located a maximum of 3.5 miles apart for cascade prevention.

4.1.14 Phase transposition structures, for impedance equalization, shall be developed and utilized at 1/3 (or more if required to maintain substation phasing) intervals of the entire length.

4.2 Phase Conductor

The transmission line phase conductor design shall incorporate the following requirements:

4.2.1 Transmission Line Conductor Size

Transmission line conductor shall be ***1590 ACSR "Falcon", 54/19 stranding***, in a two conductor bundle with 18" of separation.:

Rating is based on the IEEE Standard for Calculating the Current-Temperature Relationship of Bare Overhead Conductors. (IEEE Std.738).

The maximum allowable operating conductor temperature limits the current carrying capacity of transmission conductors. The temperature of an overhead conductor is primarily a function of current flow, ambient conditions (wind speed and direction, air density and temperature, and solar radiation), and the physical properties of the conductor (electrical resistivity, emissivity, absorptivity, and specific heat). Weather conditions such as wind speed and direction, solar heating and temperature, are the major factors influencing the allowable ampacity of a conductor. Such geographic factors as latitude and elevation will also have an affect; however, to a much lesser degree. Table 4.2.1 contains typical steady state thermal ratings for standard conductors as a base case for both summer and winter.

The table below lists typical assumptions used as input for the IEEE program for the standard base case electrical ratings for conductors:

Table 4.2.1 – Typical Steady State Thermal Ratings for Standard Conductors

VARIABLE	SUMMER	WINTER
Ambient Temperature	38° deg. C/100.44° deg. F	10° deg. C/50° deg. F
Wind Speed	3 ft/sec	3 ft/sec
Wind Angle *	90 deg.	90 deg.
Elevation	1000 feet	1000 feet
Line Orientation	East-West	East-West
Latitude	42 deg.	42 deg.
Emissivity	0.75 Al, 0.85 Cu	0.75 Al, 0.85 Cu
Absorptivity	0.5	0.5
Atmospheric Clarity	Clear	Clear
For lines in New England, all variables need to comply with the latest ISO New England PP7 document. *The direction of the wind in relation to the conductor. A direction of 90 deg. or perpendicular to the conductor is typically used.		

4.2.2 Transmission Line Conductor Ampacity

Conductor allowable ampacity shall be determined by Number Nine in accordance with local ISO-NE standards, utilizing the variables in the above table 4.2.1

4.2.3 Conductor should be bundled type, and sized based on the Utilities' requirements.

4.2.4 Conductor design shall be based on a maximum conductor temperature of 248° F, based on ISO PP7, or the Utilities' approved temperature documented in the site specific design criteria document.

4.2.5 Conductor design shall also include a cold curve evaluation to avoid exceeding uplift limitations.

4.2.6 Conductor minimum design clearance shall be NESC minimum clearance plus design buffer as specified in this document.

4.2.7 Conductor phase to phase spacing shall not be less than 18' in any direction.

4.2.8 Conductor phasing shall match the phasing at the substations.

4.2.9 Conductor splices shall not be located over railroads, limited access highways, rivers, or lakes. Splices shall not be located in spans crossing other spans or in dead-end spans. Splices are to be avoided if possible in spans above state, county, and township roads. All conductor splices shall be approved by the Utilities.

4.2.10 Mechanical compression connectors shall be used to connect non-tension conductor jumpers at dead end structures and substations.

4.2.11 Armor Grip suspension or approved alternate shall be installed at all conductor suspension supports.

4.3 OPGW (Optical Ground Wire)

The transmission line OPGW design shall incorporate the following requirements pending the outcome of the static wire selection study completed by the design engineer:

4.3.1 Unless noted otherwise for the project, communication between adjacent substations shall be via OPGW. The OPGW shall be placed in the transmission line shield positions. The OPGW shall achieve a 60° shield angle for the structure. Two (2) separate OPGW shall be provided if practicable and requested by the Utilities.

4.3.2 Transmission line OPGW fiber count shall be approved by the Utilities.

4.3.3 OPGW splices shall be located as required for standard reel lengths. Splices shall be located on structures adjacent to access routes. Splices shall also be located on substation dead-end structures. A coil (100 feet measured from the base of pole) of OPGW shall be allowed for at the splice point and mounted on the external coil bracket. The bracket shall be mounted on the pole above the splice enclosure. The OPGW and associated splicing and terminating supplies should be approved by the Utilities.

4.4 Shield Wire

In the event that only one OPGW is used, the transmission line shield design shall incorporate the following requirements pending the outcome of the static wire selection study completed by Number Nine:

4.4.1 Where required for the project, an Alumoweld shield wire shall be installed to provide lightning protection for the transmission line.

4.4.2 Shield wire attachment should be suspension type armor grip or approved alternate shall be installed, if necessary, at all shield wire supports.

4.5 Wire Tension Limits

The transmission line design shall incorporate the following wire tension limit requirements:

4.5.1 The tension limits specified in Table 4.5.1 shall be applied for the calculation of structure loads.

Table 4.5.1: Wire Tension Limits

Load Case	ACSR Conductor Max. Design Tension (%RBS)	OPGW & Shield Wire Max. Design Tension (% RBS)	NESC Allowable Tension (% RBS)*
NESC Heavy Loading, Initial	35%	35%	60%
60°F, Initial, Unloaded*	35%	35%	35%
60°F, Final, Unloaded*	20%	20%	25%
NESC Extreme Wind (250C), Initial (20PSF)	30%	30%	80%
NESC Concurrent Ice&wind (250D) Initial	60%	60%	80%
Extreme Ice (1.5")	60%	60%	N/A

*Per NESC Rule 261 H.1 Exception 1

4.5.2 Shield wires shall be sagged to 70% - 80% of the final after-creep sag of the conductors at 60°F.

4.5.3 The design tensions, pull-off angle, phasing, phase spacing, shield wire locations, and hardware connection details for the wires at the Interconnect Switching Station dead-end structure shall be coordinated with the Utilities.

4.6 Design Loading Criteria

The transmission line design shall incorporate the following loading criteria:

4.6.1 The transmission line shall be designed in accordance with the minimum loading requirements of ANSI C2, NESC, Grade B construction, Heavy Loading district unless otherwise agreed for the project with the Utilities. Loading shall be as specified in Table 4.6.1.

Table 4.6.1: Transmission Line Design Loading

Loading Condition	Wire Wind Pressure	Structure Wind Pressure (1)	Ice	Temperature (Tension Condition)
NESC Heavy Loading (250B)	4 psf	4 psf	1/2”	0°F (Initial)
Extreme Wind (250C)	25 psf	25 psf	None	60°F (Initial)
Extreme Ice & Concurrent Wind (250D)	4 psf	4 psf	1”	15°F (Initial)
Heavy Ice	0 psf	0 psf	1-1/2”	32°F (Initial)
Deflection: NESC Heavy Loading See note (2)	4 psf	4 psf	1/2"	0°F (Initial)
Hot Conductor	0 psf	0 psf	None	248°F (Final)
Cold Conductor or Shield Wire	0 psf	0 psf	None	-40°F (Initial)
Pre-Camber Condition See note (3)	0 psf	0 psf	None	60°F (Final)
Longitudinal Load – Suspension Structure				
Broken Wire- Any one conductor/subconductor or shield wire	4 psf	4 psf	1/2"	0°F (Initial)
Stringing Load - Any one phase or shield wire	2 psf	2 psf	None	30°F (Initial)
Longitudinal Load – Strain Structure (Angle structure with line angle of 45 degrees or less)				
Broken Wire- Any one conductor/subconductor or shield wire	4 psf	4 psf	1/2"	0°F (Initial)
Longitudinal Load – Deadend Structure				
All wires to be intact on one side only	4 psf	4 psf	1/2"	0°F (Initial)

(Notes continued on following page)

Table 4.6.1 Notes:

(1) A shape factor of 1.0 is assumed for wind in any direction on the structure based on guidelines for Electrical Transmission Line Structural Loading, American Society of Civil Engineers, ASCE Manual No. 74, latest edition.

(2) Allowable deflection in this case is 4% of pole height.

(3) If deflection exceeds the diameter of the pole top, the poles shall be pre-cambered. If deflection is less than the pole top diameter, pole will be raked to plumb condition.

4.6.2 Overload factors are noted in Table 4.6.2.

Table 4.6.2: Overload Factors – All Structures – Grade B New Construction:

Loading Condition	Transverse			Longitudinal			Vertical	
	Wind on Conductor	Angle	Wind on Structure	Wind on Conductor	Angle	Wind on Structure	Weight of Conductor	Weight of Structure
NESC Heavy Loading (250B)	2.5	1.65	2.5	2.5	1.65	2.5	1.5	1.5
Extreme Wind (250C)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Extreme Ice & Concurrent Wind (250D)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Heavy Ice	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Deflection: NESC Heavy Loading	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Pre-Camber Condition	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Broken Wire	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
All other Intact wires	2.5	1.65	2.5	2.5	1.65	2.5	1.5	1.5
Stringing	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

4.6.3 Strength reduction factors shall be applied as follows:

- Steel and pre-stressed concrete structures 1.0
- Wood and reinforced concrete structures 0.65 (NESC Heavy Cases)
- Foundations 1.0
- Support Hardware 1.0
- Guy Wire 0.9

4.6.4 Under the Normal Every Day Condition, all structures shall be designed to support a point load of 400 pounds at any point where a construction or maintenance person could stand or otherwise be supported on the structure. All wires shall be assumed to be intact. Conditions (ice on wire, wind pressure applied on wires or structures, temperature, etc.) shall be project specific.

4.6.5 The following conditions shall be assumed for developing the stringing design loads - Loads applied at all phases and shield wires with all wires sloping down to pullers, tensioners or temporary anchors. The horizontal and vertical components of this load are derived from the wires at a 2 horizontal to 1 vertical slope. Weight of a person and tackle shall be included at 400 lbs.

4.6.6 The following conditions shall be assumed for developing the maintenance design loads – Attachment points shall be provided on the structure cross-arms directly above the phase conductors as a support point for the wires during line maintenance. To allow for simultaneous work on adjacent structures, these attachment points shall be designed for twice the design weight span of the conductors with an additional load of 400 pounds for men and equipment on the cross-arms. assuming all cables are intact and at 100% of their design wind and weight spans, except for any one static wire or conductor, which is assumed to have a heavy vertical load equivalent to 200% of its design weight span times the bare weight per foot of the wire with an additional load of 400 pounds for men and equipment on the cross-arms. Conditions (ice on wire, wind pressure applied on wires or structures, temperature, etc.) shall be project specific.

4.6.7 Transmission line tangent structures shall be designed for one broken conductor or shield wire. Any one phase conductor or static wire is assumed broken. For construction using bundled conductors, one subconductor of any phase bundle shall be assumed broken, the other subconductor(s) for that phase shall be assumed intact. All other conductors and static wires are intact.

4.6.8 Transmission line dead-end structures shall be designed for full terminal conditions under the NESC Heavy load case. Structures shall be designed for a line angle of +/- 15° unless a larger angle is required based on project specific conditions.

4.6.9 The transmission line dead-end structures shall be designed to support an uplift load equal in magnitude but opposite in direction of the vertical load under NESC Heavy and Extreme wind design loading cases.

4.6.10 The ratio of span lengths on either side of a suspension pole shall not exceed 3:2.

4.6.11 Anti-Cascading Loads: Tangent structures shall be designed for a single broken conductor or shield wire; strain structures shall be designed for a single broken conductor and a single broken shield wire under NESC load conditions. Transmission line dead-end structures shall be designed for full terminal conditions under all design loading cases. Since every structure on the line will be designed for longitudinal load-carrying capability, the risk of cascading failures will be reduced (Reference Guidelines for Electrical Transmission Line Structural Loading, American Society of Civil Engineers, ASCE Manual No. 74, latest edition).

4.7 Electrical Load

The transmission line design shall incorporate the following electrical loading criteria:

Maximum Electrical Load shall be determined for the project based on a study performed by the Utilities.

4.8 Clearances

The transmission line design shall incorporate the following clearance requirements:

4.8.1 Basis for Clearances

The basis for calculating proper transmission line clearance is the NESC and best design practices. For new line designs, clearance buffers have been identified for vertical clearances, which are summarized in the following sections. For special cases not listed in this document the NESC document will govern and a reasonable buffer specified in table 4.8.3.2 shall be utilized.

4.8.2 Clearance Due to Voltage

Clearances shall be determined from maximum phase-to-ground voltages. Phase-to-ground voltages shall include a 5% over-voltage. Typical best design voltages are shown in Table 4.8.2.

Table 4.8.2: Clearance Voltage Criteria

Clearance Voltage Criteria		
Nominal Phase-to Phase Voltage (kV)	**Maximum Phase-to Ground Voltage (kV)**	**Comments**
345	210	Includes 5% over-voltage

4.8.3 In-span Vertical Clearances

4.8.3.1 General

Vertical clearance shall be provided for the maximum operating temperature considering aluminum compression and no wind at final sag or at 32°F (0°C) and no wind with 0.5-inch radial ice at final sag, whichever produces the greatest sag.

Vertical clearance requirements shall be determined in accordance with the NESC requirements plus the additional buffers shown in Table 4.8.3.2. Heavy Ice loadings shall meet NESC minimum clearance requirements without any additional buffers. Specific NESC rules are referenced below.

4.8.3.2 **To Ground, Roadways, Rail or Water Surfaces (Rule 232)**

Table 4.8.3.2 shows the NESC required clearances.

Table 4.8.3.2: Vertical Clearances to Ground

Vertical Clearances to Ground, ft. (NESC Rule 232)					
Nature of Surface Underneath wires, conductors, or cables	**Basic NESC Clearance (ft)**	**NESC voltage adder 345 kV P to P 210 P to G (ft)**	**Total NESC Clearance (ft)[1]**	**345 kV Design Buffer (ft)**	**345 kV Design Clearance (ft)**
Track rails of railroads	26.5	6.3	32.8	7.2	40.0
Roads, streets, and other areas subject to truck traffic	18.5	6.3	24.8	7.2	32.0[2]
Driveways, parking lots, and alleys	18.5	6.3	24.8	7.2	32.0[2]
Other land traversed by vehicles, such as cultivated grazing, forest, orchard, etc.	18.5	6.3	24.8	7.2	32.0[2]
Spaces and ways subject to pedestrians or restricted traffic only.	14.5	6.3	20.8	7.2	28
Water areas not suitable for sail boating or where sail boating is prohibited.	17.0	6.3	23.3	8.7	32
Water areas suitable for sail boating including lakes, ponds, resevoirs, tidal waters, rivers, streams, and canals with unobstructed surface area of:					
Less than 20 acres	20.5	6.3	26.8	7.2	34.0
Over 20 to 200 acres	28.5	6.3	34.8	13.2	48.0[3]
Over 200 to 2000 acres	34.5	6.3	40.8	7.2	48.0
Over 2000 acres	40.5	6.3	46.8	7.2	54.0
Established boat ramps and associated rigging areas: areas posted with sign(s) for rigging or launching boats:					
Less than 20 acres	25.5	6.3	31.8	7.2	39.0
Over 20 to 200 acres	33.5	6.3	39.8	7.2	47.0
Over 200 to 2000 acres	39.5	6.3	45.8	7.2	53.0
Over 2000 acres	45.5	6.3	51.8	7.2	59.0

[1] Does not include corrections for altitudes above 3,300 feet
[2] Minimum clearance is 35'-0" with 345kV conductors at 120F, Final Sag.
[3] The Maine Public Utilities Commission requires Water Bodies over 20 Acres and under 200 acres to be classified as 200 and 2000 acres.

4.8.3.3 **At Line Crossings (Rule 233C)**

Mid-span crossing of wires will be avoided to the extent practicable.

The vertical clearance at points along the span shall be measured with the upper conductor at its maximum sag as described in Section 4.8.3.1 and the lower conductor at -20°F, initial sag.

Table 4.8.3.4 lists the Code clearance, buffer and the design vertical clearance for wire crossings.

The design and structure spotting will provide additional clearance over adjacent distribution lines assuming lines may be upgraded to higher voltages in the future. For road crossings that do not currently have adjacent distribution lines, additional clearance will be provided assuming that a future distribution line may be constructed.

4.8.3.4 **To Buildings, Bridges or Other Structures (Rule 234)**

Clearances to buildings, bridges, or other structures will be as per NESC 2012-C2 or the most current revision.

Table 4.8.3.4: Vertical Clearances at wire crossings

Vertical Clearances at wire crossings, ft. (NESC Rule 233)					
Lower Level	**Basic NESC Clearance (ft)**	**NESC voltage adder 345 kV P to P 210 P to G (ft)**	**Total NESC Clearance (ft)**	**345 kV Design Buffer (ft)**	**345 kV Design Clearance (ft)**
Effectively grounded guys, span wires, and messengers	2.0	6.3	8.3	7.7	16.0
Effectively grounded communication guys, span wires, and messengers	5.0	6.3	11.3	7.7	19.0
Open supply conductors, 22 kV	2.0	6.3	8.3	7.7	16.0
Open supply conductors, 34.5 kV	2.0	6.3	8.3	7.7	16.0
Open supply conductors, 69 kV	2.7	6.3	9.0	9.0	18.0
Open supply conductors, 115 kV	3.6	6.3	9.9	10.1	20.0
Open supply conductors, 345 kV	8.3	6.3	14.6	8.4	23.0

4.8.4 Clearance to Supporting Structures

Table 4.8.4a lists the required clearance from the conductor (at rest and as displaced by wind) to the supporting structure. The 5' adder is not required for the clearances in Table 4.8.3.4a.

Table 4.8.4a: Clearances-Conductors to Supporting Structures

Clearances - Conductors to Supporting Structures (To be confirmed by Insulation Coordination Study)	
	345 kV
NESC Rule 235E (Table 235-6) Conductor rigidly supported or transversely displaced due to 6 psf wind, at 60°F, final)	
***To Span or Guy wires:**	
When parallel to line	12'-11"
Anchor guys	7'-11"
All other	12'-5"
***To surface of support arms**	6'-2"
***To surface of structure:**	
Jointly used structures	6'-4"
All other	6'-2"

*Does not include design clearance buffer

Additionally, Table 4.8.4b identifies the load cases and associated clearances to be utilized when calculating allowable inulator swing angles.

Table 4.8.4b: Clearances-Insulator Swing Criteria

Clearances - Insulator Swing Criteria		
Weather Case	**Cable Condition**	**Required Clearance**
60°F, no wind, no ice	Initial	7'-8"
60°F, 6psf wind, no ice	Initial	6'-4"
60°F, 6psf wind, no ice	Final	6'-4"
60°F, 25psf wind, no ice	Initial	2'-6"

4.8.5 Clearance to Other Supporting Structures

Table 4.8.5 lists the required clearance from the conductor (at rest and as displaced by wind) to other supporting structures.

Table 4.8.5: Clearances – (NESC Rule 234)

Clearance to Other Supporting Structures	
Structure Type	**345kV(ft)[4]**
Other Supporting Structures (Vertical)	13.8
Other Supporting Structures (Horizontal)	13.8

4.8.6 In-span Horizontal Clearances

Horizontal clearance requirements to buildings and other structures are shown in Table 4.8.6 per NESC 2012-C2 or the most current revision. Conductor and structure displacements shall be determined assuming 6-psf wind, at 60°F, final sag.

Table 4.8.6: Clearances – (NESC Rule 234)

Horizontal Clearances to Buildings, Signs and Other Structures ft (NESC Rule 234)			
Nature of Surface adjacent to wires, conductors or cables	**Basic NESC Clearance**	**345 kV Design Adder**	**345 kV Design Clearance[5]**
Walls, projections and guarded windows	7.5	6.3	16.8
Unguarded windows	7.5	6.3	16.8
Balconies and areas readily accessible to pedestrians	7.5	6.3	16.8
Signs, chimneys, billboards, radio and television antennas, tanks, and other installations not classified as buildings or bridges	7.5	1.6	16.8

[4] 345kV Design Clearance includes basic clearance, applicable adder and a 3 ft buffer.
[5] 345kV Design Clearance includes basic clearance, applicable adder and 3 ft buffer.

4.8.7 Horizontal Clearances to Edge of ROW

Structure spotting and conductor tensions shall be designed such that the following minimum horizontal clearances are maintained to the edge of the ROW.

	345 kV (ft)
6-psf wind, at 60 ºF, final sag	17

4.8.8 Working Clearance

A minimum vertical separation of (16) feet shall be provided between transmission conductors and distribution or communication conductors or attachments. In addition, the separation requirements of NESC 2012-C2 must be met. See Table 4.8.3.3 for NESC Clearances.

4.8.9 Air Gap Distance

Air Gap Distance will be based on the results of an Insulation Coordination Study to be completed by the design engineer.

4.8.10 Galloping Clearance

Galloping Clearance will be reviewed for all line designs. Where galloping is a concern, the required clearance between ellipses shall be determined on a case by case basis through discussion with the Utilities taking into consideration, ruling span, span length, structure framing, cables, etc.

Single loop galloping shall be assumed for spans less than 700 feet. Double loop galloping shall be assumed for spans greater than 700 feet.

The A. E. Davison method shall be used for modeling single loop galloping, and the L.W. Toye method shall be used for modeling double loop galloping. The conductor loading criteria to determine size of the conductor motion ellipses is ½ inch ice, 32°F, and no wind; to determine shape of the ellipses, use a minor axis of 40 percent of major axis; to determine the sag and the displacement (swing) angle, us ½ inch ice, 32°F, and a 2-psf wind.

4.8.11 Rolling Clearance Checks

Clearance between phase conductors or between ground wires and phases of the same circuit when “rolling” from a vertical to a horizontal configuration (as in a S/S entrance span) should not be less than the following:

Table 4.8.10: Rolling Clearances

Rolling Clearances		
Nominal Phase-to-Phase Voltage (kV)	**Clearance Phase-to-Phase**	**Clearance Phase-to-OPGW**
345 kV	14.3' +	12.9' +

Where practical, rolling clearances should be increased to lessen the probability of contact between phase conductors during galloping in flat areas and de-icing everywhere.

It is anticipated that the 345kV line will be required to "roll" from horizontal to vertical, however, there may be instance to "roll" from a horizontal configuration on H-Frame structures to a delta configuration on single pole.

4.9 Transmission Right of Way

4.9.1 Existing 225' wide "Bridle Path" right of way to be used from Haynesville to Houlton.

4.9.2 EDPR to clear a minimum of 150' of the corridor. The location of the 150' to be determined by the owner.

4.9.3 Centerline of the transmission line to be located 75' from the easterly edge of right of way.

4.9.4 All work along the corridor to meet the Utilities environmental requirements, whichever is more stringent.

4.9.5 EDPR shall grant access to the Utilities, or their representatives, for the purposes of construction inspection, during construction.

4.9.6 EDPR is responsible for obtaining all necessary guying easements and off right-of-way access easements and/or agreements. EDPR shall ensure that rights are transferable to the utilities for any additional easements that are acquired for the project.

4.10 Insulator Assemblies

The transmission line insulator assembly design shall incorporate the following requirements:

4.10.1 Porcelain or Polymer insulator assemblies shall be used unless otherwise approved by the Utilities. Polymer insulator shall be limited to manufacturers below, others need approval by the utilities.

- Hubbell – Quadri*Sil
- K-Line
- MacLean – Apex MacLean – Apex

4.10.2 Insulators for tangent structures shall be braced post, I-string, or V-string.

4.10.3 Double insulator strings shall be used for all dead-end assemblies.

4.10.4 Hardware shall have a strength that is consistent with other components in an assembly including the structure attachment, insulator, and conductor fittings. Minor hardware items shall not be the weak link in the assembly.

4.10.5 Minimum Basic Impulse Level for 345 kV insulation to be 900 kV.

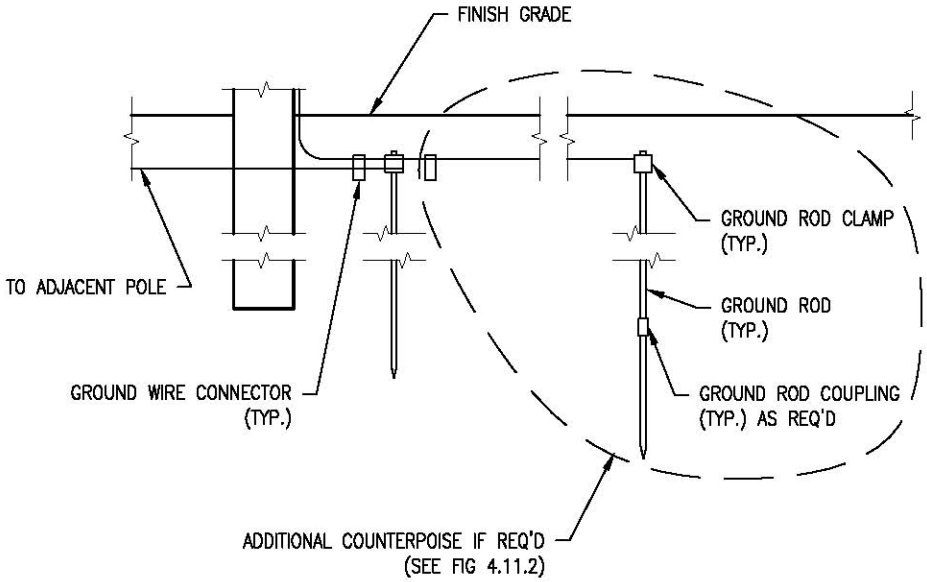
4.11 Grounding and Lightning Performance

The transmission line grounding and lightning performance design shall incorporate the following requirements that are based on the Utilities experience with other transmission projects in the area:

4.11.1 All structures are to be grounded.

4.11.2 All ground wires to be buried 12 inches below grade in uncultivated areas where soil depth is available, and covered with or anchored to rock where no soil is available. In cultivated areas wire depth to be 18 inches. See figure 4.11.1

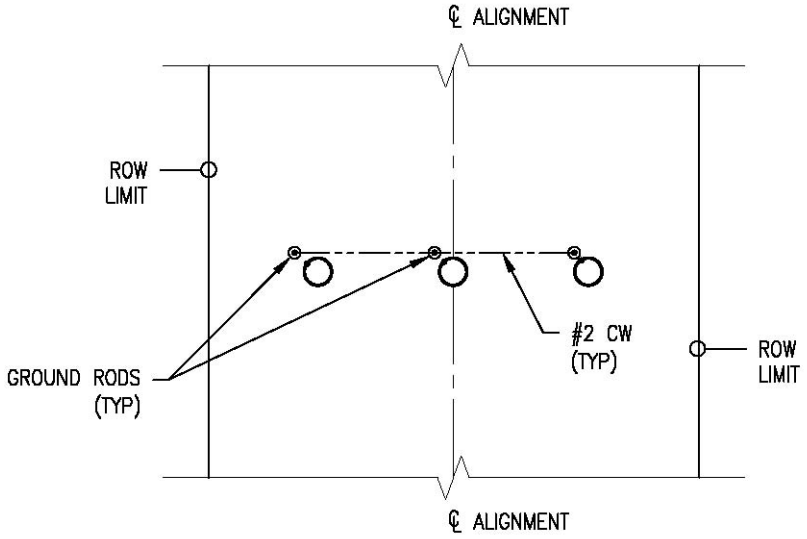
Figure 4.11.1: Grounding and Counterpoise Details



4.11.3 Ground rods to be driven, or installed in a drilled hole and grouted so the top of the rod matches the ground wire depth below the surface of the ground.

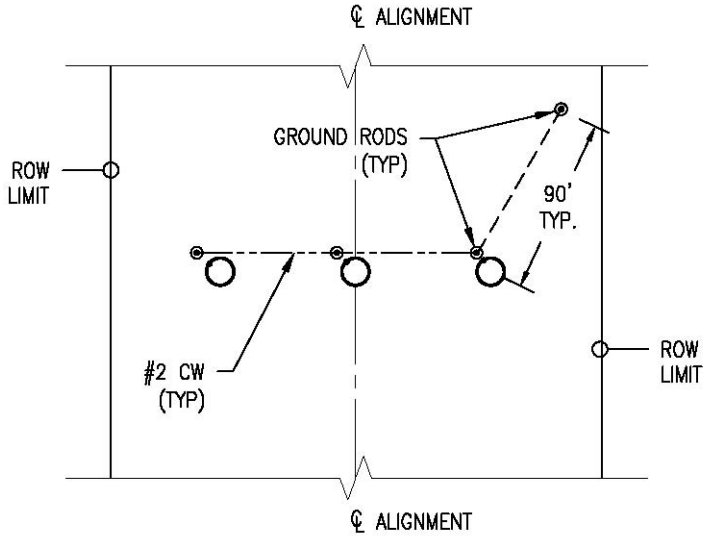
4.11.4 The basic grounding will consist of a driven ground rod at each pole with an interconnecting #2 copperweld wire between poles of a structure. See figure 4.11.2. This installed configuration will be tested using a megger and if the result is more than 38 ohms, additional grounding will be installed.

Figure 4.11.2: Minimum Grounding Configuration



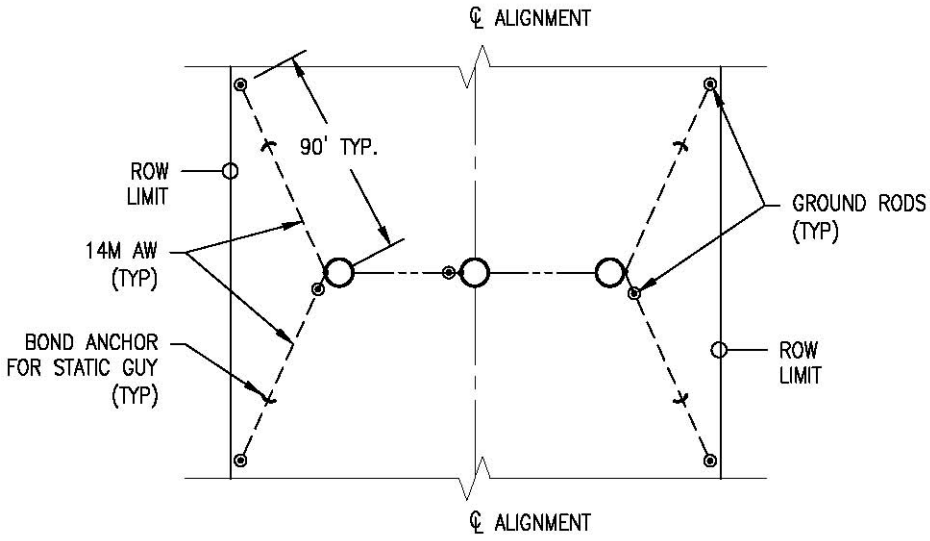
4.11.5 Additional grounding shall consist of a 14M Alumoweld counterpoise wire that extend out from one of the outside poles at an angle away from the conductors (Not parallel to the conductor). All counterpoise to be installed within the limits of the right-of- way. The direction of the installation may be altered up to 15° or doubled back to avoid obstructions and right of way limits provided that the turning radius is not less than 20 feet and that the counterpoise is not located within 20 feet of itself or structure. (See Figure 4.11.3) A ground rod will be driven at the end of the counterpoise. When the counterpoise passes in close proximity to anchor rods, it shall be bonded to the anchor rod.

Figure 4.11.3: Grounding and Counterpoise Configuration



4.11.6 The structure resistivity shall be measured again using a megger at the site using one ground rod at the base of the pole. If 38 ohms is not achieved, then a second length of counterpoise will be installed. A ground rod will be installed and connected at the end of the second counterpoise . The process will be repeated until the maximum grounding configuration is installed, as described below and show in configuration figure 4.11.4. If 38 ohms is still not obtained, the contractor shall contact the design engineer for further guidance.

Figure 4.11.4: Maximum Grounding and Counterpoise Configuration



4.11.7 The maximum grounding configuration on two and three pole tangent and angle structures will be four 90’ counterpoise wires emanating from the structure as shown.

4.11.8 The maximum grounding configuration on a 3-pole dead-end structure will be four 90' counterpoise wires. The counterpoise wires from the outside poles shall be bonded to OPGW/static guy anchors as they go by. A ground rod will be driven at the end of each counterpoise.

4.11.9 For poles in a wetland, contractor shall drive a ground rod at the base of each pole and at the end of each length of counterpoise. The length of each counterpoise to be 12-20 feet in length but longer if conditions allow for additional length to be placed in upland areas.

4.11.10 For poles adjacent to a wetland, contractor shall drive a ground rod at the base of each pole and at the end of each length of counterpoise. Towards the wetland, the length of counterpoise shall extend just beyond the wetland boundary. The length of counterpoise will vary depending on proximity to wetland.

4.11.11 All down grounds conductors installed along a support structure shall be protected with guards designed for this application from the ground level until reaching a height of at least 12 ft.

4.12 EMF, RFI, TVI, Audible Noise

The transmission line EMF, RFI, TVI, and audible noise design shall incorporate the following requirements:

4.12.1 Calculations for the Electric and Magnetic Field (EMF) levels at the edge of the right-of-way shall be performed using the EPRI AC/DC Line software or alternate program accepted by the Utilities.

4.12.2 Corona line losses (does not include corona hardware losses) shall be limited to 5kW per 3 phase mile.

4.12.3 The L50 wet conductor audible noise level shall be limited to 52 dB(A) at the edge of the right-of-way, as suggested by the EPRI Transmission Line Reference Book – 345kV and Above, Second Edition.

4.12.4 Calculated EMF levels shall be compared to state and local limits (as well as previously filed documents previously submitted by the Utilities) and shall be minimized through selection of appropriate wire configuration, structure height and phasing.

4.13 Foundations

Transmission line structure foundation types may include, but are not limited to, direct embedded, drilled pier reinforced concrete foundations, concrete slab or pile cap pinned to ledge. Unguyed direct buried structures should not be used in line angles greater than 3.5° without the Utilities' approval. Design will be in accordance with the general design criteria stated in Table 4.13. Subsurface profiles shall be developed from soil boring logs and used in the design of the foundations. Soil borings are required at each structure with concrete foundations and at any other location as deemed appropriate by the Utilities.

4.13.1 Where structures are supported on concrete drilled piers, the drilled piers shall have a nominal projection of 12".

4.13.2 The top of drilled piers shall be crowned for precipitation runoff.

4.13.3 All foundations shall be designed in accordance with the requirements of the project specific geotechnical report.

4.13.4 Foundations subjected to overturning moments and designed by rotation or pier deflection performance criteria shall use un-factored structure reactions for the determination of the foundation performance. The ultimate strength of an overturning moment and uplift foundation shall not be less than 1.25 times the design factored load reactions of the structure.

Table 4.13: General Design Criteria for Foundation Design

General Design Criteria for Foundation Design	
Concrete Strength	Fc = 4,000 psi at 28 days
Reinforcing Steel	ASTM A615 Grade 60 Fy=60,000 psi
Frost Line	60 inches below grade
Safety Factor for Soil Properties Above Structure Ultimate Loads	1.10

4.14 Avian Protection

Transmission line avian protection design shall be considered per recommendations/requirements from state agencies.

4.15 Aviation Marking

Transmission line aviation marking shall incorporate the following requirements:

Where required due to proximity to aviation facilities, transmission line aviation marking shall be installed in accordance with the provisions of U.S. Department of Transportation Federal Aviation

Administration Advisory Circular AC 70/7460-1K Obstruction Marking and Lighting.

4.16 Guying and Anchoring

Guys and anchors shall be designed with the appropriate loads, overload factors, and strength reduction factors given in table 4.6.1. and section 4.6.2. Guy wire shall be:

- Type “M” Alumoweld
- 19 No. 8
- .642” O.D.
- 43, 240 lb. Breaking Strength

4.17 Documentation and Review

The Utilities require EDPR to provide them with all ***design*** documentation for review at the same intervals that EDPR is reviewing for their consultants.

The Utilities also requie EDPR to provide them with all ***construction*** documentation during and at the completion of construction. Provide data at the 25%, 50%, 75%, and 100% intervals. Data to be included is listed below:

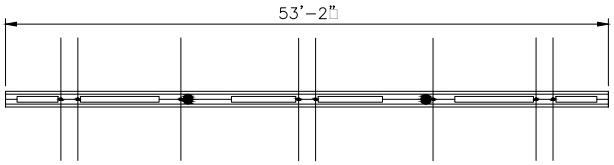
1. Ledge hole locations
2. Pole embedment depths
3. Guy anchor – pull test results. All anchors to be tested to the full tension limit of the 19#8 AW guy wire.
4. Structure grounding test results. Including Megger results for all tests including preliminary test before the installation of any counterpoise materials.

5. Conductor installation information including the date, structure numbers at ends of spans sagged, actual measured sag, method of measurement, temperature and wind force and direction at the time of measurement.

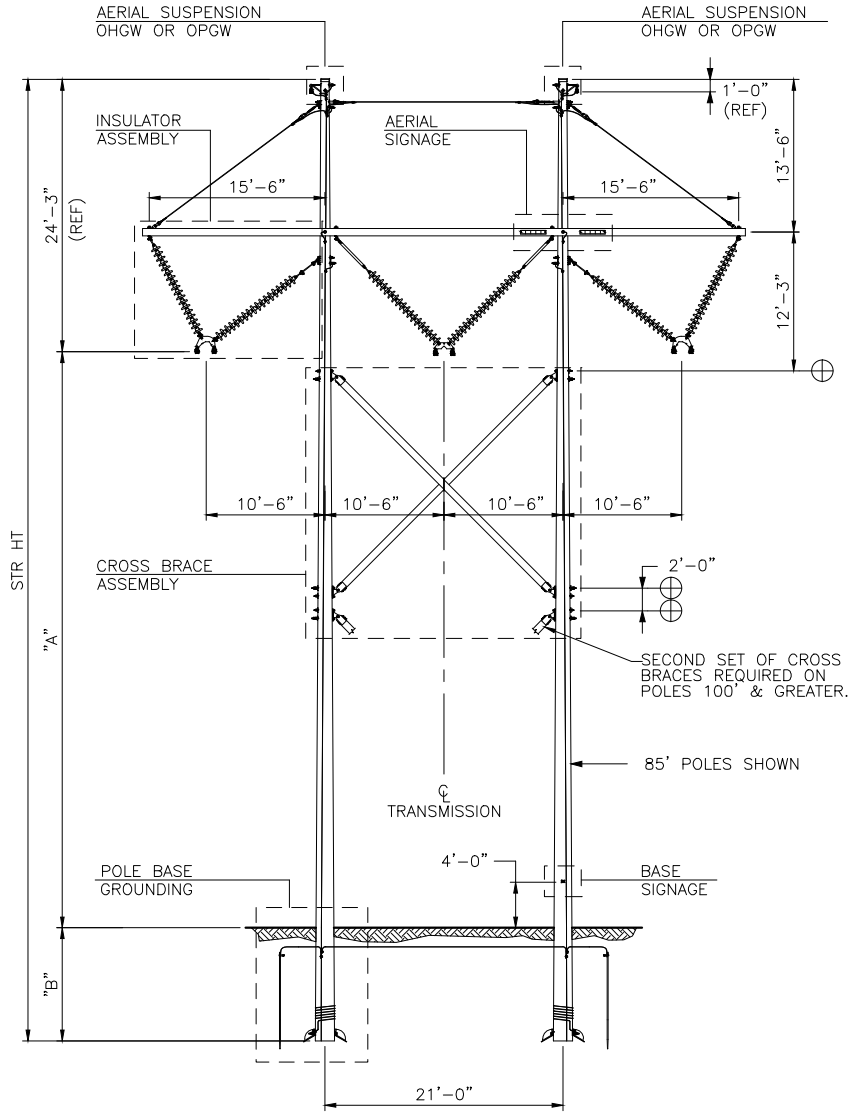
    a. The sag shall be checked for several spans in each sagging section by selecting one near each end and one near the center. The total number of spans to be checked shall be no less than two (2) for a section of two (2) to four (4) spans, four (4) for a section of up to one (1) mile, and four (4) additional spans for each additional mile. Where the distance between strain structures is too great to permit the conductors to be sagged in one operation, temporary intermediate dead ends shall be established. Individual anchors and anchor cables shall be used for each end of each phase. Installation shall include pre-stressing to assure a minimum of “creep” after the sagging operation. The sag of all spans in excess of 800 feet shall be checked. At sharp vertical angle spans, the sag shall be checked on both sides of the angle and the conductor shall be checked on the sheave for equality of tension on both sides. After the conductors have been pulled to the required sag, intermediate spans shall be inspected to determine whether the sags are correct.

    b. The Utilities reserve the right to verify the sag.

APPENDIX A



DIMENSIONS		
STR HT	"A"	"B"
70'	36.75'	9.0'
75'	41.25'	9.5'
80'	45.75'	10.0'
85'	50.25'	10.5'
90'	54.75'	11.0'
95'	59.25'	11.5'
100'	63.75'	12.0'
105'	68.25'	12.5'
110'	72.75'	13.0'
115'	77.25'	13.5'
120'	81.75'	14.0'
125'	86.25'	14.5'



REFERENCE DRAWINGS

INSULATOR ASSEMBLY
982-T345R-31
AERIAL ATTACHMENT
982-T345R-37
CONDUCTOR ATTACHMENT
982-T345R-41
CROSSARM ATTACHMENT
982-T345R-46
TENSION BRACE &
HEAD GUY ATTACHMENT
982-T345R-48
CROSS BRACE ASSEMBLY
982-T345R-52
AERIAL AND BASE SIGNAGE
982-T345R-64
POLE BASE GROUNDING
982-T345R-66
BURIED GROUND WIRE
982-T345R-68

NOTES:
1. EMBEDMENT DEPTHS (DIMENSION "B") ARE FOR OPTIMAL SOILS. DEPTHS MAY VARY DUE TO POLES SET IN ROCK OR PARTIALLY IN EARTH AND ROCK. REFER TO CMP POLE SETTING STANDARDS.
2. GROUND WIRE CLIPS (ITEM #161) SHALL HAVE TWELVE INCH (12") MAXIMUM SPACING FOR ENTIRE POLE LENGTH, AND SIX INCH (6") MAXIMUM SPACING ALONG CROSSARM LENGTH.
3. THERE SHALL BE NO MORE THAN ONE SPLICE IN THE GROUND WIRE (ITEM #12) ABOVE THE GROUNDLINE.
4. WHEN INSTALLING GROUND WIRE CLIPS (ITEM #161) AVOID CRACKS AND CHECKS. CLIPS MUST BE INSTALLED IN WOOD.
5. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.

SGC Engineering, LLC
a part of Senergy

TITLE:
345kV TRANSMISSION LINE
TYPE EAR-3 COMPACT TANGENT STRUCTURE

PROJECT:
EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT:
EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER
275025

DRAWING NUMBER
982-T345R-3A

REVISION
A

SHEET NUMBER
1 OF 1

MATERIAL LIST

SHEET 1 OF 2

* QUANTITY AS REQUIRED
** ESTIMATED QUANTITY

ITEM NO.	QTY	UNIT OF MEASURE	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NO.	CMP STOCK CODE
1.XX	2	EA	ROUNDWOOD POLE, WOOD SPECIES, CLASS AND HEIGHT VARIES	--	--	--
12	350**	FT	GROUND WIRE, NO. 2 AWG C/W, DIA. 0.258 IN	--	--	20-6605
161	250**	EA	CLIP, BRONZE, FOR NO. 2 C/W NAIL	COOPER	5730-1	25-1033
162	250**	EA	COPPERWELD NAIL, 16D, 3-1/2 IN LENGTH	GHOLKAR	C9N350RN	25-1034
INSULATOR ASSEMBLY, TANGENT						
19	*	FT	1590 MCM, FALCON ACSR, 54/19 STRAND COND, DIA. 1.545 IN	SOUTHWIRE	--	20-4845
83	*	EA	VIBRATION DAMPER, STOCKBRIDGE TYPE, FITS 1590 MCM 54/19 STRD COND & AR	ACA	1708-19	--
87	6	EA	ARMOR ROD, EHV, FITS 1590 MCM, FALCON ACSR, 54/19 STRD COND, DIA. 1.545 IN	PREFORMED	AR-0512	--
181	*	EA	CONDUCTOR SPACER, 1590 MCM 54/19 "FALCON" ACSR (DIA. = 1.545 IN)	PREFORMED	CGTS-0123	--
201	6	EA	HOT LINE Y-CLEVIS BALL, GALV, 30K	ANDERSON	HYBC-30	27-2910
202	12	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
211	108	EA	INSULATOR, SUSP., PORCELAIN, NO. 70 GRAY, ANSI CLASS 52-5, 30K	NGK	30S295	--
213	6	EA	SOCKET Y-CLEVIS, GALV, INCLUDES SPHERE NUT, 30K	ANDERSON	SYC-30-SN	27-2900
214B	6	EA	SUSP. CLAMP, COND & AR, AL, CORONA FREE, CLAMPING RANGE 2.29 - 2.80 IN, 30K	ANDERSON	CFS-280-N	--
220	6	EA	Y-CLEVIS EYE, 90 DEG, GALV, INCLUDES SPHERE NUT, 40K	ANDERSON	YCS-26-90-40-SN	--
227	1	EA	YOKE PLATE, VEE CONFIGURATION, GALV, 40K	ANDERSON	93006-4004	--
232	2	EA	EXTENSION STRAP, GALV, 2-1/2 x 14 IN, 40K	ANDERSON	ES-40-7819-14	--
234	2	EA	EXTENSION STRAP, GALV, 2-1/2 x 36 IN, 40K	ANDERSON	ES-40-7819-36	--
242	2	EA	YOKE PLATE, ANGLE/ VEE CONFIGURATION, GALV, 30K	ANDERSON	YPC-30-12204	--
AERIAL SUSPENSION, 0° - 20° ANGLE - OHGW						
10	*	FT	AERIAL SHIELD WIRE, 7 NO. 8 A/W, DIA. 0.385 IN	AFL	--	20-5428
42C	2**	EA	SPIRAL VIBRATION DAMPER, 7 NO. 8 A/W, DIA. 0.385 IN	PREFORMED	5050104	22-2185
215A	1	EA	SUSP. CLAMP, AL, CLAMPING RANGE 0.20 - 0.62 IN, 17K	ANDERSON	HAS-62-N	11-1407
221	1	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO NO. 2 C/W)	BURNDY	YHO-2	11-3860
222	1	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO 7 NO. 8 A/W)	BURNDY	YHO-10	11-3868
AERIAL SUSPENSION, 0° - 20° ANGLE - OPGW						
21	*	FT	OPGW TYPE "E" FIBER OPTIC CABLE, 72 FIBER, DIA. 0.602 IN	AFL	DNO-8538 S4-83/42/602	--
42B	2**	EA	SPIRAL VIBRATION DAMPER, OPGW, DIA. 0.602 IN	PREFORMED	5050106	22-2181
54B	1	ASY	FIBER OPTIC SUSP. ASY, DIA. 0.602 IN, INCLUDES TAP FOR DIA. 1/2 IN LUG & GROUND BOLT	PREFORMED	4300114	11-1401
64	1	EA	GROUNDING LEAD, NO. #4 - 7 STRAND CU., DIA. 0.232 IN, 48 IN LENGTH, INCLUDES ONE SINGLE HOLE TERMINAL FOR DIA. 1/2 IN BOLT	PREFORMED	710010016	20-5490
71	2	EA	SIGN, WRAP AROUND, FIBER OPTIC CABLE, 4 x 7 IN	WILLIAM FRICK	SA2-BRUGGS-4X7	81-5504
164	1	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
CONDUCTOR ATTACHMENT						
101	4	EA	CROSSARM SPACER FITTING, TYPE C, FITS 5-1/8 x 7-1/2 IN CROSSARM	HUGHES	3414-C.10WF-140	--
102A	2	EA	BENT BOLT, GALV, DIA. 7/8 IN, 7-1/2 IN LENGTH, INCLUDES NUT & LOCKNUT	HUGHES	2722.2A	27-0300
159	6	EA	BONDING CLIP, STL. GALV, FOR 7/8 IN SQ. NUT	HUGHES	2727.8	25-1031
164	4	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
207	2	EA	GAIN GRID, BONDING, 4-1/2 x 9 IN, DIA. 31/32 IN MTG HOLES	HUGHES	1260-AB2	27-3231
250	2	EA	DEAD END TEE, GALV, DIA. 15/16 IN MTG & 1-1/4 IN STEM HOLES, 60K	HUGHES	2817-15	27-4505
265	4	EA	SQUARE HEAD BOLT, GALV, DIA. 7/8 IN, 13 UNC THREAD, INCLUDES SQUARE NUT, LENGTH AS NEEDED	HUGHES	B8XX-X	--
268	8	EA	LOCKNUT, GALV, SQ., 7/8 IN	HUGHES	MF80	27-3745
276	6	EA	NUT, GALV, SQ., 7/8 IN	HUGHES	N80	27-3770
280	4	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 7/8 IN BOLT	HUGHES	SLW2-80	27-4612
285	4	EA	WASHER, SQ. CURVED, 4 IN FOR DIA. 7/8 IN BOLT	MACLEAN	CW-44-7	27-4880
CROSSARM ATTACHMENT						
124	2	EA	CROSSARM, 5-1/8 x 7-1/2 IN, 53 FT 2-1/2 IN LENGTH, FOR TYPE EAR-3 STRUCTURE	HUGHES	C3939.9A-1L	--
160	2	EA	BONDING CLIP, STL. GALV, FOR 1 IN SQ. NUT	HUGHES	2727.10	25-1032
164	6	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
208	4	EA	GAIN GRID, CROSSARM, BONDING, 4 x 6-3/4 IN, DIA. 1-1/16 IN MTG HOLE	HUGHES	1262-BB	27-3255
269	4	EA	LOCKNUT, GALV, SQ., 1 IN	HUGHES	MF100	27-3700
278	4	EA	WASHER, SQ. FLAT, GALV, 4 x 4 x 1/2 IN, FOR DIA. 1 IN BOLT	HUGHES	SW4-100-1/2	27-4844
281	4	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 1 IN BOLT	HUGHES	SLW2-100	27-4614
289	2	EA	NUT, GALV, SQ., 1 IN	HUGHES	N100	27-3780
337	2	EA	THREADED DOUBLE ENDED ROD, GALV, DIA. 1 IN, 12 IN- 13 UNC THREAD EACH END, INCLUDES 2 SQUARE NUTS, LENGTH AS NEEDED	HUGHES	TR10XX-12-2N	--

NOTES:
1. OPGW ASSEMBLY IDENTIFIED ABOVE IS TYPICAL. ALTERNATE ASSEMBLIES MAY BE REQUIRED AS OPGW SPLICES OCCUR. WHEN IDENTIFIED ON THE STRUCTURE LIST, SUBSTITUTE OPGW ASSEMBLY AS SPECIFIED.
2. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.

SGC Engineering, LLC
a part of Senergy

TITLE: 345kV TRANSMISSION LINE
TYPE EAR-3 COMPACT TANGENT STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER 275025
DRAWING NUMBER 982-T345R-3B
REVISION A
SHEET NUMBER 1 OF 1

MATERIAL LIST

SHEET 2 OF 2

* QUANTITY AS REQUIRED
** ESTIMATED QUANTITY

ITEM NO.	QTY	UNIT OF MEASURE	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NO.	CMP STOCK CODE
TENSION BRACE & HEAD GUY ATTACHMENT						
10	75	FT	AERIAL SHIELD WIRE, 7 NO. 8 A/W, DIA. 0.385 IN	AFL	--	20-5428
110	3	EA	TURNBUCKLE, 7/8 x 27 IN (+/- 6 IN), JAW & ROD END FITTINGS, 35K	HUGHES	AS2545-D	27-4527
146	2	EA	POLE CAP, DIA. 19 IN, BLACK	OSMOSE	70-110-010-019	--
159	6	EA	BONDING CLIP, STL. GALV, FOR 7/8 IN SQ. NUT	HUGHES	2727.8	25-1031
164	8	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
202	8	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
206	2	EA	TWISTED CLIP, GALV, 1/2 IN PLATE, 32° BEND ANGLE	HUGHES	AS2276-32	27-2990
207	2	EA	GAIN GRID, BONDING, 4-1/2 x 9 IN, DIA. 31/32 IN MTG HOLES	HUGHES	1260-AB2	27-3231
209	6	EA	GUY GRIP, 7 NO. 8 ALUMOWELD	PREFORMED	AWDE-4122	25-0966
212	2	ASY	SHIELD WIRE SUPPORT BRACKET ASSEMBLY, DIA. 7/8 IN, INCLUDES DIA. 5/8 IN CHAIN LINK, ROD LENGTH AS NEEDED	HUGHES	C4770.3-XX	--
221	4	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO NO. 2 C/W)	BURNDY	YHO-2	11-3860
229	6	EA	GUY ROLLER, DUCTILE IRON, FOR 1 IN BOLT	HUGHES	28083	25-1375
250	2	EA	DEAD END TEE, GALV, DIA. 15/16 IN MTG & 1-1/4 IN STEM HOLES, 60K	HUGHES	2817-15	27-4505
251	2	EA	CLEVIS, GALV, DIA. 1-1/16 IN MTG & STEM HOLES, 6-3/4 IN LENGTH, 25K	HUGHES	AS2277-H2	27-2872
265	6	EA	SQUARE HEAD BOLT, GALV, DIA. 7/8 IN, 13 UNC THREAD, INCLUDES SQUARE NUT, LENGTH AS NEEDED	HUGHES	B8XX-X	--
268	8	EA	LOCKNUT, GALV, SQ., 7/8 IN	HUGHES	MF80	27-3745
276	8	EA	NUT, GALV, SQ., 7/8 IN	HUGHES	N80	27-3770
277	2	EA	SCREW, LAG, GALV, FETTER DRIVE PILOT POINT, 1/2 x 4 IN	MACLEAN	J8754P	27-2540
280	10	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 7/8 IN BOLT	HUGHES	SLW2-80	27-4612
285	10	EA	WASHER, SQ. CURVED, 4 IN FOR DIA. 7/8 IN BOLT	MACLEAN	CW-44-7	27-4880
329	2	EA	DRILLED BOLT, SQ. HEAD, GALV, DIA. 7/8 IN, 4-3/4 IN LENGTH, 2-3/4 IN- 13 UNC THREAD, INCLUDES COTTER PIN & SQUARE NUT	HUGHES	B8-4.75D-2.75	27-2300
CROSS BRACE ASSEMBLY						
89	1	ASY	6 x 6-3/4 IN LAM X-BRACE ASY, 21 FT C/C, INCLUDES CENTER CLAMP STRAP, ROD, GAIN, & DEAD END TEE	HUGHES	2123-21-0-MPRP	--
159	4	EA	BONDING CLIP, STL. GALV, FOR 7/8 IN SQ. NUT	HUGHES	2727.8	25-1031
164	4	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
265	8	EA	SQUARE HEAD BOLT, GALV, DIA. 7/8 IN, 13 UNC THREAD, INCLUDES SQUARE NUT, LENGTH AS NEEDED	HUGHES	B8XX-X	--
268	8	EA	LOCKNUT, GALV, SQ., 7/8 IN	HUGHES	MF80	27-3745
276	4	EA	NUT, GALV, SQ., 7/8 IN	HUGHES	N80	27-3770
280	8	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 7/8 IN BOLT	HUGHES	SLW2-80	27-4612
285	8	EA	WASHER, SQ. CURVED, 4 IN FOR DIA. 7/8 IN BOLT	MACLEAN	CW-44-7	27-4880
SIGNAGE						
70	1	EA	SIGN, FIBER OPTIC CABLE, 2 x 3 IN	TECH PRODUCTS	EL3KO063	81-5502
73	1	EA	POLE TAG, AL., 3 IN x 4 IN, SPECIFIC TO SECTION AND STRUCTURE NO.	TECH PRODUCTS	TBD	--
74	*	EA	EVERLAST AERIAL SIGNAGE TAG, 6 IN, FITS TYPE AHE605 AERIAL SIGNAGE BRACKET	TECH PRODUCTS	EL6XX-XX	--
76	*	EA	AERIAL SIGNAGE BRACKET, HORIZ. CONFIGURATION, AL., 3/4 IN ATTACH HOLES, FITS 6 IN SIGNAGE TAGS	TECH PRODUCTS	AHE605HP-H0.75	--
273	8	EA	NAIL, GALV, 2 IN	--	--	--
288	*	EA	WASHER, ROUND, STAINLESS STEEL, 1-1/4 IN FOR DIA. 3/8 - 1/2 IN BOLT	ALLIED BOLT	314102	27-4790
305	*	EA	SCREW, LAG, GALV, FETTER DRIVE REGULAR POINT, 3/8 x 2-1/2 IN	MACLEAN	J8742-1/2	27-2550
POLE BASE GROUNDING / BURIED GROUND WIRE						
8	*	FT	GROUND WIRE, NO. 2 AWG COPPER, 7 STRAND, DIA. 0.258 IN	--	--	20-5819
12	30**	FT	GROUND WIRE, NO. 2 AWG C/W, DIA. 0.258 IN	--	--	20-6605
141	4	EA	PLATE, POLE BEARING, GALV	MACLEAN	P325B-122	27-0110
159	2	EA	BONDING CLIP, STL. GALV, FOR 7/8 IN SQ. NUT	HUGHES	2727.8	25-1031
163	2	EA	GROUND CLAMP, BRONZE, NO. 2 AWG C/W TO DIA. 3/4 IN GROUND ROD	BURNDY	GRC34	11-2662
164	6**	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
166	2	EA	GROUND ROD, COPPERBONDED, DIA. 3/4 IN, 8 FT LENGTH	ERICO	613480	--
265	2	EA	SQUARE HEAD BOLT, GALV, DIA. 7/8 IN, 13 UNC THREAD, INCLUDES SQUARE NUT, LENGTH AS NEEDED	HUGHES	B8XX-X	--
268	2	EA	LOCKNUT, GALV, SQ., 7/8 IN	HUGHES	MF80	27-3745
276	2	EA	NUT, GALV, SQ., 7/8 IN	HUGHES	N80	27-3770
280	2	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 7/8 IN BOLT	HUGHES	SLW2-80	27-4612

NOTES:
1. BEARING PLATES SPECIFIED AS PART OF POLE BASE GROUNDING ASSEMBLY ARE TYPICAL. FOUNDATIONS AT POLE BASE MAY BE REQUIRED. WHEN IDENTIFIED IN THE CONSTRUCTION DOCUMENTS, SUBSTITUTE FOUNDATION ASSEMBLY AS SPECIFIED.
2. GROUND WIRE BENEATH GROUND SURFACE SHALL BE NO. 2 COPPER (ITEM #8) WHERE A PIPELINE IS LOCATED WITHIN THE SAME TRANSMISSION CORRIDOR. IN ALL OTHER LOCATIONS NOT OTHERWISE SPECIFIED, GROUND WIRE SHALL BE NO. 2 COPPERWELD (ITEM #12).
3. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.

SGC Engineering, LLC
a part of Senergy

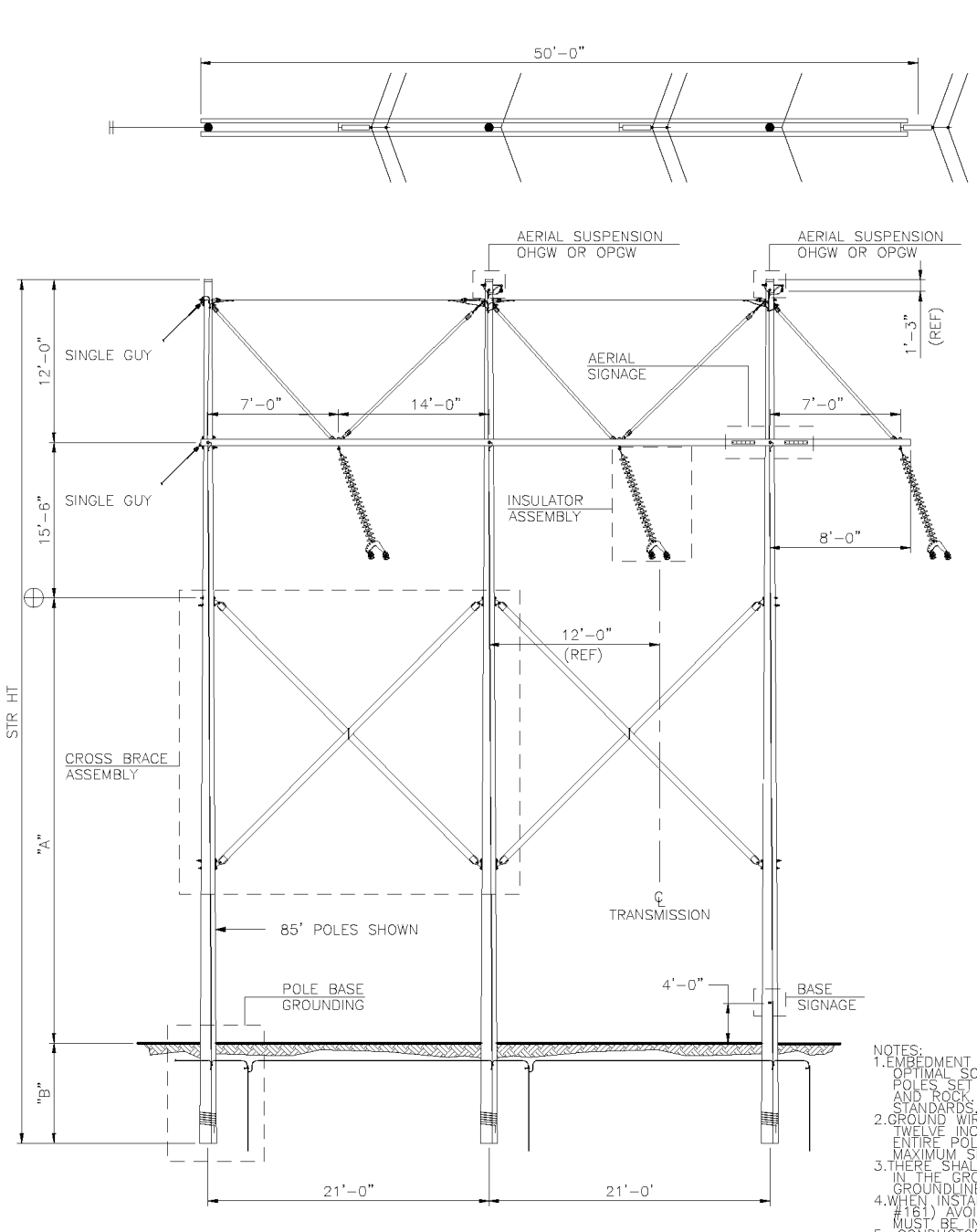
TITLE: 345kV TRANSMISSION LINE
TYPE EAR-3 COMPACT TANGENT STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER 275025
DRAWING NUMBER 982-T345R-3C
REVISION A
SHEET NUMBER 1 OF 1



DIMENSIONS		
STR HT	"A"	"B"
70'	29.5'	9.0'
75'	34.0'	9.5'
80'	38.5'	10.0'
85'	43.0'	10.5'
90'	47.5'	11.0'
95'	52.0'	11.5'
100'	56.5'	12.0'
105'	61.0'	12.5'
110'	65.5'	13.0'
115'	70.0'	13.5'
120'	74.5'	14.0'
125'	79.0'	14.5'

REFERENCE DRAWINGS

INSULATOR ASSEMBLY
982-T345R-32
AERIAL ATTACHMENT
982-T345R-37
CONDUCTOR ATTACHMENT
982-T345R-42
CROSSARM ATTACHMENT
982-T345R-46
TENSION BRACE & HEAD GUY ATTACHMENT
982-T345R-49
CROSS BRACE ASSEMBLY
982-T345R-53
GUY ATTACHMENT
982-T345R-54
GUY ASSEMBLIES
982-T345R-55
GUY LEADS & ARRANGEMENTS
982-T345R-61
AERIAL AND BASE SIGNAGE
982-T345R-64
POLE BASE GROUNDING
982-T345R-66
BURIED GROUND WIRE
982-T345R-68

NOTES:
1. EMBEDMENT DEPTHS (DIMENSION "B") ARE FOR OPTIMAL SOILS. DEPTHS MAY VARY DUE TO POLES SET IN ROCK OR PARTIALLY IN EARTH AND ROCK. REFER TO CMP POLE SETTING STANDARDS.
2. GROUND WIRE CLIPS (ITEM #161) SHALL HAVE TWELVE INCH (12") MAXIMUM SPACING FOR ENTIRE POLE LENGTH, AND SIX INCH (6") MAXIMUM SPACING ALONG CROSSARM LENGTH.
3. THERE SHALL BE NO MORE THAN ONE SPLICE IN THE GROUND WIRE (ITEM #12) ABOVE THE GROUNDLINE.
4. WHEN INSTALLING GROUND WIRE CLIPS (ITEM #161) AVOID CRACKS AND CHECKS. CLIPS MUST BE INSTALLED IN WOOD.
5. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
6. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

TITLE:
345kV TRANSMISSION LINE
TYPE EBR-1 0°-3° ANGLE STRUCTURE

PROJECT:
EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT:
EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER
275025

DRAWING NUMBER
982-T345R-6A

REVISION
A

SHEET NUMBER
1 OF 1

MATERIAL LIST

SHEET 1 OF 2

* QUANTITY AS REQUIRED
** ESTIMATED QUANTITY

ITEM NO.	QTY	UNIT OF MEASURE	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NO.	CMP STOCK CODE
1.XX	3	EA	ROUNDWOOD POLE, WOOD SPECIES, CLASS AND HEIGHT VARIES	--	--	--
12	500**	FT	GROUND WIRE, NO. 2 AWG C/W, DIA. 0.258 IN	--	--	20-6605
161	375**	EA	CLIP, BRONZE, FOR NO. 2 C/W NAIL	COOPER	5730-1	25-1033
162	375**	EA	COPPERWELD NAIL, 16D, 3-1/2 IN LENGTH	GHOLKAR	C9N350RN	25-1034
			INSULATOR ASSEMBLY, 0° - 3° ANGLE			
19	*	FT	1590 MCM, FALCON ACSR, 54/19 STRAND COND, DIA. 1.545 IN	SOUTHWIRE	--	20-4845
83	*	EA	VIBRATION DAMPER, STOCKBRIDGE TYPE, FITS 1590 MCM 54/19 STRD COND & AR	ACA	1708-19	--
87	6	EA	ARMOR ROD, EHV, FITS 1590 MCM, FALCON ACSR, 54/19 STRD COND, DIA. 1.545 IN	PREFORMED	AR-0512	--
181	*	EA	CONDUCTOR SPACER, 1590 MCM 54/19 "FALCON" ACSR (DIA. = 1.545 IN)	PREFORMED	CGTS-0123	--
201	3	EA	HOT LINE Y-CLEVIS BALL, GALV, 30K	ANDERSON	HYBC-30	27-2910
211	57	EA	INSULATOR, SUSP., PORCELAIN, NO. 70 GRAY, ANSI CLASS 52-5, 30K	NGK	30S295	--
213	3	EA	SOCKET Y-CLEVIS, GALV, INCLUDES SPHERE NUT, 30K	ANDERSON	SYC-30-SN	27-2900
214B	6	EA	SUSP. CLAMP, COND & AR, AL, CORONA FREE, CLAMPING RANGE 2.29 - 2.80 IN, 30K	ANDERSON	CFS-280-N	--
217	3	EA	YOKE PLATE, ANGLE, GALV, 50K	ANDERSON	YPC-50-9378	--
220	6	EA	Y-CLEVIS EYE, 90 DEG, GALV, INCLUDES SPHERE NUT, 40K	ANDERSON	YCS-26-90-40-SN	--
			AERIAL SUSPENSION, 0° - 20° ANGLE - OHGW			
10	*	FT	AERIAL SHIELD WIRE, 7 NO. 8 A/W, DIA. 0.385 IN	AFL	--	20-5428
42C	2**	EA	SPIRAL VIBRATION DAMPER, 7 NO. 8 A/W, DIA. 0.385 IN	PREFORMED	5050104	22-2185
215A	1	EA	SUSP. CLAMP, AL, CLAMPING RANGE 0.20 - 0.62 IN, 17K	ANDERSON	HAS-62-N	11-1407
221	1	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO NO. 2 C/W)	BURNDY	YHO-2	11-3860
222	1	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO 7 NO. 8 A/W)	BURNDY	YHO-10	11-3868
			AERIAL SUSPENSION, 0° - 20° ANGLE - OPGW			
21	*	FT	OPGW TYPE "E" FIBER OPTIC CABLE, 72 FIBER, DIA. 0.602 IN	AFL	DNO-8538 S4-83/42/602	--
42B	2**	EA	SPIRAL VIBRATION DAMPER, OPGW, DIA. 0.602 IN	PREFORMED	5050106	22-2181
54B	1	ASY	FIBER OPTIC SUSP. ASY, DIA. 0.602 IN, INCLUDES TAP FOR DIA. 1/2 IN LUG & GROUND BOLT	PREFORMED	4300114	11-1401
64	1	EA	GROUNDING LEAD, NO. #4 - 7 STRAND CU., DIA. 0.232 IN, 48 IN LENGTH, INCLUDES ONE SINGLE HOLE TERMINAL FOR DIA. 1/2 IN BOLT	PREFORMED	710010016	20-5490
71	2	EA	SIGN, WRAP AROUND, FIBER OPTIC CABLE, 4 x 7 IN	WILLIAM FRICK	SA2-BRUGGS-4X7	81-5504
164	1	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
			CONDUCTOR ATTACHMENT			
101	3	EA	CROSSARM SPACER FITTING, TYPE C, FITS 5-1/8 x 7-1/2 IN CROSSARM	HUGHES	3414-C.10WF-140	--
102A	1	EA	BENT BOLT, GALV, DIA. 7/8 IN, 7-1/2 IN LENGTH, INCLUDES NUT & LOCKNUT	HUGHES	2722.2A	27-0300
102B	2	EA	BENT STUD, GALV, DIA. 7/8 IN, 10 IN LENGTH, INCLUDES 2 NUTS & LOCKNUTS	HUGHES	2722.2B	27-0301
159	3	EA	BONDING CLIP, STL. GALV, FOR 7/8 IN SQ. NUT	HUGHES	2727.8	25-1031
164	2	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
206	2	EA	TWISTED CLIP, GALV, 1/2 IN PLATE, 32° BEND ANGLE	HUGHES	AS2276-32	27-2990
268	3	EA	LOCKNUT, GALV, SQ., 7/8 IN	HUGHES	MF80	27-3745
276	3	EA	NUT, GALV, SQ., 7/8 IN	HUGHES	N80	27-3770
			CROSSARM ATTACHMENT			
120	2	EA	CROSSARM, 5-1/8 x 7-1/2 IN, 69 FT 6 IN LENGTH, FOR TYPE EBR-1 STRUCTURE	HUGHES	C3939.8A	--
160	3	EA	BONDING CLIP, STL. GALV, FOR 1 IN SQ. NUT	HUGHES	2727.10	25-1032
164	8	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
208	6	EA	GAIN GRID, CROSSARM, BONDING, 4 x 6-3/4 IN, DIA. 1-1/16 IN MTG HOLE	HUGHES	1262-BB	27-3255
269	6	EA	LOCKNUT, GALV, SQ., 1 IN	HUGHES	MF100	27-3700
278	6	EA	WASHER, SQ. FLAT, GALV, 4 x 4 x 1/2 IN, FOR DIA. 1 IN BOLT	HUGHES	SW4-100-1/2	27-4844
281	6	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 1 IN BOLT	HUGHES	SLW2-100	27-4614
289	3	EA	NUT, GALV, SQ., 1 IN	HUGHES	N100	27-3780
337	3	EA	THREADED DOUBLE ENDED ROD, GALV, DIA. 1 IN, 12 IN- 13 UNC THREAD EACH END, INCLUDES 2 SQUARE NUTS, LENGTH AS NEEDED	HUGHES	TR10XX-12-2N	--
			CROSS BRACE ASSEMBLY			
91	2	ASY	5-1/8 x 7-1/2 IN LAM X-BRACE ASY, 28 FT C/C, INCLUDES CENTER CLAMP STRAP, ROD, GAIN, & DEAD END TEE	HUGHES	2093-28-0-MPRP	--
159	6	EA	BONDING CLIP, STL. GALV, FOR 7/8 IN SQ. NUT	HUGHES	2727.8	25-1031
164	6	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
265	8	EA	SQUARE HEAD BOLT, GALV, DIA. 7/8 IN, 13 UNC THREAD, INCLUDES SQUARE NUT, LENGTH AS NEEDED	HUGHES	B8XX-X	--
268	16	EA	LOCKNUT, GALV, SQ., 7/8 IN	HUGHES	MF80	27-3745
276	6	EA	NUT, GALV, SQ., 7/8 IN	HUGHES	N80	27-3770
280	12	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 7/8 IN BOLT	HUGHES	SLW2-80	27-4612
285	8	EA	WASHER, SQ. CURVED, 4 IN FOR DIA. 7/8 IN BOLT	MACLEAN	CW-44-7	27-4880
336	4	EA	THREADED DOUBLE ENDED ROD, GALV, DIA. 7/8 IN, 6 IN- 13 UNC THREAD EACH END, INCLUDES 2 SQUARE NUTS, LENGTH AS NEEDED	HUGHES	TR8XX-6-2N	--

NOTES:
1. OPGW ASSEMBLY IDENTIFIED ABOVE IS TYPICAL. ALTERNATE ASSEMBLIES MAY BE REQUIRED AS OPGW SPLICES OCCUR. WHEN IDENTIFIED ON THE STRUCTURE LIST, SUBSTITUTE OPGW ASSEMBLY AS SPECIFIED.
2. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
3. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

TITLE: 345kV TRANSMISSION LINE
TYPE EBR–1 0°–3° ANGLE STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER 275025
DRAWING NUMBER 982–T345R–6B
REVISION A
SHEET NUMBER 1 OF 1

MATERIAL LIST

SHEET 2 OF 2

* QUANTITY AS REQUIRED
** ESTIMATED QUANTITY

ITEM NO.	QTY	UNIT OF MEASURE	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NO.	CMP STOCK CODE
TENSION BRACE & HEAD GUY ATTACHMENT						
10	75	FT	AERIAL SHIELD WIRE, 7 NO. 8 A/W, DIA. 0.385 IN	AFL	--	20-5428
105	2	EA	TENSION BRACE, ADJUSTABLE, 3-3/8 x 4-3/8 IN, 240 IN LENGTH, 30K	HUGHES	2043-A240	--
110	2	EA	TURNBUCKLE, 7/8 x 27 IN (+/- 6 IN), JAW & ROD END FITTINGS, 35K	HUGHES	AS2545-D	27-4527
146	3	EA	POLE CAP, DIA. 19 IN, BLACK	OSMOSE	70-110-010-019	--
150	3	EA	VEE BRACE, 3-1/2 x 5-1/2 IN, 212 IN LENGTH	HUGHES	2038C-ACV-212	--
159	7	EA	BONDING CLIP, STL. GALV, FOR 7/8 IN SQ. NUT	HUGHES	2727.8	25-1031
164	8	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
189	1	EA	CLEVIS THIMBLE, GALV, DIA. 3/4 IN BOLT, 25K	MACLEAN	CT-88H	27-2902
207	3	EA	GAIN GRID, BONDING, 4-1/2 x 9 IN, DIA. 31/32 IN MTG HOLES	HUGHES	1260-AB2	27-3231
209	4	EA	GUY GRIP, 7 NO. 8 ALUMOWELD	PREFORMED	AWDE-4122	25-0966
212	2	ASY	SHIELD WIRE SUPPORT BRACKET ASSEMBLY, DIA. 7/8 IN, INCLUDES DIA. 5/8 IN CHAIN LINK, ROD LENGTH AS NEEDED	HUGHES	C4770.3-XX	--
221	4	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO NO. 2 C/W)	BURNDY	YHO-2	11-3860
229	3	EA	GUY ROLLER, DUCTILE IRON, FOR 1 IN BOLT	HUGHES	28083	25-1375
244	3	EA	GAIN GRID, 4 x 6-3/4 IN, BONDING, DIA. 1-1/16 IN MTG HOLES	HUGHES	1261-BB	--
250	3	EA	DEAD END TEE, GALV, DIA. 15/16 IN MTG & 1-1/4 IN STEM HOLES, 60K	HUGHES	2817-15	27-4505
251	3	EA	CLEVIS, GALV, DIA. 1-1/16 IN MTG & STEM HOLES, 6-3/4 IN LENGTH, 25K	HUGHES	AS2277-H2	27-2872
265	8	EA	SQUARE HEAD BOLT, GALV, DIA. 7/8 IN, 13 UNC THREAD, INCLUDES SQUARE NUT, LENGTH AS NEEDED	HUGHES	B8XX-X	--
268	10	EA	LOCKNUT, GALV, SQ., 7/8 IN	HUGHES	MF80	27-3745
276	9	EA	NUT, GALV, SQ., 7/8 IN	HUGHES	N80	27-3770
277	2	EA	SCREW, LAG, GALV, FETTER DRIVE PILOT POINT, 1/2 x 4 IN	MACLEAN	J8754P	27-2540
280	14	EA	WASHER, HELICAL LOCK, GALV. FOR DIA. 7/8 IN BOLT	HUGHES	SLW2-80	27-4612
285	9	EA	WASHER, SQ. CURVED, 4 IN FOR DIA. 7/8 IN BOLT	MACLEAN	CW-44-7	27-4880
329	4	EA	DRILLED BOLT, SQ. HEAD, GALV, DIA. 7/8 IN, 4-3/4 IN LENGTH, 2-3/4 IN- 13 UNC THREAD, INCLUDES COTTER PIN & SQUARE NUT	HUGHES	B8-4.75D-2.75	27-2300
338	1	EA	OVAL EYE NUT, FITS DIA. 7/8 IN BOLT	HUGHES	EN80	27-3445
GUY ATTACHMENT						
159	1	EA	BONDING CLIP, STL. GALV, FOR 7/8 IN SQ. NUT	HUGHES	2727.8	25-1031
164	1	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
207	1	EA	GAIN GRID, BONDING, 4-1/2 x 9 IN, DIA. 31/32 IN MTG HOLES	HUGHES	1260-AB2	27-3231
250	1	EA	DEAD END TEE, GALV, DIA. 15/16 IN MTG & 1-1/4 IN STEM HOLES, 60K	HUGHES	2817-15	27-4505
265	2	EA	SQUARE HEAD BOLT, GALV, DIA. 7/8 IN, 13 UNC THREAD, INCLUDES SQUARE NUT, LENGTH AS NEEDED	HUGHES	B8XX-X	--
268	2	EA	LOCKNUT, GALV, SQ., 7/8 IN	HUGHES	MF80	27-3745
276	1	EA	NUT, GALV, SQ., 7/8 IN	HUGHES	N80	27-3770
280	2	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 7/8 IN BOLT	HUGHES	SLW2-80	27-4612
285	2	EA	WASHER, SQ. CURVED, 4 IN FOR DIA. 7/8 IN BOLT	MACLEAN	CW-44-7	27-4880
GUY ASSEMBLY						
14	250**	FT	19 NO. 8 ALUMOWELD, DIA. 0.642 IN	AFL	--	25-2362
229	2	EA	GUY ROLLER, DUCTILE IRON, FOR 1 IN BOLT	HUGHES	28083	25-1375
230	2	EA	GUY GRIP, 19 NO. 8 ALUMOWELD	PREFORMED	BG-4176	--
231	2	EA	GUY MARKER, LOOP LOCK, 8' LENGTH, HIGH VISABILITY, YELLOW	PREFORMED	PG-5462	--
238	4	EA	ANCHOR SHACKLE, GALV, BNK, 3-3/4 IN LENGTH, 80K	ANDERSON	AS-60-BNK	27-4377
291	4	EA	WASHER, ROUND, GALV, 3 IN FOR DIA. 1 IN BOLT	HUGHES	RW3-100	--
SIGNAGE						
70	1	EA	SIGN, FIBER OPTIC CABLE, 2 x 3 IN	TECH PRODUCTS	EL3KO063	81-5502
73	1	EA	POLE TAG, AL., 3 IN x 4 IN, SPECIFIC TO SECTION AND STRUCTURE NO.	TECH PRODUCTS	TBD	--
74	*	EA	EVERLAST AERIAL SIGNAGE TAG, 6 IN, FITS TYPE AHE605 AERIAL SIGNAGE BRACKET	TECH PRODUCTS	EL6XX-XX	--
76	*	EA	AERIAL SIGNAGE BRACKET, HORIZ. CONFIGURATION, AL., 3/4 IN ATTACH HOLES, FITS 6 IN SIGNAGE TAGS	TECH PRODUCTS	AHE605HP-H0.75	--
273	8	EA	NAIL, GALV, 2 IN	--	--	--
288	*	EA	WASHER, ROUND, STAINLESS STEEL, 1-1/4 IN FOR DIA. 3/8 - 1/2 IN BOLT	ALLIED BOLT	314102	27-4790
305	*	EA	SCREW, LAG, GALV, FETTER DRIVE REGULAR POINT, 3/8 x 2-1/2 IN	MACLEAN	J8742-1/2	27-2550
POLE BASE GROUNDING / BURIED GROUND WIRE						
8	*	FT	GROUND WIRE, NO. 2 AWG COPPER, 7 STRAND, DIA. 0.258 IN	--	--	20-5819
12	45**	FT	GROUND WIRE, NO. 2 AWG C/W, DIA. 0.258 IN	--	--	20-6605
163	4	EA	GROUND CLAMP, BRONZE, NO. 2 AWG C/W TO DIA. 3/4 IN GROUND ROD	BURNDY	GRC34	11-2662
164	9**	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
166	4	EA	GROUND ROD, COPPERBONDED, DIA. 3/4 IN, 8 FT LENGTH	ERICO	613480	--

NOTES:
1. REFER TO THE FOLLOWING SHEETS FOR ANCHOR DETAILS AND MATERIAL LIST:
   SCREW ANCHOR AND BONDING ASSEMBLY 982-T345R-57
   ROCK ANCHOR AND BONDING ASSEMBLY 982-T345R-59
   DEADMAN ANCHOR AND BONDING ASSEMBLY 982-MISC-05
   BOTH ANCHOR ASSEMBLIES ARE LISTED, HOWEVER ONLY ONE ASSEMBLY WILL APPLY TO EACH STRUCTURE AS IDENTIFIED IN THE CONSTRUCTION DOCUMENTS.
2. GROUND WIRE BENEATH GROUND SURFACE SHALL BE NO. 2 COPPER (ITEM #8) WHERE A PIPELINE IS LOCATED WITHIN THE SAME TRANSMISSION CORRIDOR. IN ALL OTHER LOCATIONS NOT OTHERWISE SPECIFIED, GROUND WIRE SHALL BE NO. 2 COPPERWELD (ITEM #12).
3. FOUNDATIONS AT POLE BASE MAY BE REQUIRED. WHEN IDENTIFIED IN THE CONSTRUCTION DOCUMENTS, SUBSTITUTE POLE BASE GROUNDING ASSEMBLY WITH FOUNDATION ASSEMBLY AS SPECIFIED.
4. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
5. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

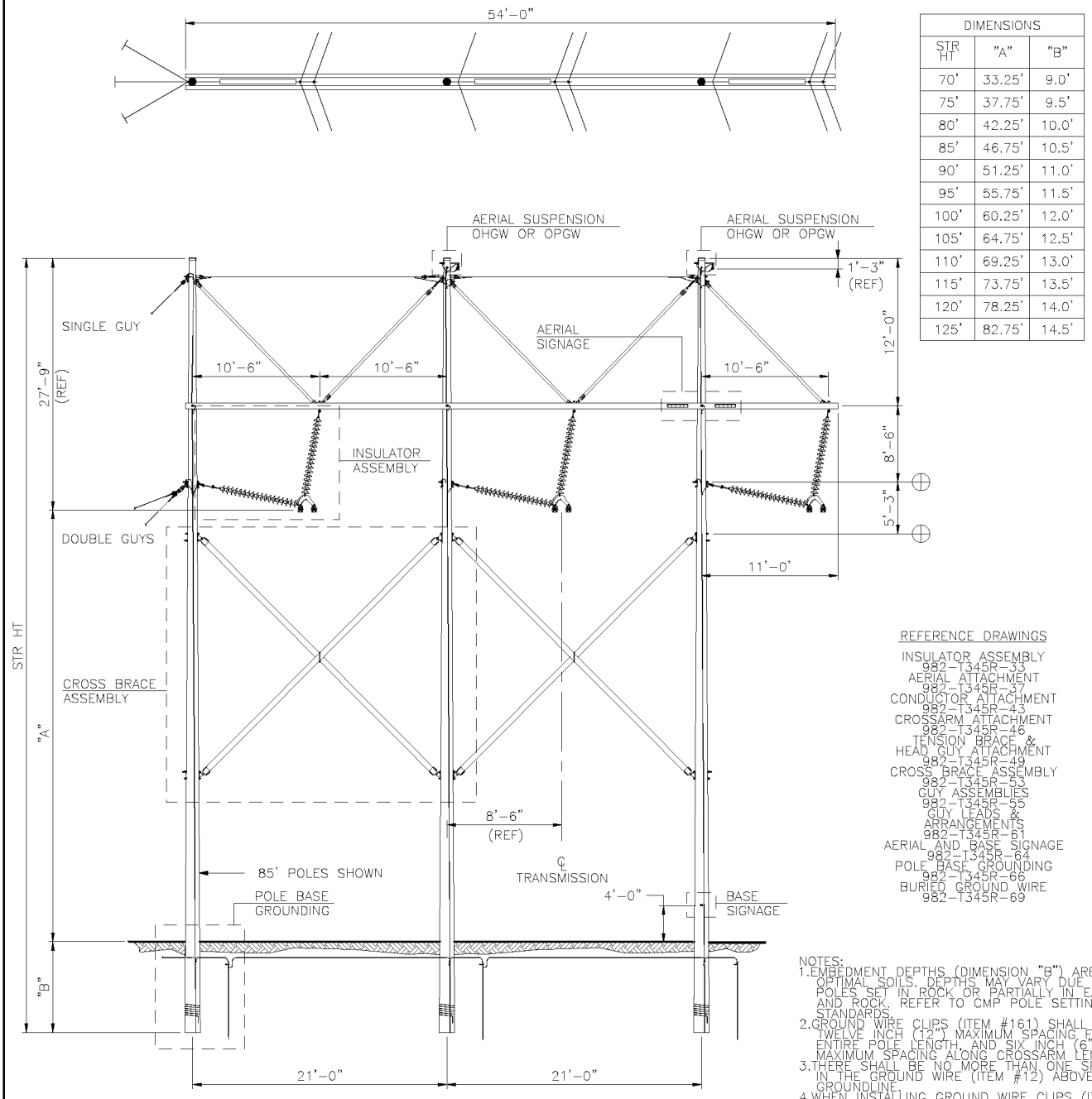
TITLE: 345kV TRANSMISSION LINE
TYPE EBR-1 0°-3° ANGLE STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER 275025
DRAWING NUMBER 982-T345R-6C
REVISION A
SHEET NUMBER 1 OF 1



DIMENSIONS		
STR HT	"A"	"B"
70'	33.25'	9.0'
75'	37.75'	9.5'
80'	42.25'	10.0'
85'	46.75'	10.5'
90'	51.25'	11.0'
95'	55.75'	11.5'
100'	60.25'	12.0'
105'	64.75'	12.5'
110'	69.25'	13.0'
115'	73.75'	13.5'
120'	78.25'	14.0'
125'	82.75'	14.5'

REFERENCE DRAWINGS

INSULATOR ASSEMBLY
982-T345R-33
AERIAL ATTACHMENT
982-T345R-37
CONDUCTOR ATTACHMENT
982-T345R-43
CROSSARM ATTACHMENT
982-T345R-46
TENSION BRACE & HEAD GUY ATTACHMENT
982-T345R-49
CROSS BRACE ASSEMBLY
982-T345R-53
GUY ASSEMBLIES
982-T345R-55
GUY LEADS & ARRANGEMENTS
982-T345R-61
AERIAL AND BASE SIGNAGE
982-T345R-64
POLE BASE GROUNDING
982-T345R-66
BURIED GROUND WIRE
982-T345R-69

NOTES:
1. EMBEDMENT DEPTHS (DIMENSION "B") ARE FOR OPTIMAL SOILS. DEPTHS MAY VARY DUE TO POLES SET IN ROCK OR PARTIALLY IN EARTH AND ROCK. REFER TO CMP POLE SETTING STANDARDS.
2. GROUND WIRE CLIPS (ITEM #161) SHALL HAVE TWELVE INCH (12") MAXIMUM SPACING FOR ENTIRE POLE LENGTH, AND SIX INCH (6") MAXIMUM SPACING ALONG CROSSARM LENGTH.
3. THERE SHALL BE NO MORE THAN ONE SPLICE IN THE GROUND WIRE (ITEM #12) ABOVE THE GROUNDLINE.
4. WHEN INSTALLING GROUND WIRE CLIPS (ITEM #161) AVOID CRACKS AND CHECKS. CLIPS MUST BE INSTALLED IN WOOD.
5. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
6. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

TITLE:
345kV TRANSMISSION LINE
TYPE EBR-2 3°-10° ANGLE STRUCTURE

PROJECT:
EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT:
EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER
275025

DRAWING NUMBER
982-T345R-7A

REVISION
A

SHEET NUMBER
1 OF 1

MATERIAL LIST

SHEET 1 OF 2

* QUANTITY AS REQUIRED
** ESTIMATED QUANTITY

ITEM NO.	QTY	UNIT OF MEASURE	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NO.	CMP STOCK CODE
1.XX	3	EA	ROUNDWOOD POLE, WOOD SPECIES, CLASS AND HEIGHT VARIES	--	--	--
12	500**	FT	GROUND WIRE, NO. 2 AWG C/W, DIA. 0.258 IN	--	--	20-6605
161	375**	EA	CLIP, BRONZE, FOR NO. 2 C/W NAIL	COOPER	5730-1	25-1033
162	375**	EA	COPPERWELD NAIL, 16D, 3-1/2 IN LENGTH	GHOLKAR	C9N350RN	25-1034
			INSULATOR ASSEMBLY, 3° - 20° ANGLE			
19	*	FT	1590 MCM, FALCON ACSR, 54/19 STRAND COND, DIA. 1.345 IN	SOUTHWIRE	--	20-4845
83	*	EA	VIBRATION DAMPER, STOCKBRIDGE TYPE, FITS 1590 MCM 54/19 STRD COND & AR	ACA	1708-19	--
87	6	EA	ARMOR ROD, EHV, FITS 1590 MCM, FALCON ACSR, 54/19 STRD COND, DIA. 1.345 IN	PREFORMED	AR-0512	--
181	*	EA	CONDUCTOR SPACER, 1590 MCM 54/19 "FALCON" ACSR (DIA. = 1.345 IN)	PREFORMED	CGTS-0123	--
201	6	EA	HOT LINE Y-CLEVIS BALL, GALV, 30K	ANDERSON	HYBC-30	27-2910
202	6	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
211	108	EA	INSULATOR, SUSP., PORCELAIN, NO. 70 GRAY, ANSI CLASS 52-5, 30K	NGK	30S295	--
213	6	EA	SOCKET Y-CLEVIS, GALV, INCLUDES SPHERE NUT, 30K	ANDERSON	SYC-30-SN	27-2900
214B	6	EA	SUSP. CLAMP, COND & AR, AL, CORONA FREE, CLAMPING RANGE 2.29 - 2.80 IN, 30K	ANDERSON	CFS-280-N	--
217	3	EA	YOKE PLATE, ANGLE, GALV, 50K	ANDERSON	YPC-50-9378	--
220	6	EA	Y-CLEVIS EYE, 90 DEG, GALV, INCLUDES SPHERE NUT, 40K	ANDERSON	YCS-26-90-40-SN	--
228	3	EA	EXTENSION STRAP, GALV, 2-1/2 x 12 IN, 40K	ANDERSON	ES-40-7819-12	--
			AERIAL SUSPENSION, 0° - 20° ANGLE - OHGW			
10	*	FT	AERIAL SHIELD WIRE, 7 NO. 8 A/W, DIA. 0.385 IN	AFL	--	20-5428
42C	2**	EA	SPIRAL VIBRATION DAMPER, 7 NO. 8 A/W, DIA. 0.385 IN	PREFORMED	5050104	22-2185
215A	1	EA	SUSP. CLAMP, AL, CLAMPING RANGE 0.20 - 0.62 IN, 17K	ANDERSON	HAS-62-N	11-1407
221	1	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO NO. 2 C/W)	BURNDY	YHO-2	11-3860
222	1	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO 7 NO. 8 A/W)	BURNDY	YHO-10	11-3868
			AERIAL SUSPENSION, 0° - 20° ANGLE - OPGW			
21	*	FT	OPGW TYPE "E" FIBER OPTIC CABLE, 72 FIBER, DIA. 0.602 IN	AFL	DNO-8538 SI-83/42/602	--
42B	2**	EA	SPIRAL VIBRATION DAMPER, OPGW, DIA. 0.602 IN	PREFORMED	5050106	22-2181
54B	1	ASY	FIBER OPTIC SUSP. ASY, DIA. 0.602 IN, INCLUDES TAP FOR DIA. 1/2 IN LUG & GROUND BOLT	PREFORMED	4300114	11-1401
64	1	EA	GROUNDING LEAD, NO. #4 - 7 STRAND CU., DIA. 0.232 IN, 48 IN LENGTH, INCLUDES ONE SINGLE HOLE TERMINAL FOR DIA. 1/2 IN BOLT	PREFORMED	710010016	20-5490
71	2	EA	SIGN, WRAP AROUND, FIBER OPTIC CABLE, 4 x 7 IN	WILLIAM FRICK	SA2-BRUGGS-4X7	81-5504
164	1	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
			CONDUCTOR ATTACHMENT			
101	3	EA	CROSSARM SPACER FITTING, TYPE C, FITS 5-1/8 x 7-1/2 IN CROSSARM	HUGHES	3414-C.10WF-140	--
102A	1	EA	BENT BOLT, GALV, DIA. 7/8 IN, 7-1/2 IN LENGTH, INCLUDES NUT & LOCKNUT	HUGHES	2722.2A	27-0300
102B	2	EA	BENT STUD, GALV, DIA. 7/8 IN, 10 IN LENGTH, INCLUDES 2 NUTS & LOCKNUTS	HUGHES	2722.2B	27-0301
159	6	EA	BONDING CLIP, STL. GALV, FOR 7/8 IN SQ. NUT	HUGHES	2727.8	25-1031
164	5	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
206	2	EA	TWISTED CLIP, GALV, 1/2 IN PLATE, 32° BEND ANGLE	HUGHES	AS2276-32	27-2990
207	4	EA	GAIN GRID, BONDING, 4-1/2 x 9 IN, DIA. 31/32 IN MTG HOLES	HUGHES	1260-AB2	27-3231
250	4	EA	DEAD END TEE, GALV, DIA. 15/16 IN MTG & 1-1/4 IN STEM HOLES, 60K	HUGHES	2817-15	27-4505
265	6	EA	SQUARE HEAD BOLT, GALV, DIA. 7/8 IN, 13 UNC THREAD, INCLUDES SQUARE NUT, LENGTH AS NEEDED	HUGHES	B8XX-X	--
268	9	EA	LOCKNUT, GALV, SQ., 7/8 IN	HUGHES	MF80	27-3745
276	6	EA	NUT, GALV, SQ., 7/8 IN	HUGHES	N80	27-3770
280	6	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 7/8 IN BOLT	HUGHES	SLW2-80	27-4612
285	4	EA	WASHER, SQ. CURVED, 4 IN FOR DIA. 7/8 IN BOLT	MACLEAN	CW-44-7	27-4830
			CROSSARM ATTACHMENT			
122	2	EA	CROSSARM, 5-1/8 x 7-1/2 IN, 71 FT 6 IN LENGTH, FOR TYPE EBR-2 OR 3 STRUCTURE	HUGHES	C3939.10A	74-0815
160	3	EA	BONDING CLIP, STL. GALV, FOR 1 IN SQ. NUT	HUGHES	2727.10	25-1032
164	8	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
208	6	EA	GAIN GRID, CROSSARM, BONDING, 4 x 6-3/4 IN, DIA. 1-1/16 IN MTG HOLE	HUGHES	1262-BB	27-3255
269	6	EA	LOCKNUT, GALV, SQ., 1 IN	HUGHES	MF100	27-3700
278	6	EA	WASHER, SQ. FLAT, GALV, 4 x 4 x 1/2 IN, FOR DIA. 1 IN BOLT	HUGHES	SW4-100-1/2	27-4844
281	6	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 1 IN BOLT	HUGHES	SLW2-100	27-4614
289	3	EA	NUT, GALV, SQ., 1 IN	HUGHES	N100	27-3750
337	3	EA	THREADED DOUBLE ENDED ROD, GALV, DIA. 1 IN, 12 IN- 13 UNC THREAD EACH END, INCLUDES 2 SQUARE NUTS, LENGTH AS NEEDED	HUGHES	TR10XX-12-2N	--

NOTES:
1. OPGW ASSEMBLY IDENTIFIED ABOVE IS TYPICAL. ALTERNATE ASSEMBLIES MAY BE REQUIRED AS OPGW SPLICES OCCUR. WHEN IDENTIFIED ON THE STRUCTURE LIST, SUBSTITUTE OPGW ASSEMBLY AS SPECIFIED.
2. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
3. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

TITLE: 345kV TRANSMISSION LINE
TYPE EBR-2 3°-10° ANGLE STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER 275025
DRAWING NUMBER 982-T345R-7B
REVISION A
SHEET NUMBER 1 OF 1

MATERIAL LIST

SHEET 2 OF 2

* QUANTITY AS REQUIRED
** ESTIMATED QUANTITY

ITEM NO.	QTY	UNIT OF MEASURE	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NO.	CMP STOCK CODE
			TENSION BRACE & HEAD GUY ATTACHMENT			
10	75	FT	AERIAL SHIELD WIRE, 7 NO. 8 A/W, DIA. 0.385 IN	AFL	–	20-5428
104	2	EA	TENSION BRACE, ADJUSTABLE, 3-3/8 x 4-3/8 IN, 220 IN LENGTH, 30K	HUGHES	2043-A220	--
110	2	EA	TURNBUCKLE, 7/8 x 27 IN (+/- 6 IN), JAW & ROD END FITTINGS, 35K	HUGHES	AS2545-D	27-4527
146	3	EA	POLE CAP, DIA. 19 IN, BLACK	OSMOSE	30-110-010-019	–
151	3	EA	VEE BRACE, 3-1/2 x 3-1/2 IN, 228 IN LENGTH	HUGHES	2038C-ACV-228	--
159	7	EA	BONDING CLIP, STL. GALV, FOR 7/8 IN SQ. NUT	HUGHES	27278	25-1031
164	8	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
189	1	EA	CLEVIS THIMBLE, GALV, DIA. 3/4 IN BOLT, 25K	MACLEAN	CT-58H	27-2902
207	3	EA	GAIN GRID, BONDING, 4-1/2 x 9 IN, DIA. 31/32 IN MTG HOLES	HUGHES	1360-ABJ	25-3251
209	8	EA	GUY GRIP, 7 NO. 8 ALUMOWELD	PREFORMED	AWDE-4122	25-0966
212	2	ASY	SHIELD WIRE SUPPORT BRACKET ASSEMBLY, DIA. 7/8 IN, INCLUDES DIA. 5/8 IN CHAIN LINK, ROD LENGTH AS NEEDED	HUGHES	C4730 3-XX	–
221	3	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO NO. 2 C/W)	BURNDY	YHO-2	11-3860
229	3	EA	GUY ROLLER, DUCTILE IRON, FOR 1 IN BOLT	HUGHES	28083	25-3375
244	3	EA	GAIN GRID, 4 x 6-3/4 IN, BONDING, DIA. 1-1/16 IN MTG HOLES	HUGHES	1261-BB	–
250	3	EA	DEAD END YEE, GALV, DIA. 15/16 IN MTG & 1-1/4 IN STEM HOLES, 60K	HUGHES	2817-15	27-4305
251	3	EA	CLEVIS, GALV, DIA. 1-1/16 IN MTG & STEM HOLES, 6-3/4 IN LENGTH, 25K	HUGHES	AS2227-N3	27-2872
265	8	EA	SQUARE HEAD BOLT, GALV, DIA. 7/8 IN, 13 UNC THREAD, INCLUDES SQUARE NUT, LENGTH AS NEEDED	HUGHES	B8XX-X	--
269	10	EA	LOCKNUT, GALV, SQ., 7/8 IN	HUGHES	MF80	27-3745
276	9	EA	NUT, GALV, SQ., 7/8 IN	HUGHES	N80	27-3770
277	2	EA	SCREW, LAG, GALV, FETTER DRIVE PILOT POINT, 1/2 x 4 IN	MACLEAN	JS754P	27-2540
280	14	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 7/8 IN BOLT	HUGHES	SLW2-80	27-4612
285	9	EA	WASHER, SQ. CURVED, 4 IN FOR DIA. 7/8 IN BOLT	MACLEAN	CW-44-7	27-4580
329	1	EA	DRILLED BOLT, SQ. HEAD, GALV, DIA. 7/8 IN, 4-3/4 IN LENGTH, 2-3/4 IN- 13 UNC THREAD, INCLUDES COTTER PIN & SQUARE NUT	HUGHES	B8-4.75D-2.75	27-2300
338	1	EA	OVAL EYE NUT, FITS DIA. 7/8 IN BOLT	HUGHES	EN80	27-3445
			CROSS BRACE ASSEMBLY			
91	2	ASY	5-1/8 x 7-1/2 IN LAM X-BRACE ASY, 36 FT C-C, INCLUDES CENTER CLAMP STRAP, ROD, GAIN, & DEAD END YEE	HUGHES	2093-38.0-MPRP	–
159	6	EA	BONDING CLIP, STL. GALV, FOR 7/8 IN SQ. NUT	HUGHES	27278	25-1031
164	6	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
265	8	EA	SQUARE HEAD BOLT, GALV, DIA. 7/8 IN, 13 UNC THREAD, INCLUDES SQUARE NUT, LENGTH AS NEEDED	HUGHES	B8XX-X	--
268	16	EA	LOCKNUT, GALV, SQ., 7/8 IN	HUGHES	MF80	27-3745
276	6	EA	NUT, GALV, SQ., 7/8 IN	HUGHES	N80	27-3770
280	12	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 7/8 IN BOLT	HUGHES	SLW2-80	27-4612
285	8	EA	WASHER, SQ. CURVED, 4 IN FOR DIA. 7/8 IN BOLT	MACLEAN	CW-44-7	27-4580
336	4	EA	THREADED DOUBLE ENDED ROD, GALV, DIA. 7/8 IN, 6 IN- 13 UNC THREAD EACH END, INCLUDES 2 SQUARE NUTS, LENGTH AS NEEDED	HUGHES	TR8XX-6-2N	–
			GUY ASSEMBLY			
14	350**	FT	19 NO. 8 ALUMOWELD, DIA. 0.642 IN	AFL	–	53-2362
216	1	EA	YOKE PLATE, GUYING, GALV, 80K	HUGHES	AS2355-H7	--
229	3	EA	GUY ROLLER, DUCTILE IRON, FOR 1 IN BOLT	HUGHES	28083	25-3375
230	3	EA	GUY GRIP, 19 NO. 8 ALUMOWELD	PREFORMED	BG-4176	--
231	3	EA	GUY MARKER, LOOP LOCK, 8' LENGTH, HIGH VISABILITY, YELLOW	PREFORMED	PG-5362	–
338	6	EA	ANCHOR SHACKLE, GALV, BNK, 3-3/4 IN LENGTH, 80K	ANDERSON	AS-60-BNK	27-4377
291	6	EA	WASHER, ROUND, GALV, 3 IN FOR DIA. 1 IN BOLT	HUGHES	RW1-100	--
			SIGNAGE			
70	1	EA	SIGN, FIBER OPTIC CABLE, 2 x 3 IN	TECH PRODUCTS	EL3KO063	81-5502
73	1	EA	POLE TAG, AL., 3 IN x 4 IN, SPECIFIC TO SECTION AND STRUCTURE NO.	TECH PRODUCTS	TBD	--
74	*	EA	EVERLAST AERIAL SIGNAGE TAG, 6 IN, FITS TYPE AHE603 AERIAL SIGNAGE BRACKET	TECH PRODUCTS	EL6NX-XX	–
76	*	EA	AERIAL SIGNAGE BRACKET, HORIZ. CONFIGURATION, AL., 3/4 IN ATTACH HOLES, FITS 6 IN SIGNAGE TAGS	TECH PRODUCTS	AHE603HP-H0.73	–
273	8	EA	NAIL, GALV, 2 IN	--	--	--
288	*	EA	WASHER, ROUND, STAINLESS STEEL, 1-1/4 IN FOR DIA. 3/8 - 1/2 IN BOLT	ALLIED BOLT	314102	27-4790
303	*	EA	SCREW, LAG, GALV, FETTER DRIVE REGULAR POINT, 3/8 x 3-1/2 IN	MACLEAN	JS742-1/2	27-2550
			POLE BASE GROUNDING / BURIED GROUND WIRE			
8	*	FT	GROUND WIRE, NO. 2 AWG COPPER, 7 STRAND, DIA. 0.258 IN	–	–	20-5819
12	45**	FT	GROUND WIRE, NO. 2 AWG C/W, DIA 0.258 IN	--	--	20-6605
165	5	EA	GROUND CLAMP, BRONZE, NO. 2 AWG C/W TO DIA. 3/4 IN GROUND ROD	BURNDY	GRC34	11-2662
164	9**	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
166	5	EA	GROUND ROD, COPPERBONDED, DIA. 3/4 IN, 8 FT LENGTH	ERICO	613480	--

NOTES:
1. REFER TO THE FOLLOWING SHEETS FOR ANCHOR DETAILS AND MATERIAL LIST:
   SCREW ANCHOR AND BONDING ASSEMBLY 982-T345R-57
   ROCK ANCHOR AND BONDING ASSEMBLY 982-T345R-59
   DEADMAN ANCHOR AND BONDING ASSEMBLY 982-MISC-05
   BOTH ANCHOR ASSEMBLIES ARE LISTED, HOWEVER ONLY ONE ASSEMBLY WILL APPLY TO EACH STRUCTURE AS IDENTIFIED IN THE CONSTRUCTION DOCUMENTS.
2. GROUND WIRE BENEATH GROUND SURFACE SHALL BE NO. 2 COPPER (ITEM #8) WHERE A PIPELINE IS LOCATED WITHIN THE SAME TRANSMISSION CORRIDOR. IN ALL OTHER LOCATIONS NOT OTHERWISE SPECIFIED, GROUND WIRE SHALL BE NO. 2 COPPERWELD (ITEM #12).
3. FOUNDATIONS AT POLE BASE MAY BE REQUIRED. WHEN IDENTIFIED IN THE CONSTRUCTION DOCUMENTS, SUBSTITUTE POLE BASE GROUNDING ASSEMBLY WITH FOUNDATION ASSEMBLY AS SPECIFIED.
4. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
5. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

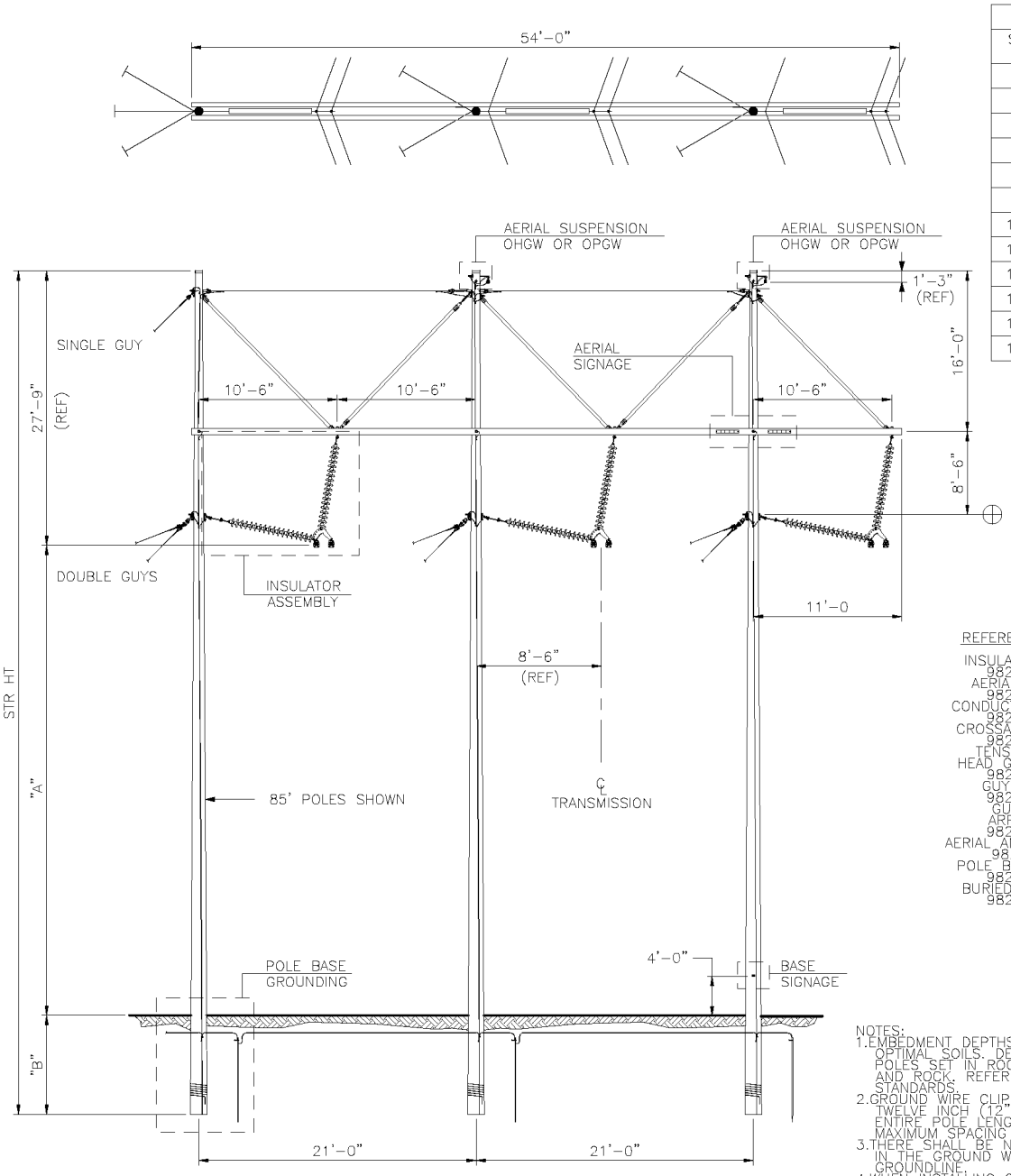
TITLE: 345kV TRANSMISSION LINE
TYPE EBR-2 3°-10° ANGLE STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGNED: DLH
APPD: TMH

SGC PROJECT NUMBER 275025
DRAWING NUMBER 982-T345R-7C
REVISION A
SHEET NUMBER 1 OF 1



DIMENSIONS		
STR HT	"A"	"B"
70'	33.25'	9.0'
75'	37.75'	9.5'
80'	42.25'	10.0'
85'	46.75'	10.5'
90'	51.25'	11.0'
95'	55.75'	11.5'
100'	60.25'	12.0'
105'	64.75'	12.5'
110'	69.25'	13.0'
115'	73.75'	13.5'
120'	78.25'	14.0'
125'	82.75'	14.5'

REFERENCE DRAWINGS

INSULATOR ASSEMBLY
982-T345R-33
AERIAL ATTACHMENT
982-T345R-37
CONDUCTOR ATTACHMENT
982-T345R-43
CROSSARM ATTACHMENT
982-T345R-46
TENSION BRACE &
HEAD GUY ATTACHMENT
982-T345R-49
GUY ASSEMBLIES
982-T345R-55
GUY LEADS &
ARRANGEMENTS
982-T345R-62
AERIAL AND BASE SIGNAGE
982-T345R-64
POLE BASE GROUNDING
982-T345R-66
BURIED GROUND WIRE
982-T345R-69

NOTES:
1. EMBEDMENT DEPTHS (DIMENSION "B") ARE FOR OPTIMAL SOILS. DEPTHS MAY VARY DUE TO POLES SET IN ROCK OR PARTIALLY IN EARTH AND ROCK. REFER TO CMP POLE SETTING STANDARDS.
2. GROUND WIRE CLIPS (ITEM #161) SHALL HAVE TWELVE INCH (12") MAXIMUM SPACING FOR ENTIRE POLE LENGTH, AND SIX INCH (6") MAXIMUM SPACING ALONG CROSSARM LENGTH.
3. THERE SHALL BE NO MORE THAN ONE SPLICE IN THE GROUND WIRE (ITEM #12) ABOVE THE GROUNDLINE.
4. WHEN INSTALLING GROUND WIRE CLIPS (ITEM #161) AVOID CRACKS AND CHECKS. CLIPS MUST BE INSTALLED IN WOOD.
5. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
6. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

TITLE:
345kV TRANSMISSION LINE
TYPE EBR-3 10°-20° ANGLE STRUCTURE

PROJECT:
EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT:
EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER
275025

DRAWING NUMBER
982-T345R-8A

REVISION
A

SHEET NUMBER
1 OF 1

MATERIAL LIST

SHEET 1 OF 2

* QUANTITY AS REQUIRED
** ESTIMATED QUANTITY

ITEM NO.	QTY	UNIT OF MEASURE	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NO.	CMP STOCK CODE
1 XX	3	EA	ROUNDWOOD POLE, WOOD SPECIES, CLASS AND HEIGHT VARIES	–	–	--
12	1000**	FT	GROUND WIRE, NO. 2 AWG CW, DIA. 0.258 IN	–	–	20-6605
161	375**	EA	CLIP, BRONZE, FOR NO. 2 CW NAIL	COOPER	5730-1	25-1033
162	375**	EA	COPPERWELD NAIL, 16D, 3-1/2 IN LENGTH	GHOLKAR	C9N350RN	25-1034
			INSULATOR ASSEMBLY, 5° - 20° ANGLE			
19	*	FT	1590 MCM, FALCON ACSR, 54/19 STRAND COND, DIA. 1.545 IN	SOUTHWIRE	--	20-4845
83	*	EA	VIBRATION DAMPER, STOCKBRIDGE TYPE, FITS 1590 MCM 54/19 STRD COND & AR	ACA	1708-19	--
87	6	EA	ARMOR ROD, EHV, FITS 1590 MCM, FALCON ACSR, 54/19 STRD COND, DIA. 1.545 IN	PREFORMED	AR-0512	--
181	*	EA	CONDUCTOR SPACER, 1590 MCM 54/19 "FALCON" ACSR (DIA. = 1.545 IN)	PREFORMED	CGTS-0123	--
201	6	EA	HOT LINE Y-CLEVIS BALL, GALV, 30K	ANDERSON	HYBC-30	27-2910
202	6	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
211	108	EA	INSULATOR, SUSP., PORCELAIN, NO. 70 GRAY, ANSI CLASS 52-5, 30K	NGK	3052P5	--
213	6	EA	SOCKET Y-CLEVIS GALV, INCLUDES SPHERE NUT, 30K	ANDERSON	SYC-30-SN	27-2900
214B	6	EA	SUSP. CLAMP, COND & AR, AL, CORONA FREE, CLAMPING RANGE 2.29 - 2.80 IN 30K	ANDERSON	CFS-280-N	--
217	3	EA	YOKE PLATE, ANGLE, GALV, 50K	ANDERSON	YPC-50-9378	--
220	6	EA	Y-CLEVIS EYE, 90 DEG, GALV, INCLUDES SPHERE NUT, 40K	ANDERSON	YCS-26-90-40-SN	--
226	3	EA	EXTENSION STRAP, GALV, 2-1/2 x 12 IN, 40K	ANDERSON	ES-40-7819-12	--
			AERIAL SUSPENSION, 0° - 20° ANGLE - OHGW			
10	*	FT	AERIAL SHIELD WIRE, 7 NO. 8 AW, DIA. 0.385 IN	AFL	–	20-5428
42C	2**	EA	SPIRAL VIBRATION DAMPER, 7 NO. 8 AW, DIA. 0.385 IN	PREFORMED	5050104	22-2185
215A	1	EA	SUSP. CLAMP, AL, CLAMPING RANGE 0.20 - 0.62 IN 17K	ANDERSON	HAS-62-N	11-1407
221	1	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 AW TO NO. 2 CW)	BURNDY	YHO-2	11-3560
222	1	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 AW TO 7 NO. 8 AW)	BURNDY	YHO-10	11-3565
			AERIAL SUSPENSION, 0° - 20° ANGLE - OPGW			
21	*	FT	OPGW TYPE "E" FIBER OPTIC CABLE, 72 FIBER, DIA. 0.602 IN	AFL	DNO-5538 S4-83/42/602	–
42B	2**	EA	SPIRAL VIBRATION DAMPER, OPGW, DIA. 0.602 IN	PREFORMED	5050106	22-2181
54B	1	ASY	FIBER OPTIC SUSP. ASY, DIA. 0.602 IN, INCLUDES TAP FOR DIA. 1/2 IN LUG & GROUND BOLT	PREFORMED	4300114	11-1401
64	1	EA	GROUNDING LEAD, NO. 4 - 7 STRAND CU, DIA. 0.232 IN, 48 IN LENGTH, INCLUDES ONE SINGLE HOLE TERMINAL FOR DIA. 1/2 IN BOLT	PREFORMED	710010016	20-5490
71	2	EA	SIGN, WRAP AROUND, FIBER OPTIC CABLE, 4 x 7 IN	WILLIAM FRICK	SA2-BRUGGS-4X7	81-5504
164	1	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG CW	ANDERSON	GC8002-LO	11-3712
			CONDUCTOR ATTACHMENT			
101	3	EA	CROSSARM SPACER FITTING, TYPE C, FITS 5-1/8 x 7-1/2 IN CROSSARM	HUGHES	3414-C.10WF-140	--
102A	1	EA	BENT BOLT, GALV, DIA. 7/8 IN, 7-1/2 IN LENGTH, INCLUDES NUT & LOCKNUT	HUGHES	2722.2A	27-0306
102B	2	EA	BENT STUD, GALV, DIA. 7/8 IN, 10 IN LENGTH, INCLUDES 2 NUTS & LOCKNUTS	HUGHES	2722.2B	27-0301
159	6	EA	BONDING CLIP, ST'L, GALV, FOR 7/8 IN SQ. NUT	HUGHES	2727.5	25-1031
164	5	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG CW	ANDERSON	GC8002-LO	11-3712
206	2	EA	TWISTED CLIP, GALV, 1/2 IN PLATE, 32° BEND ANGLE	HUGHES	AS2276-32	27-2999
207	6	EA	GAIN GRID, BONDING, 4-1/2 x 9 IN, DIA. 31/32 IN MTG HOLES	HUGHES	1260-AB2	27-3231
250	6	EA	DEAD END TEE, GALV, DIA. 15/16 IN MTG & 1-1/4 IN STEM HOLES, 60K	HUGHES	2817-15	27-4505
265	6	EA	SQUARE HEAD BOLT, GALV, DIA. 7/8 IN, 13 UNC THREAD, INCLUDES SQUARE NUT, LENGTH AS NEEDED	HUGHES	B8XX-X	--
268	9	EA	LOCKNUT, GALV, SQ., 7/8 IN	HUGHES	MF80	27-3745
276	6	EA	NUT, GALV, SQ., 7/8 IN	HUGHES	N80	27-3770
280	6	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 7/8 IN BOLT	HUGHES	SLW2-80	27-4612

NOTES:
1. OPGW ASSEMBLY IDENTIFIED ABOVE IS TYPICAL. ALTERNATE ASSEMBLIES MAY BE REQUIRED AS OPGW SPLICES OCCUR. WHEN IDENTIFIED ON THE STRUCTURE LIST, SUBSTITUTE OPGW ASSEMBLY AS SPECIFIED.
2. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
3. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

TITLE: 345kV TRANSMISSION LINE
TYPE EBR–3 10°–20° ANGLE STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER 275025
DRAWING NUMBER 982–T345R–88
REVISION A
SHEET NUMBER 1 OF 1

MATERIAL LIST

SHEET 2 OF 2

* QUANTITY AS REQUIRED
** ESTIMATED QUANTITY

ITEM NO.	QTY	UNIT OF MEASURE	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NO.	CMP STOCK CODE
			CROSSARM ATTACHMENT			
122	2	EA	CROSSARM, 5-1/8 x 7-1/2 IN, 71 FT 6 IN LENGTH, FOR TYPE EBR-2 OR 3 STRUCTURE	HUGHES	C3939.10A	74-0815
160	3	EA	BONDING CLIP, STL. GALV, FOR 1 IN SQ. NUT	HUGHES	2727.10	25-1032
164	8	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
208	6	EA	GAIN GRID, CROSSARM, BONDING, 4 x 6-3/4 IN, DIA. 1-1/16 IN MTG HOLE	HUGHES	1262-BB	27-3255
269	6	EA	LOCKNUT, GALV, SQ., 1 IN	HUGHES	MF100	27-3700
278	6	EA	WASHER, SQ. FLAT, GALV, 4 x 4 x 1/2 IN, FOR DIA. 1 IN BOLT	HUGHES	SW4-100-1/2	27-4844
281	6	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 1 IN BOLT	HUGHES	SLW2-100	27-4614
289	3	EA	NUT, GALV, SQ., 1 IN	HUGHES	N100	27-3780
337	3	EA	THREADED DOUBLE ENDED ROD, GALV, DIA. 1 IN, 12 IN- 13 UNC THREAD EACH END, INCLUDES 2 SQUARE NUTS, LENGTH AS NEEDED	HUGHES	TR10XX-12-2N	--
			TENSION BRACE & HEAD GUY ATTACHMENT			
10	75	FT	AERIAL SHIELD WIRE, 7 NO. 8 A/W, DIA. 0.385 IN	AFL	--	20-5428
104	2	EA	TENSION BRACE, ADJUSTABLE, 3-3/8 x 4-3/8 IN, 220 IN LENGTH, 30K	HUGHES	2043-A220	--
110	2	EA	TURNBUCKLE, 7/8 x 27 IN (+/- 6 IN), JAW & ROD END FITTINGS, 35K	HUGHES	AS2545-D	27-4527
146	3	EA	POLE CAP, DIA. 19 IN, BLACK	OSMOSE	70-110-010-019	--
151	3	EA	VEE BRACE, 3-1/2 x 5-1/2 IN. 228 IN LENGTH	HUGHES	2038C-ACV-228	--
159	7	EA	BONDING CLIP, STL. GALV, FOR 7/8 IN SQ. NUT	HUGHES	2727.8	25-1031
164	8	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
189	1	EA	CLEVIS THIMBLE, GALV, DIA. 3/4 IN BOLT, 25K	MACLEAN	CT-88H	27-2902
207	3	EA	GAIN GRID, BONDING, 4-1/2 x 9 IN, DIA. 31/32 IN MTG HOLES	HUGHES	1260-AB2	27-3231
209	4	EA	GUY GRIP, 7 NO. 8 ALUMOWELD	PREFORMED	AWDE-4122	25-0966
212	2	ASY	SHIELD WIRE SUPPORT BRACKET ASSEMBLY, DIA. 7/8 IN, INCLUDES DIA. 5/8 IN CHAIN LINK, ROD LENGTH AS NEEDED	HUGHES	C4770.3-XX	--
221	4	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO NO. 2 C/W)	BURNDY	YHO-2	11-3860
229	3	EA	GUY ROLLER, DUCTILE IRON, FOR 1 IN BOLT	HUGHES	28083	25-1375
244	3	EA	GAIN GRID, 4 x 6-3/4 IN, BONDING, DIA. 1-1/16 IN MTG HOLES	HUGHES	1261-BB	--
250	3	EA	DEAD END TEE, GALV, DIA. 15/16 IN MTG & 1-1/4 IN STEM HOLES, 60K	HUGHES	2817-15	27-4505
251	3	EA	CLEVIS, GALV, DIA. 1-1/16 IN MTG & STEM HOLES, 6-3/4 IN LENGTH, 25K	HUGHES	AS2277-H2	27-2872
265	8	EA	SQUARE HEAD BOLT, GALV, DIA. 7/8 IN, 13 UNC THREAD, INCLUDES SQUARE NUT, LENGTH AS NEEDED	HUGHES	B8XX-X	--
268	10	EA	LOCKNUT, GALV, SQ., 7/8 IN	HUGHES	MF80	27-3745
276	9	EA	NUT, GALV, SQ., 7/8 IN	HUGHES	N80	27-3770
277	2	EA	SCREW, LAG, GALV, FETTER DRIVE PILOT POINT, 1/2 x 4 IN	MACLEAN	J8754P	27-2540
280	14	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 7/8 IN BOLT	HUGHES	SLW2-80	27-4612
285	9	EA	WASHER, SQ. CURVED, 4 IN FOR DIA. 7/8 IN BOLT	MACLEAN	CW-44-7	27-4880
329	4	EA	DRILLED BOLT, SQ. HEAD, GALV, DIA. 7/8 IN, 4-3/4 IN LENGTH, 2-3/4 IN- 13 UNC THREAD, INCLUDES COTTER PIN & SQUARE NUT	HUGHES	B8-4.75D-2.75	27-2300
338	1	EA	OVAL EYE NUT, FITS DIA. 7/8 IN BOLT	HUGHES	EN80	27-3445
			GUY ASSEMBLY			
14	750**	FT	19 NO. 8 ALUMOWELD, DIA. 0.642 IN	AFL	--	25-2362
216	3	EA	YOKE PLATE, GUYING, GALV, 80K	HUGHES	AS2355-H7	--
229	7	EA	GUY ROLLER, DUCTILE IRON, FOR 1 IN BOLT	HUGHES	28083	25-1375
230	7	EA	GUY GRIP, 19 NO. 8 ALUMOWELD	PREFORMED	BG-4176	--
231	7	EA	GUY MARKER, LOOP LOCK, 8' LENGTH, HIGH VISABILITY, YELLOW	PREFORMED	PG-5462	--
238	20	EA	ANCHOR SHACKLE, GALV, BNK, 3-3/4 IN LENGTH, 80K	ANDERSON	AS-60-BNK	27-4377
291	14	EA	WASHER, ROUND, GALV, 3 IN FOR DIA. 1 IN BOLT	HUGHES	RW3-100	--
			SIGNAGE			
70	1	EA	SIGN, FIBER OPTIC CABLE, 2 x 3 IN	TECH PRODUCTS	EL3KO063	81-5502
73	1	EA	POLE TAG, AL., 3 IN x 4 IN, SPECIFIC TO SECTION AND STRUCTURE NO.	TECH PRODUCTS	TBD	--
74	*	EA	EVERLAST AERIAL SIGNAGE TAG, 6 IN, FITS TYPE AHE605 AERIAL SIGNAGE BRACKET	TECH PRODUCTS	EL6XX-XX	--
76	*	EA	AERIAL SIGNAGE BRACKET, HORIZ. CONFIGURATION, AL., 3/4 IN ATTACH HOLES, FITS 6 IN SIGNAGE TAGS	TECH PRODUCTS	AHE605HP-H0.75	--
273	8	EA	NAIL, GALV, 2 IN	--	--	--
288	*	EA	WASHER, ROUND, STAINLESS STEEL, 1-1/4 IN FOR DIA. 3/8 - 1/2 IN BOLT	ALLIED BOLT	314102	27-4790
305	*	EA	SCREW, LAG, GALV, FETTER DRIVE REGULAR POINT, 3/8 x 2-1/2 IN	MACLEAN	J8742-1/2	27-2550
			POLE BASE GROUNDING / BURIED GROUND WIRE			
8	*	FT	GROUND WIRE, NO. 2 AWG COPPER, 7 STRAND, DIA. 0.258 IN	--	--	20-5819
12	45**	FT	GROUND WIRE, NO. 2 AWG C/W, DIA. 0.258 IN	--	--	20-6605
163	9	EA	GROUND CLAMP, BRONZE, NO. 2 AWG C/W TO DIA. 3/4 IN GROUND ROD	BURNDY	GRC34	11-2662
164	11**	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
166	9	EA	GROUND ROD, COPPERBONDED, DIA. 3/4 IN, 8 FT LENGTH	ERICO	613480	--

NOTES:
1. REFER TO THE FOLLOWING SHEETS FOR ANCHOR DETAILS AND MATERIAL LIST:
   SCREW ANCHOR AND BONDING ASSEMBLY 982-T345R-57
   ROCK ANCHOR AND BONDING ASSEMBLY 982-T345R-59
   DEADMAN ANCHOR AND BONDING ASSEMBLY 982-MISC-05
   BOTH ANCHOR ASSEMBLIES ARE LISTED, HOWEVER ONLY ONE ASSEMBLY WILL APPLY TO EACH STRUCTURE AS IDENTIFIED IN THE CONSTRUCTION DOCUMENTS.
2. GROUND WIRE BENEATH GROUND SURFACE SHALL BE NO. 2 COPPER (ITEM #8) WHERE A PIPELINE IS LOCATED WITHIN THE SAME TRANSMISSION CORRIDOR. IN ALL OTHER LOCATIONS NOT OTHERWISE SPECIFIED, GROUND WIRE SHALL BE NO. 2 COPPERWELD (ITEM #12).
3. FOUNDATIONS AT POLE BASE MAY BE REQUIRED. WHEN IDENTIFIED IN THE CONSTRUCTION DOCUMENTS, SUBSTITUTE POLE BASE GROUNDING ASSEMBLY WITH FOUNDATION ASSEMBLY AS SPECIFIED.
4. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
5. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

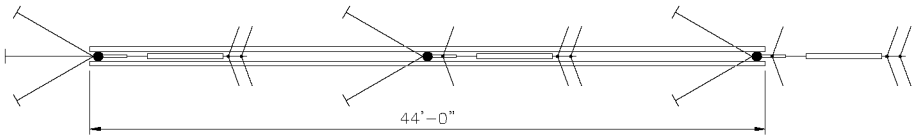
TITLE: 345kV TRANSMISSION LINE
TYPE EBR-3 10°-20° ANGLE STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

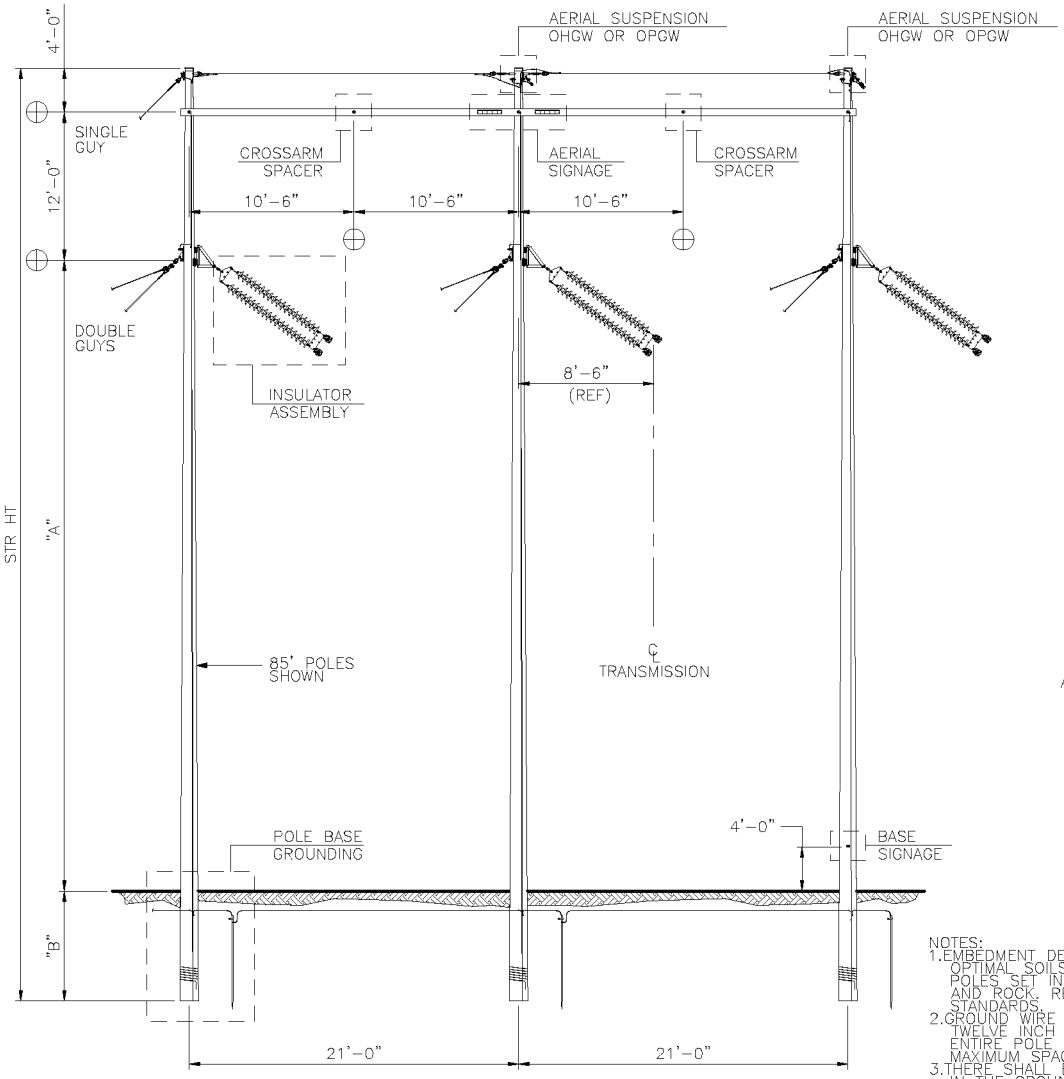
CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER 275025
DRAWING NUMBER 982-T345R-8C
REVISION A
SHEET NUMBER 1 OF 1



DIMENSIONS		
STR HT	"A"	"B"
70'	43.5'	9.0'
75'	48.0'	9.5'
80'	52.5'	10.0'
85'	57.0'	10.5'
90'	61.5'	11.0'
95'	66.0'	11.5'
100'	70.5'	12.0'
105'	75.0'	12.5'
110'	79.5'	13.0'
115'	84.0'	13.5'
120'	88.5'	14.0'
125'	93.0'	14.5'



REFERENCE DRAWINGS

INSULATOR ASSEMBLY
982-T345R-34
AERIAL ATTACHMENT
982-T345R-38
CONDUCTOR ATTACHMENT
982-T345R-44
CROSSARM ATTACHMENT
982-T345R-46
CROSSARM SPACER
982-T345R-46
HEAD GUY ATTACHMENT
982-T345R-50
GUY ASSEMBLIES
982-T345R-55
GUY LEADS & ARRANGEMENTS
982-T345R-62
AERIAL AND BASE SIGNAGE
982-T345R-64
POLE BASE GROUNDING
982-T345R-66
BURIED GROUND WIRE
982-T345R-70

NOTES:
1. EMBEDMENT DEPTHS (DIMENSION "B") ARE FOR OPTIMAL SOILS. DEPTHS MAY VARY DUE TO POLES SET IN ROCK OR PARTIALLY IN EARTH AND ROCK. REFER TO CMP POLE SETTING STANDARDS.
2. GROUND WIRE CLIPS (ITEM #161) SHALL HAVE TWELVE INCH (12") MAXIMUM SPACING FOR ENTIRE POLE LENGTH, AND SIX INCH (6") MAXIMUM SPACING ALONG CROSSARM LENGTH.
3. THERE SHALL BE NO MORE THAN ONE SPLICE IN THE GROUND WIRE (ITEM #12) ABOVE THE GROUND LINE.
4. WHEN INSTALLING GROUND WIRE CLIPS (ITEM #161) AVOID CRACKS AND CHECKS. CLIPS MUST BE INSTALLED IN WOOD.
5. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
6. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

TITLE:
345kV TRANSMISSION LINE
TYPE ECR-1 20°-30° ANGLE STRUCTURE

PROJECT:
EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT:
EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER
275025

DRAWING NUMBER
982-T345R-11A

REVISION
A

SHEET NUMBER
1 OF 1

MATERIAL LIST

SHEET 1 OF 2

* QUANTITY AS REQUIRED
** ESTIMATED QUANTITY

ITEM NO.	QTY	UNIT OF MEASURE	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NO.	CMP STOCK CODE
1.XX	3	EA	ROUNDWOOD POLE, WOOD SPECIES, CLASS AND HEIGHT VARIES	--	--	--
12	1000**	FT	GROUND WIRE, NO. 2 AWG C/W, DIA. 0.258 IN	--	--	20-6605
161	375**	EA	CLIP, BRONZE, FOR NO. 2 C/W NAIL	COOPER	5730-1	25-1033
162	375**	EA	COPPERWELD NAIL, 16D, 3-1/2 IN LENGTH	GHOLKAR	C9N350RN	25-1034
INSULATOR ASSEMBLY, 20° - 30° ANGLE						
19	*	FT	1590 MCM, FALCON ACSR, 54/19 STRAND COND, DIA. 1.545 IN	SOUTHWIRE	--	20-4845
83	*	EA	VIBRATION DAMPER, STOCKBRIDGE TYPE, FITS 1590 MCM 54/19 STRD COND & AR	ACA	1708-19	--
87	6	EA	ARMOR ROD, EHV, FITS 1590 MCM, FALCON ACSR, 54/19 STRD COND, DIA. 1.545 IN	PREFORMED	AR-0512	--
181	*	EA	CONDUCTOR SPACER, 1590 MCM 54/19 "FALCON" ACSR (DIA. = 1.545 IN)	PREFORMED	CGTS-0123	--
201	6	EA	HOT LINE Y-CLEVIS BALL, GALV, 30K	ANDERSON	HYBC-30	27-2910
211	114	EA	INSULATOR, SUSP., PORCELAIN, NO. 70 GRAY, ANSI CLASS 52-5, 30K	NGK	30S295	--
213	6	EA	SOCKET Y-CLEVIS, GALV, INCLUDES SPHERE NUT, 30K	ANDERSON	SYC-30-SN	27-2900
214B	6	EA	SUSP. CLAMP, COND & AR, AL, CORONA FREE, CLAMPING RANGE 2.29 - 2.80 IN, 30K	ANDERSON	CFS-280-N	--
220	6	EA	Y-CLEVIS EYE, 90 DEG, GALV, INCLUDES SPHERE NUT, 40K	ANDERSON	YCS-26-90-40-SN	--
224	3	EA	YOKE PLATE, TRIANGULAR, GALV, 80K	ANDERSON	YPD-80-18475	27-4132
225	3	EA	YOKE PLATE, RECTANGULAR, GALV, 60K	ANDERSON	YPR-60-19401	--
226	3	EA	CHAIN LINK, GALV, DIA. 7/8 IN, 4 IN LENGTH, 80K	ANDERSON	LK-80	27-3375
238	6	EA	ANCHOR SHACKLE, GALV, BNK, 3-3/4 IN LENGTH, 80K	ANDERSON	AS-60-BNK	27-4377
AERIAL SUSPENSION, 20° - 45° ANGLE - OHGW						
10	*	FT	AERIAL SHIELD WIRE, 7 NO. 8 A/W, DIA. 0.385 IN	AFL	--	20-5428
42C	2**	EA	SPIRAL VIBRATION DAMPER, 7 NO. 8 A/W, DIA. 0.385 IN	PREFORMED	5050104	22-2185
63C	1	EA	AGS DBL SUSP. ASY, 7 NO. 8 A/W, DIA. 0.385 IN	PREFORMED	AGS-8805	--
68	2	EA	CLEVIS EYE, GALV, 15K	PREFORMED	CE-5259	--
69	1	EA	YOKE PLATE, DOUBLE AGS, 12 IN SPACING, 30K	PREFORMED	YP-5907	--
202	2	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
221	1	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO NO. 2 C/W)	BURNDY	YHO-2	11-3860
222	1	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO 7 NO. 8 A/W)	BURNDY	YHO-10	11-3868
AERIAL SUSPENSION, 20° - 45° ANGLE - OPGW						
21	*	FT	OPGW TYPE "E" FIBER OPTIC CABLE, 72 FIBER, DIA. 0.602 IN	AFL	DNO-8538 S4-83/42/602	--
42B	2**	EA	SPIRAL VIBRATION DAMPER, OPGW, DIA. 0.602 IN	PREFORMED	5050106	22-2181
63B	1	ASY	FIBER OPTIC DBL SUSP. ASY, DIA. 0.602 IN, INCLUDES TWO CLEVIS-EYES, YOKE PLATE, AND TAP FOR DIA. 1/2 IN LUG & GROUND BOLT	PREFORMED	4300214CEYP	11-1403
65	1	EA	GROUNDING LEAD, CU. #4 - 7 STRAND CU., DIA. 0.232 IN, 72 IN LENGTH, INCLUDES ONE SINGLE HOLE TERMINAL FOR DIA. 1/2 IN BOLT	PREFORMED	710013558	--
71	2	EA	SIGN, WRAP AROUND, FIBER OPTIC CABLE, 4 x 7 IN	WILLIAM FRICK	SA2-BRUGGS-4X7	81-5504
164	1	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
202	2	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
CONDUCTOR ATTACHMENT						
164	3	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
247	3	ASY	SWINGING ANGLE BRACKET ASSEMBLY, GALV, 40K, INCLUDES U-PLATE, DEADEND TEE, GAINS, DIA. 1-1/8 IN HEX BOLTS, NUTS, LOCKNUTS, WASHERS, & BONDING CLIP	HUGHES	1796-X1.5-MPRP	--

NOTES:
1. OPGW ASSEMBLY IDENTIFIED ABOVE IS TYPICAL. ALTERNATE ASSEMBLIES MAY BE REQUIRED AS OPGW SPLICES OCCUR. WHEN IDENTIFIED ON THE STRUCTURE LIST, SUBSTITUTE OPGW ASSEMBLY AS SPECIFIED.
2. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
3. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

TITLE: 345kV TRANSMISSION LINE
TYPE ECR-1 20°-30° ANGLE STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER 275025
DRAWING NUMBER 982-T345R-11B
REVISION A
SHEET NUMBER 1 OF 1

MATERIAL LIST

SHEET 2 OF 2

* QUANTITY AS REQUIRED
** ESTIMATED QUANTITY

ITEM NO.	QTY	UNIT OF MEASURE	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NO.	CMP STOCK CODE
CROSSARM ATTACHMENT & CROSSARM SPACER						
125	2	EA	CROSSARM, 5-1/8 x 7-1/2 IN 61 FT-6 IN LENGTH, FOR TYPE ECR STRUCTURE	HUGHES	C3939 7B	74-0845
160	5	EA	BONDING CLIP STL. GALV, FOR 1 IN SQ. NUT	HUGHES	2727.10	25-1032
164	9	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC3002-LO	11-3712
208	6	EA	GAIN GRID, CROSSARM, BONDING, 4 x 6-3/4 IN, DIA. 1-1/16 IN MTG HOLE	HUGHES	1262-BB	27-3255
269	10	EA	LOCKNUT, GALV, SQ., 1 IN	HUGHES	MF100	27-3700
278	14	EA	WASHER, SQ FLAT, GALV, 4 x 4 x 1/2 IN, FOR DIA. 1 IN BOLT	HUGHES	SW4-100-1/2	27-4844
281	10	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 1 IN BOLT	HUGHES	SLW2-100	27-4614
289	13	EA	NUT, GALV, SQ., 1 IN	HUGHES	N100	27-3780
337	5	EA	THREADED DOUBLE ENDED ROD, GALV, DIA. 1 IN, 12 IN- 13 UNC THREAD EACH END, INCLUDES 2 SQUARE NUTS, LENGTH AS NEEDED	HUGHES	TR10XX-12-2N	–
HEAD GUY ATTACHMENT						
10	75	FT	AERIAL SHIELD WIRE, 7 NO. 8 A/W, DIA. 0.385 IN	AFL	–	20-5428
110	2	EA	TURNBUCKLE, 7/8 x 27 IN (+/- 6 IN), JAW & ROD END FITTINGS, 35K	HUGHES	AS2545-D	27-4527
146	3	EA	POLE CAP, DIA. 19 IN, BLACK	OSMOSE	70-110-010-019	–
159	6	EA	BONDING CLIP, STL. GALV, FOR 7/8 IN SQ. NUT	HUGHES	2727.8	25-1031
164	7	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC3002-LO	11-3712
189	1	EA	CLEVIS THIMBLE, GALV, DIA. 3/4 IN BOLT, 25K	MACLEAN	CT-88H	27-2902
207	3	EA	GAIN GRID, BONDING, 4-1/2 x 9 IN, DIA. 31/32 IN MTG HOLES	HUGHES	1260-AB2	27-3231
209	4	EA	GUY GRIP, 7 NO. 8 ALUMOWELD	PREFORMED	AWDE-4122	25-0966
221	4	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO NO. 2 C/W)	BURNDY	YHO-2	11-3860
229	3	EA	GUY ROLLER, DUCTILE IRON, FOR 1 IN BOLT	HUGHES	28083	25-1375
250	3	EA	DEAD END TEE, GALV, DIA. 15/16 IN MTG & 1-1/4 IN STEM HOLES, 60K	HUGHES	2817-15	27-4505
251	3	EA	CLEVIS, GALV, DIA. 1-1/16 IN MTG & STEM HOLES, 6-3/4 IN LENGTH, 25K	HUGHES	AS2277-H2	27-2872
265	9	EA	SQUARE HEAD BOLT, GALV, DIA. 7/8 IN, 13 UNC THREAD, INCLUDES SQUARE NUT, LENGTH AS NEEDED	HUGHES	B8XX-X	–
268	9	EA	LOCKNUT, GALV, SQ., 7/8 IN	HUGHES	MF80	27-3745
276	6	EA	NUT, GALV, SQ., 7/8 IN	HUGHES	N80	27-3770
280	13	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 7/8 IN BOLT	HUGHES	SLW2-80	27-4612
285	12	EA	WASHER, SQ. CURVED, 4 IN FOR DIA. 7/8 IN BOLT	MACLEAN	CW-44-7	27-4880
329	4	EA	DRILLED BOLT, SQ. HEAD, GALV, DIA. 7/8 IN, 4-3/4 IN LENGTH, 2-3/4 IN- 13 UNC THREAD, INCLUDES COTTER PIN & SQUARE NUT	HUGHES	B8-4.75D-2.75	27-2300
338	1	EA	OVAL EYE NUT, FITS DIA. 7/8 IN BOLT	HUGHES	EN80	27-3445
GUY ASSEMBLY						
14	750**	FT	19 NO. 8 ALUMOWELD, DIA. 0.642 IN	AFL	–	25-2562
216	3	EA	YOKE PLATE, GUYENG, GALV, 80K	HUGHES	AS2355-H7	–
229	7	EA	GUY ROLLER, DUCTILE IRON, FOR 1 IN BOLT	HUGHES	28083	25-1375
230	7	EA	GUY GRIP, 19 NO. 8 ALUMOWELD	PREFORMED	BG-4176	–
231	7	EA	GUY MARKER, LOOP LOCK, 5' LENGTH, HIGH VISABILITY, YELLOW	PREFORMED	PG-5462	–
238	20	EA	ANCHOR SHACKLE, GALV, BNK, 3-3/4 IN LENGTH, 80K	ANDERSON	AS-60-BNK	27-4377
291	14	EA	WASHER, ROUND, GALV, 3 IN FOR DIA. 1 IN BOLT	HUGHES	RW3-100	–
SIGNAGE						
70	1	EA	SIGN, FIBER OPTIC CABLE, 2 x 3 IN	TECH PRODUCTS	EL3KO063	81-5502
73	1	EA	POLE TAG, AL., 3 IN x 4 IN, SPECIFIC TO SECTION AND STRUCTURE NO.	TECH PRODUCTS	TBD	–
74	*	EA	EVERLAST AERIAL SIGNAGE TAG, 6 IN, FITS TYPE AHE60S AERIAL SIGNAGE BRACKET	TECH PRODUCTS	EL6XX-XX	–
76	*	EA	AERIAL SIGNAGE BRACKET, HORIZ. CONFIGURATION, AL., 3/4 IN ATTACH HOLES, FITS 6 IN SIGNAGE TAGS	TECH PRODUCTS	AHE606HP-H0.75	–
273	8	EA	NAIL, GALV, 2 IN	–	–	–
288	*	EA	WASHER, ROUND, STAINLESS STEEL, 1-1/4 IN FOR DIA. 3/8 - 1/2 IN BOLT	ALLIED BOLT	314102	27-4790
305	*	EA	SCREW, LAG, GALV, FETTER DRIVE REGULAR POINT, 3/8 x 2-1/2 IN	MACLEAN	J8742-1/2	27-2550
POLE BASE GROUNDING / BURIED GROUND WIRE						
8	*	FT	GROUND WIRE, NO. 2 AWG COPPER, 7 STRAND, DIA. 0.258 IN	–	–	20-5819
12	45**	FT	GROUND WIRE, NO. 2 AWG C/W, DIA. 0.258 IN	–	–	20-6605
163	9	EA	GROUND CLAMP, BRONZE, NO. 2 AWG C/W TO DIA. 3/4 IN GROUND ROD	BURNDY	GRC34	11-2662
164	11**	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC3002-LO	11-3712
166	9	EA	GROUND ROD, COPPERBONDED, DIA. 3/4 IN, 8 FT LENGTH	ERICO	613480	–

NOTES:
1. REFER TO THE FOLLOWING SHEETS FOR ANCHOR DETAILS AND MATERIAL LIST:
   SCREW ANCHOR AND BONDING ASSEMBLY 982–T345R–57
   ROCK ANCHOR AND BONDING ASSEMBLY 982–T345R–59
   DEADMAN ANCHOR AND BONDING ASSEMBLY 982–MISC–05
   BOTH ANCHOR ASSEMBLIES ARE LISTED, HOWEVER ONLY ONE ASSEMBLY WILL APPLY TO EACH STRUCTURE AS IDENTIFIED IN THE CONSTRUCTION DOCUMENTS.
2. GROUND WIRE BENEATH GROUND SURFACE SHALL BE NO. 2 COPPER (ITEM #8) WHERE A PIPELINE IS LOCATED WITHIN THE SAME TRANSMISSION CORRIDOR. IN ALL OTHER LOCATIONS NOT OTHERWISE SPECIFIED, GROUND WIRE SHALL BE NO. 2 COPPERWELD (ITEM #12).
3. FOUNDATIONS AT POLE BASE MAY BE REQUIRED. WHEN IDENTIFIED IN THE CONSTRUCTION DOCUMENTS, SUBSTITUTE POLE BASE GROUNDING ASSEMBLY WITH FOUNDATION ASSEMBLY AS SPECIFIED.
4. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
5. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

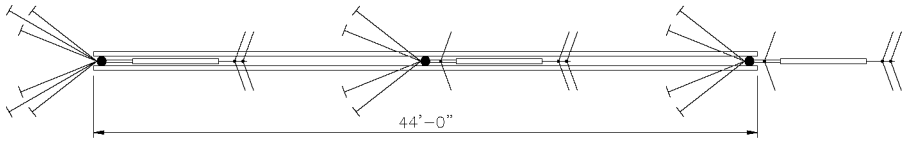
TITLE: 345kV TRANSMISSION LINE
TYPE ECR–1 20°–30° ANGLE STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

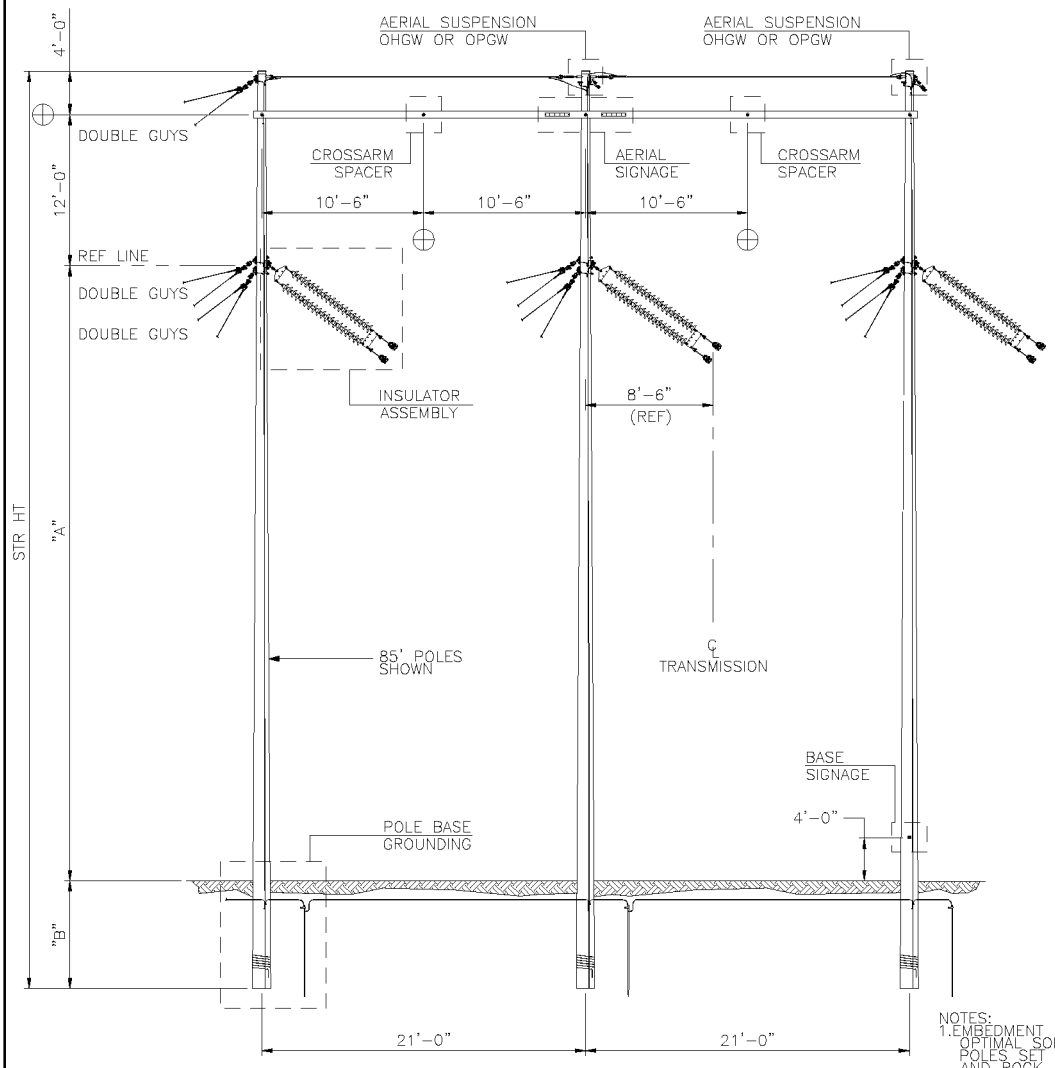
CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER: 275025
DRAWING NUMBER: 982–T345R–11C
REVISION: A
SHEET NUMBER: 1 OF 1



DIMENSIONS		
STR HT	"A"	"B"
70'	43.0'	9.0'
75'	47.5'	9.5'
80'	52.0'	10.0'
85'	56.5'	10.5'
90'	61.0'	11.0'
95'	65.5'	11.5'
100'	70.0'	12.0'
105'	74.5'	12.5'
110'	79.0'	13.0'
115'	83.5'	13.5'
120'	88.0'	14.0'
125'	92.5'	14.5'



REFERENCE DRAWINGS

INSULATOR ASSEMBLY
982-T345R-35
AERIAL ATTACHMENT
982-T345R-38
CONDUCTOR ATTACHMENT
982-T345R-44
CROSSARM ATTACHMENT
982-T345R-46
CROSSARM SPACER
982-T345R-46
HEAD GUY ATTACHMENT
982-T345R-50
GUY ASSEMBLIES
982-T345R-55
GUY LEADS & ARRANGEMENTS
982-T345R-63
AERIAL AND BASE SIGNAGE
982-T345R-64
POLE BASE GROUNDING
982-T345R-66
BURIED GROUND WIRE
982-T345R-70

NOTES:
1. EMBEDMENT DEPTHS (DIMENSION "B") ARE FOR OPTIMAL SOILS. DEPTHS MAY VARY DUE TO POLES SET IN ROCK OR PARTIALLY IN EARTH AND ROCK. REFER TO CMP POLE SETTING STANDARDS.
2. GROUND WIRE CLIPS (ITEM #161) SHALL HAVE TWELVE INCH (12") MAXIMUM SPACING FOR ENTIRE POLE LENGTH, AND SIX INCH (6") MAXIMUM SPACING ALONG CROSSARM LENGTH.
3. THERE SHALL BE NO MORE THAN ONE SPLICE IN THE GROUND WIRE (ITEM #12) ABOVE THE GROUNDLINE.
4. WHEN INSTALLING GROUND WIRE CLIPS (ITEM #161) AVOID CRACKS AND CHECKS. CLIPS MUST BE INSTALLED IN WOOD.
5. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
6. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

TITLE:
345kV TRANSMISSION LINE
TYPE ECR-2 30°-45° ANGLE STRUCTURE

PROJECT:
EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT:
EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER
275025

DRAWING NUMBER
982-T345R-12A

REVISION
A

SHEET NUMBER
1 OF 1

MATERIAL LIST

SHEET 1 OF 2

* QUANTITY AS REQUIRED
** ESTIMATED QUANTITY

ITEM NO.	QTY	UNIT OF MEASURE	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NO.	CMP STOCK CODE
LXX	3	EA	ROUNDWOOD POLE, WOOD SPECIES, CLASS AND HEIGHT VARIES	–	–	–
12	1000**	FT	GROUND WIRE, NO. 2 AWG C/W, DIA. 0.258 IN	–	–	20-6605
161	375**	EA	CLIP, BRONZE, FOR NO. 2 C/W NAIL	COOPER	5730-1	25-1033
162	375**	EA	COPPERWELD NAIL, 16D, 3-1/2 IN LENGTH	GHOLKAR	C9N350RN	25-1034
			INSULATOR ASSEMBLY, 30° - 45° ANGLE			
10	*	FT	1590 MCM, FALCON ACSR, 54/19 STRAND COND, DIA. 1.545 IN	SOUTHWIRE	–	20-4845
82	*	EA	VIBRATION DAMPER, STOCKBRIDGE TYPE, FITS 1590 MCM 54/19 STRD COND	ACA	1708-14	–
87	6	EA	ARMOR ROD, EHV, FITS 1590 MCM, FALCON ACSR, 54/19 STRD COND, DIA. 1.545 IN	PREFORMED	AR-0512	–
181	*	EA	CONDUCTOR SPACER, 1590 MCM 54/19 "FALCON" ACSR (DIA. = 1.545 IN)	PREFORMED	CGTS-0123	–
184	6	EA	YOKE PLATE, DOUBLE AGS, 37 IN LENGTH, 50K	PREFORMED	YP-5913	–
201	6	EA	HOT LINE Y-CLEVIS BALL, GALV, 30K	ANDERSON	HYBC-30	27-2910
202	12	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
204	12	EA	CLEVIS EYE, GALV, INCLUDES SPHERE NUT & BNK, 25K	ANDERSON	CA-24-13-BNK-SN	–
211	114	EA	INSULATOR, SUSP., PORCELAIN, NO. 70 GRAY, ANSI CLASS 52-5, 30K	NGK	30S295	–
213	6	EA	SOCKET Y-CLEVIS, GALV, INCLUDES SPHERE NUT, 30K	ANDERSON	SYC-30-SN	27-2900
214B	12	EA	SUSP. CLAMP, COND & AR, AL, CORONA FREE, CLAMPING RANGE 2.29 - 2.80 IN, 30K	ANDERSON	CFS-280-N	–
224	3	EA	YOKE PLATE, TRIANGULAR, GALV, 80K	ANDERSON	YPD-80-18475	27-4132
225	3	EA	YOKE PLATE, RECTANGULAR, GALV, 60K	ANDERSON	YPR-60-19401	–
226	3	EA	CHAIN LINK, GALV, DIA. 7/8 IN, 4 IN LENGTH, 80K	ANDERSON	LK-80	27-3375
238	6	EA	ANCHOR SHACKLE, GALV, BNK, 3-3/4 IN LENGTH, 80K	ANDERSON	AS-60-BNK	27-4377
			AERIAL SUSPENSION, 20° - 45° ANGLE - OHGW			
10	*	FT	AERIAL SHIELD WIRE, 7 NO. 8 A/W, DIA. 0.385 IN	AFL	–	20-5428
42C	2**	EA	SPIRAL VIBRATION DAMPER, 7 NO. 8 A/W, DIA. 0.385 IN	PREFORMED	5050104	22-2155
63C	1	EA	AGS DBL SUSP. ASY, 7 NO. 8 A/W, DIA. 0.385 IN	PREFORMED	AGS-8805	–
68	2	EA	CLEVIS EYE, GALV, 15K	PREFORMED	CE-5259	–
69	1	EA	YOKE PLATE, DOUBLE AGS, 12 IN SPACING, 30K	PREFORMED	YP-5907	–
202	2	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
221	1	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO NO. 2 C/W)	BURNDY	YHO-2	11-3560
222	1	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO 7 NO. 8 A/W)	BURNDY	YHO-10	11-3568
			AERIAL SUSPENSION, 20° - 45° ANGLE - OPGW			
21	*	FT	OPGW TYPE "E" FIBER OPTIC CABLE, 72 FIBER, DIA. 0.602 IN	AFL	DNO-8538 S4-83/42/602	–
42B	2**	EA	SPIRAL VIBRATION DAMPER, OPGW, DIA. 0.602 IN	PREFORMED	5050106	22-2181
63B	1	ASY	FIBER OPTIC DBL SUSP. ASY, DIA. 0.602 IN, INCLUDES TWO CLEVIS-EYES, YOKE PLATE, AND TAP FOR DIA. 1/2 IN LUG & GROUND BOLT	PREFORMED	4300214CEYP	11-1403
65	1	EA	GROUNDING LEAD, CU. #4 - 7 STRAND CU., DIA. 0.232 IN, 72 IN LENGTH, INCLUDES ONE SINGLE HOLE TERMINAL FOR DIA. 1/2 IN BOLT	PREFORMED	710013558	–
71	2	EA	SIGN, WRAP AROUND, FIBER OPTIC CABLE, 4 x 7 IN	WILLIAM FRICK	SA2-BRUGGS-4X7	51-5504
164	1	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GCS002-LO	11-3712
202	2	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
			CONDUCTOR ATTACHMENT			
111	9	EA	DEAD END TEE, HEAVY, DIA. 1-1/8 IN MTG & STEM HOLES, 70K	HUGHES	A2132-A1	–
160	3	EA	BONDING CLIP, STL. GALV, FOR 1 IN SQ. NUT	HUGHES	2727.10	25-1032
164	3	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GCS002-LO	11-3712
244	18	EA	GAIN GRID, 4 x 6-3/4 IN, BONDING, DIA. 1-1/16 IN MTG HOLES	HUGHES	1261-BB	–
266	12	EA	SQUARE HEAD BOLT, GALV, DIA. 1 IN, 13 UNC THREAD, INCLUDES SQUARE NUT, LENGTH AS NEEDED	HUGHES	B10XX-X	–
269	12	EA	LOCKNUT, GALV, SQ., 1 IN	HUGHES	MF100	27-3700
281	12	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 1 IN BOLT	HUGHES	SLW2-100	27-4614
283	6	EA	WASHER, SQ. CURVED, 4 IN FOR DIA. 1 IN BOLT	HUGHES	CW100-3/8	27-4884
289	3	EA	NUT, GALV, SQ., 1 IN	HUGHES	N100	27-3780

NOTES:
1 OPGW ASSEMBLY IDENTIFIED ABOVE IS TYPICAL. ALTERNATE ASSEMBLIES MAY BE REQUIRED AS OPGW SPLICES OCCUR. WHEN IDENTIFIED ON THE STRUCTURE LIST, SUBSTITUTE OPGW ASSEMBLY AS SPECIFIED.
2. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
3. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

TITLE: 345kV TRANSMISSION LINE
TYPE ECR–2 30°–45° ANGLE STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER: 275025
DRAWING NUMBER: 9B2–T345R–12B
REVISION: A
SHEET NUMBER: 1 OF 1

MATERIAL LIST

SHEET 2 OF 2

* QUANTITY AS REQUIRED
** ESTIMATED QUANTITY

ITEM NO.	QTY	UNIT OF MEASURE	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NO.	CMP STOCK CODE
			CROSSARM ATTACHMENT & CROSSARM SPACER			
125	2	EA	CROSSARM, 5-1/8 x 7-1/2 IN, 61 FT-6 IN LENGTH, FOR TYPE ECR STRUCTURE	HUGHES	C3939.7B	74-0845
160	5	EA	BONDING CLIP, STL. GALV, FOR 1 IN SQ. NUT	HUGHES	2727.10	25-1032
164	9	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
208	6	EA	GAIN GRID, CROSSARM, BONDING, 4 x 6-3/4 IN, DIA. 1-1/16 IN MTG HOLE	HUGHES	1262-BB	27-3255
269	10	EA	LOCKNUT, GALV, SQ., 1 IN	HUGHES	MF100	27-3766
278	14	EA	WASHER, SQ. FLAT, GALV, 4 x 4 x 1/2 IN, FOR DIA. 1 IN BOLT	HUGHES	SW4-100-1/2	27-4844
281	10	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 1 IN BOLT	HUGHES	SLW2-100	27-4614
289	13	EA	NUT, GALV, SQ., 1 IN	HUGHES	N100	27-3780
337	5	EA	THREADED DOUBLE ENDED ROD, GALV, DIA. 1 IN, 12 IN- 13 UNC THREAD EACH END, INCLUDES 2 SQUARE NUTS, LENGTH AS NEEDED	HUGHES	TR10XX-12-2N	–
			HEAD GUY ATTACHMENT			
10	75	FT	AERIAL SHIELD WIRE, 7 NO. 8 AW, DIA. 0.385 IN	AFL	–	20-5428
110	2	EA	TURNBUCKLE, 7/8 x 27 IN (+/- 6 IN), JAW & ROD END FITTINGS, 35K	HUGHES	AS2545-D	27-4527
146	3	EA	POLE CAP, DIA. 19 IN, BLACK	OSMOSE	70-110-010-019	–
159	6	EA	BONDING CLIP, STL. GALV, FOR 7/8 IN SQ. NUT	HUGHES	2727.8	25-1031
164	7	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
189	1	EA	CLEVIS THIMBLE, GALV, DIA. 3/4 IN BOLT, 25K	MACLEAN	CT-88H	27-2902
207	3	EA	GAIN GRID, BONDING, 4-1/2 x 9 IN, DIA. 31/32 IN MTG HOLES	HUGHES	1260-AB2	27-3231
209	4	EA	GUY GRIP, 7 NO. 8 ALUMOWELD	PREFORMED	AWDE-4122	25-0966
221	4	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO NO. 2 C/W)	BURNDY	YHO-2	11-3860
239	3	EA	GUY ROLLER, DUCTILE IRON, FOR 1 IN BOLT	HUGHES	28083	25-1375
250	3	EA	DEAD END TEE, GALV, DIA. 15/16 IN MTG & 1-1/4 IN STEM HOLES, 60K	HUGHES	2817-15	27-4505
251	3	EA	CLEVIS, GALV, DIA. 1-1/16 IN MTG & STEM HOLES, 6-3/4 IN LENGTH, 25K	HUGHES	AS2277-H2	27-2872
265	9	EA	SQUARE HEAD BOLT, GALV, DIA. 7/8 IN, 13 UNC THREAD, INCLUDES SQUARE NUT, LENGTH AS NEEDED	HUGHES	B8XX-X	--
268	9	EA	LOCKNUT, GALV, SQ., 7/8 IN	HUGHES	MF80	27-3745
276	6	EA	NUT, GALV, SQ., 7/8 IN	HUGHES	N80	27-3770
280	13	EA	WASHER, HELICAL LOCK, GALV, FOR DIA. 7/8 IN BOLT	HUGHES	SLW2-80	27-4612
285	12	EA	WASHER, SQ. CURVED, 4 IN FOR DIA. 7/8 IN BOLT	MACLEAN	CW-44-7	27-4880
329	4	EA	DRILLED BOLT, SQ. HEAD, GALV, DIA. 7/8 IN, 4-3/4 IN LENGTH, 2-3/4 IN- 13 UNC THREAD, INCLUDES COTTER PIN & SQUARE NUT	HUGHES	B8-4.75D-2.75	27-2300
338	1	EA	OVAL EYE NUT, FITS DIA. 7/8 IN BOLT	HUGHES	EN80	27-3445
			GUY ASSEMBLY			
14	1500**	FT	19 NO. 8 ALUMOWELD, DIA. 0.642 IN	AFL	–	25-2362
216	7	EA	YOKE PLATE, GUYING, GALV, 80K	HUGHES	AS2355-H7	–
229	14	EA	GUY ROLLER, DUCTILE IRON, FOR 1 IN BOLT	HUGHES	28083	25-1375
230	14	EA	GUY GRIP, 19 NO. 8 ALUMOWELD	PREFORMED	BG-4176	–
231	14	EA	GUY MARKER, LOOP LOCK, 5' LENGTH, HIGH VISABILITY, YELLOW	PREFORMED	PG-5462	–
238	42	EA	ANCHOR SHACKLE, GALV, BNK, 3-3/4 IN LENGTH, 80K	ANDERSON	AS-60-BNK	27-4377
291	28	EA	WASHER, ROUND, GALV, 3 IN FOR DIA. 1 IN BOLT	HUGHES	RW3-100	--
			SIGNAGE			
70	1	EA	SIGN, FIBER OPTIC CABLE, 2 x 3 IN	TECH PRODUCTS	EL3KO063	S1-5502
73	1	EA	POLE TAG, AL., 3 IN x 4 IN, SPECIFIC TO SECTION AND STRUCTURE NO.	TECH PRODUCTS	TBD	--
74	*	EA	EVERLAST AERIAL SIGNAGE TAG, 6 IN, FITS TYPE AHE60S AERIAL SIGNAGE BRACKET	TECH PRODUCTS	EL6XX-XX	–
76	*	EA	AERIAL SIGNAGE BRACKET, HORIZ. CONFIGURATION, AL., 3/4 IN ATTACH HOLES, FITS 6 IN SIGNAGE TAGS	TECH PRODUCTS	AHE60SHP-H0.75	–
273	8	EA	NAIL, GALV, 2 IN	--	--	--
288	*	EA	WASHER, ROUND, STAINLESS STEEL, 1-1/4 IN FOR DIA. 3/8 - 1/2 IN BOLT	ALLIED BOLT	314102	27-4790
305	*	EA	SCREW, LAG, GALV, PETTER DRIVE REGULAR POINT, 3/8 x 2-1/2 IN	MACLEAN	J8742-1/2	27-2550
			POLE BASE GROUNDING / BURIED GROUND WIRE			
8	*	FT	GROUND WIRE, NO. 2 AWG COPPER, 7 STRAND, DIA. 0.258 IN	–	–	20-5819
12	45**	FT	GROUND WIRE, NO. 2 AWG C/W, DIA. 0.258 IN	–	–	20-6605
163	11	EA	GROUND CLAMP, BRONZE, NO. 2 AWG C/W TO DIA. 3/4 IN GROUND ROD	BURNDY	GRC34	11-2662
164	11**	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
166	11	EA	GROUND ROD, COPPERBONDED, DIA. 3/4 IN, 8 FT LENGTH	ERICO	613480	–

NOTES:
1. REFER TO THE FOLLOWING SHEETS FOR ANCHOR DETAILS AND MATERIAL LIST:
   SCREW ANCHOR AND BONDING ASSEMBLY 982-T345R-57
   ROCK ANCHOR AND BONDING ASSEMBLY 982-T345R-59
   DEADMAN ANCHOR AND BONDING ASSEMBLY 982-MISC-05
   BOTH ANCHOR ASSEMBLIES ARE LISTED, HOWEVER ONLY ONE ASSEMBLY WILL APPLY TO EACH STRUCTURE AS IDENTIFIED IN THE CONSTRUCTION DOCUMENTS.
2. GROUND WIRE BENEATH GROUND SURFACE SHALL BE NO. 2 COPPER (ITEM #8) WHERE A PIPELINE IS LOCATED WITHIN THE SAME TRANSMISSION CORRIDOR. IN ALL OTHER LOCATIONS NOT OTHERWISE SPECIFIED, GROUND WIRE SHALL BE NO. 2 COPPERWELD (ITEM #12).
3. FOUNDATIONS AT POLE BASE MAY BE REQUIRED. WHEN IDENTIFIED IN THE CONSTRUCTION DOCUMENTS, SUBSTITUTE POLE BASE GROUNDING ASSEMBLY WITH FOUNDATION ASSEMBLY AS SPECIFIED.
4. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
5. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

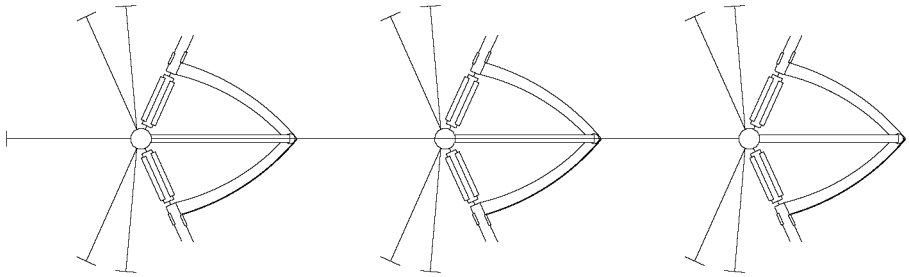
TITLE: 345kV TRANSMISSION LINE
TYPE ECR-2 30°-45° ANGLE STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

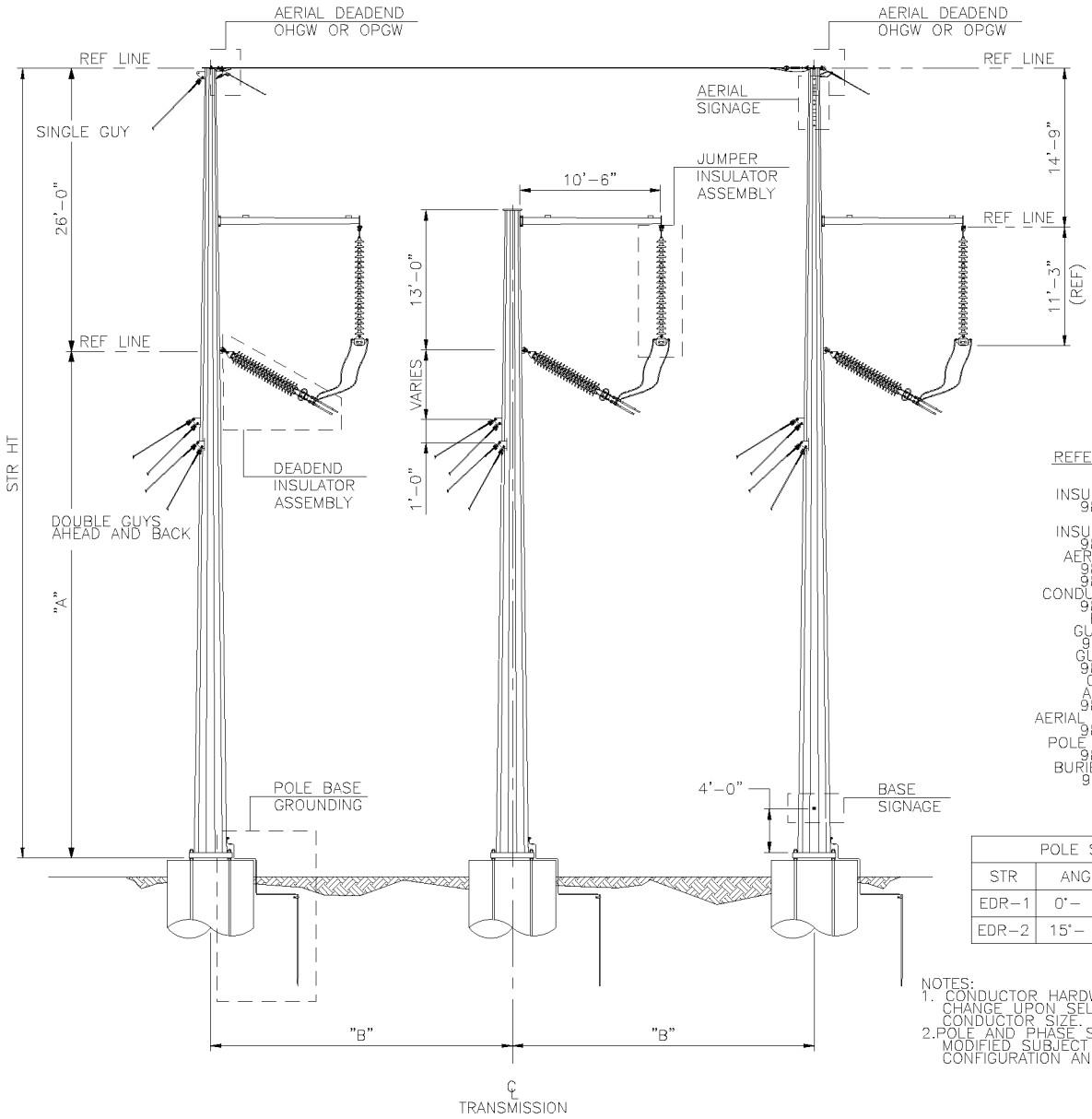
CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER: 275025
DRAWING NUMBER: 982-T345R-12C
REVISION: A
SHEET NUMBER: 1 OF 1



DIMENSIONS	
STR HT	"A"
70'	44'
75'	49'
80'	54'
85'	59'
90'	64'
95'	69'
100'	74'
105'	79'
110'	84'
115'	89'
120'	94'
125'	99'



REFERENCE DRAWINGS

DEADEND
INSULATOR ASSEMBLY
982-T345R-36
JUMPER
INSULATOR ASSEMBLY
982-T345R-36
AERIAL ATTACHMENT
982-T345R-39
982-T345R-40
CONDUCTOR ATTACHMENT
982-T345R-45
HEAD GUY &
GUY ATTACHMENT
982-T345R-51
GUY ASSEMBLIES
982-T345R-56
GUY LEADS &
ARRANGEMENTS
982-T345R-63
AERIAL AND BASE SIGNAGE
982-T345R-65
POLE BASE GROUNDING
982-T345R-67
BURIED GROUND WIRE
982-T345R-71

POLE SPACING		
STR	ANGLE	"B"
EDR-1	0°- 15°	21'-0"
EDR-2	15°- 75°	21'-0"

NOTES:
1. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
2. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

TITLE:
345kV TRANSMISSION LINE
TYPE EDR-1 & EDR-2 0°-75° ANGLE STRUCTURE

PROJECT:
EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT:
EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER
275025

DRAWING NUMBER
982-T345R-16A

REVISION
A

SHEET NUMBER
1 OF 1

MATERIAL LIST

SHEET 1 OF 2

* QUANTITY AS REQUIRED
** ESTIMATED QUANTITY

ITEM NO.	QTY	UNIT OF MEASURE	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NO.	CMP STOCK CODE
DEAD END INSULATOR ASSEMBLY						
10	*	FT	1590 MCM, FALCON ACSR, 54/19 STRAND COND, DIA. 1.545 IN	SOUTHWIRE	–	20-4845
82	*	EA	VIBRATION DAMPER, STOCKBRIDGE TYPE, FITS 1590 MCM 54/19 STRD COND	ACA	1708-14	–
181	*	EA	CONDUCTOR SPACER, 1590 MCM 54/19 "FALCON" ACSR (DIA. = 1.545 IN)	PREFORMED	CGTS-0123	–
191	12	EA	HOT LINE SOCKET Y-CLEVIS, GALV, INCLUDES SPHERE NUT, 30K	ANDERSON	HSYC-30-SN	27-2598
200	12	EA	Y-CLEVIS BALL, GALV, 30K	ANDERSON	YBC-30	27-3160
202	12	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
205	6	ASY	CORONA RING ASSEMBLY, AL, FOR 1590 MCM 54/19 "FALCON" ACSR	ANDERSON	TCR-4781-6	–
211	264	EA	INSULATOR, SUSP., PORCELAIN, NO. 70 GRAY, ANSI CLASS 52-5, 30K	NGK	3052P5	–
224	6	EA	YOKE PLATE, TRIANGULAR, GALV, 80K	ANDERSON	YPD-80-18475	27-4132
225	6	EA	YOKE PLATE, RECTANGULAR, GALV, 60K	ANDERSON	YPR-60-19401	–
238	12	EA	ANCHOR SHACKLE, GALV, BNK, 3-3/4 IN LENGTH, 50K	ANDERSON	AS-60-BNK	27-4377
239	12	EA	STRAIN CLAMP, AL, COMPRESSION, 2-DIE, 1590 MCM 54/19 "FALCON" ACSR, INCLUDES 15" JUMPER TERMINAL, STAINLESS STEEL TERMINAL HARDWARE	ANDERSON	SEDA5724-SS	–
310	24	EA	FLANGE BOLT, DIA 1/2 IN, 1-1/2 IN LENGTH, 13 UNC THREAD, FOR CORONA RING INSTALLATION	HUBBELL	1003160000	–
JUMPER INSULATOR ASSEMBLY						
19	*	FT	1590 MCM, FALCON ACSR, 54/19 STRAND COND, DIA. 1.545 IN	SOUTHWIRE	–	20-4845
180	3	ASY	JUMPER YOKE ASSEMBLY, AL. ALLOY, FITS 1590 MCM 54/19 ACSR, INCLUDES 2 PAIR OF 50 LB WEIGHTS	ANDERSON	YPJ-10-23260-200	–
181	12	EA	CONDUCTOR SPACER, 1590 MCM 54/19 "FALCON" ACSR (DIA. = 1.545 IN)	PREFORMED	CGTS-0123	–
201	3	EA	HOT LINE Y-CLEVIS BALL, GALV, 30K	ANDERSON	HYBC-30	27-2910
202	3	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
211	57	EA	INSULATOR, SUSP., PORCELAIN, NO. 70 GRAY, ANSI CLASS 52-5, 30K	NGK	3052P5	–
213	3	EA	SOCKET Y-CLEVIS, GALV, INCLUDES SPHERE NUT, 30K	ANDERSON	SYC-30-SN	27-2900
AERIAL DEAD END - OHGW						
10	*	FT	AERIAL SHIELD WIRE, 7 NO. 8 A/W, DIA. 0.385 IN	AFL	–	20-5428
42C	2**	EA	SPIRAL VIBRATION DAMPER, 7 NO. 8 A/W, DIA. 0.385 IN	PREFORMED	5050104	22-2185
157	1	EA	BONDING BOLT, DIA. 1/2 IN, 1-1/2 IN LENGTH, INCLUDES NUT & LOCKNUT	HUGHES	GWB51-1/2	11-3714
189	2	EA	CLEVIS THIMBLE, GALV, DIA. 3/4 IN BOLT, 25K	MACLEAN	CT-88H	27-2902
202	2	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
209	2	EA	GUY GRIP, 7 NO. 8 ALUMOWELD	PREFORMED	AWDE-4122	25-0966
222	3	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO 7 NO. 8 A/W)	BURNDY	YHO-10	11-3365
AERIAL DEAD END - OPGW						
21	*	FT	OPGW TYPE "E" FIBER OPTIC CABLE, 72 FIBER, DIA. 0.602 IN	AFL	DNO-8538 S4-83/42/602	–
40B	2	ASY	DEADEND, OPGW, DIA. 0.602 IN, INCLUDES 1/2 IN GROUNDING BOLT, NUT, & WASHER	PREFORMED	2801313	11-0926
42B	2**	EA	SPIRAL VIBRATION DAMPER, OPGW, DIA. 0.602 IN	PREFORMED	5050106	22-2181
65	1	EA	GROUNDING LEAD, CU. #4 - 7 STRAND CU., DIA. 0.232 IN, 72 IN LENGTH, INCLUDES ONE SINGLE HOLE	PREFORMED	710013558	–
66	1	EA	GROUNDING LEAD, 4/0- 19 STRAND AAC, DIA. 0.512 IN, 120 IN LENGTH, INCLUDES ONE SINGLE HOLE	PREFORMED	710010882	20-5494
67	1	EA	TERMINAL, COMPRESSION, SINGLE HOLE FOR DIA. 1/2 IN BOLT	BURNDY	YA28A3	–
71	2	EA	SIGN, WRAP AROUND, FIBER OPTIC CABLE, 4 x 7 IN	WILLIAM FRICK	SA2-BRUGOS-4X7	81-5504
157	1	EA	BONDING BOLT, DIA. 1/2 IN, 1-1/2 IN LENGTH, INCLUDES NUT & LOCKNUT	HUGHES	GWB51-1/2	11-3714
202	2	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327

NOTES:
1. OPGW ASSEMBLY IDENTIFIED ABOVE IS TYPICAL. ALTERNATE ASSEMBLIES MAY BE REQUIRED AS OPGW SPLICES OCCUR. WHEN IDENTIFIED ON THE STRUCTURE LIST, SUBSTITUTE OPGW ASSEMBLY AS SPECIFIED
2. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
3. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

TITLE: 345kV TRANSMISSION LINE
TYPE EDR-1 & EDR-2 0°-75° ANGLE STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER 275025
DRAWING NUMBER 982-T345R-16B
REVISION A
SHEET NUMBER 1 OF 1

MATERIAL LIST

SHEET 2 OF 2

* QUANTITY AS REQUIRED
** ESTIMATED QUANTITY

ITEM NO.	QTY	UNIT OF MEASURE	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NO.	CMP STOCK CODE
HEAD GUY ATTACHMENT						
10	12	FT	AERIAL SHIELD WIRE, 7 NO. 8 A/W, DIA. 0.385 IN	AFL	--	20-5428
14	75	FT	19 NO. 8 ALUMOWELD, DIA. 0.642 IN	AFL	--	25-2362
110	1	EA	TURNBUCKLE, 7/8 x 27 IN (+/- 6 IN), JAW & ROD END FITTINGS, 35K	HUGHES	AS2545-D	27-4527
157	2	EA	BONDING BOLT, DIA. 1/2 IN, 1-1/2 IN LENGTH, INCLUDES NUT & LOCKNUT	HUGHES	GWB51-1/2	11-3714
202	4	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
229	2	EA	GUY ROLLER, DUCTILE IRON, FOR 1 IN BOLT	HUGHES	28083	25-1375
230	2	EA	GUY GRIP, 19 NO. 8 ALUMOWELD	PREFORMED	BG-4176	--
235	2	EA	COMPRESSION TAP CONNECTOR, TYPE WR (0.520 IN - 0.858 IN) TO (0.162 IN - 0.447 IN)	BLACKBURN	WR815	11-3887
GUY ASSEMBLY						
9	1350**	FT	19 NO. 5 ALUMOWELD, DIA. 0.910 IN	AFL	--	25-2360
229	13	EA	GUY ROLLER, DUCTILE IRON, FOR 1 IN BOLT	HUGHES	28083	25-1375
238	26	EA	ANCHOR SHACKLE, GALV, BNK, 3-3/4 IN LENGTH, 80K	ANDERSON	AS-60-BNK	27-4377
258	13	EA	GUY GRIP, 19 NO. 5 ALUMOWELD	PREFORMED	BG-4187	--
291	26	EA	WASHER, ROUND, GALV, 3 IN FOR DIA. 1 IN BOLT	HUGHES	RW3-100	--
406	13	EA	GUY MARKER, 8' LENGTH, 2-1/2" O.D., YELLOW	ALLIED BOLT	12011	--
SIGNAGE						
70	1	EA	SIGN, FIBER OPTIC CABLE, 2 x 3 IN	TECH PRODUCTS	EL3KO063	81-5502
73	1	EA	POLE TAG, AL., 3 IN x 4 IN, SPECIFIC TO SECTION AND STRUCTURE NO.	TECH PRODUCTS	TBD	--
74	*	EA	EVERLAST AERIAL SIGNAGE TAG, 6 IN, FITS TYPE AHE605 AERIAL SIGNAGE BRACKET	TECH PRODUCTS	EL6XX-XX	--
75	*	EA	AERIAL SIGNAGE BRACKET, VERT. CONFIGURATION, AL., 3/4 IN ATTACH HOLES, FITS 6 IN SIGNAGE TAGS	TECH PRODUCTS	AHE605VP-H0.75	--
261	8	EA	BOLT MACHINE, STAINLESS STEEL, HEX, 1/4 x 1-1/2 IN	ALLIED BOLT	1024	27-0650
263	*	EA	BOLT MACHINE, GALV, HEX, DIA. 5/8 IN, 11 UNC THREAD, 1-1/2 IN LENGTH	--	--	27-1690
270	*	EA	NUT, GALV, HEX, 5/8 IN	--	--	27-3610
286	16	EA	NUT, STAINLESS STEEL, HEX, 1/4 IN	ALLIED BOLT	24410	27-3640
POLE BASE GROUNDING / BURIED GROUND WIRE						
8	*	FT	GROUND WIRE, NO. 2 AWG COPPER, 7 STRAND, DIA. 0.258 IN	--	--	20-5819
12	750**	FT	GROUND WIRE, NO. 2 AWG C/W, DIA. 0.258 IN	--	--	20-6605
157	3	EA	BONDING BOLT, DIA. 1/2 IN, 1-1/2 IN LENGTH, INCLUDES NUT & LOCKNUT	HUGHES	GWB51-1/2	11-3714
163	9	EA	GROUND CLAMP, BRONZE, NO. 2 AWG C/W TO DIA. 3/4 IN GROUND ROD	BURNDY	GRC34	11-2662
164	3	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
166	9	EA	GROUND ROD, COPPERBONDED, DIA. 3/4 IN, 8 FT LENGTH	ERICO	613480	--

NOTES:
1. REFER TO THE FOLLOWING SHEETS FOR ANCHOR DETAILS AND MATERIAL LIST:
   SCREW ANCHOR AND BONDING ASSEMBLY 982-T345R-58
   ROCK ANCHOR AND BONDING ASSEMBLY 982-T345R-60
   DEADMAN ANCHOR AND BONDING ASSEMBLY 982-MISC-06
   ANCHOR AND BONDING ASSEMBLY IDENTIFIED ABOVE IS TYPICAL. WHEN IDENTIFIED IN THE CONSTRUCTION DOCUMENTS, SUBSTITUTE ALTERNATE ANCHOR AND BONDING ASSEMBLY AS SPECIFIED.
2. GROUND WIRE BENEATH GROUND SURFACE SHALL BE NO. 2 COPPER (ITEM #8) WHERE A PIPELINE IS LOCATED WITHIN THE SAME TRANSMISSION CORRIDOR. IN ALL OTHER LOCATIONS NOT OTHERWISE SPECIFIED, GROUND WIRE SHALL BE NO. 2 COPPERWELD (ITEM #12).
3. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
4. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

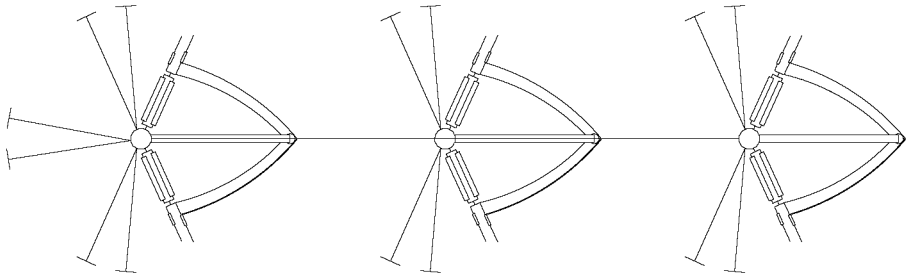
TITLE: 345kV TRANSMISSION LINE
TYPE EDR-1 & EDR-2 0°-75° ANGLE STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

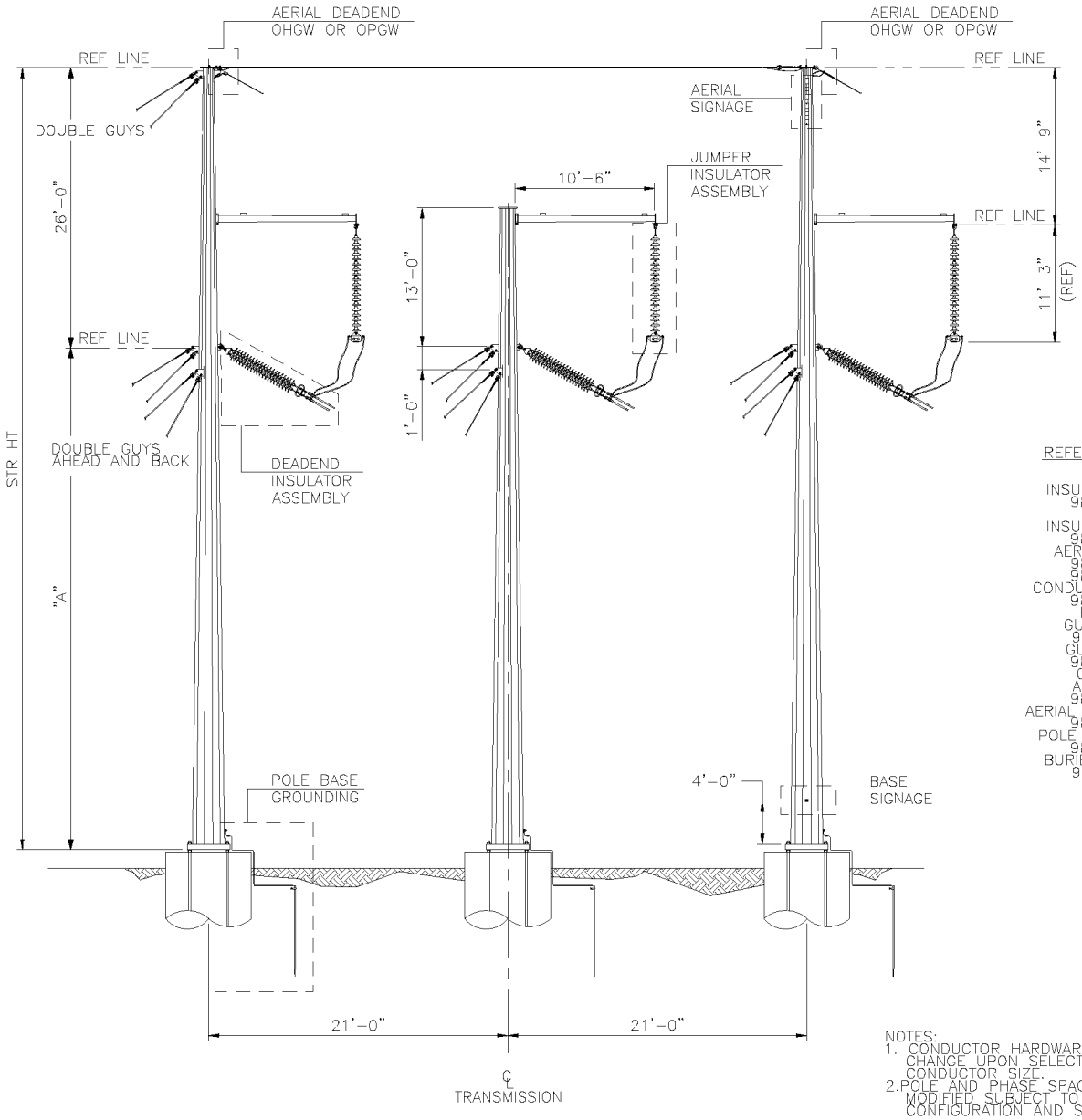
CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER 275025
DRAWING NUMBER 982-T345R-16C
REVISION A
SHEET NUMBER 1 OF 1



DIMENSIONS	
STR HT	"A"
70'	44'
75'	49'
80'	54'
85'	59'
90'	64'
95'	69'
100'	74'
105'	79'
110'	84'
115'	89'
120'	94'
125'	99'



REFERENCE DRAWINGS

DEADEND INSULATOR ASSEMBLY 982-T345R-36
JUMPER INSULATOR ASSEMBLY 982-T345R-36
AERIAL ATTACHMENT 982-T345R-39 982-T345R-40
CONDUCTOR ATTACHMENT 982-T345R-45
HEAD GUY & GUY ATTACHMENT 982-T345R-51
GUY ASSEMBLIES 982-T345R-56
GUY LEADS & ARRANGEMENTS 982-T345R-63
AERIAL AND BASE SIGNAGE 982-T345R-65
POLE BASE GROUNDING 982-T345R-67
BURIED GROUND WIRE 982-T345R-71

NOTES:
1. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
2. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

TITLE: 345kV TRANSMISSION LINE
TYPE EDR-3 75°-90° ANGLE STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER 275025
DRAWING NUMBER 982-T345R-17A
REVISION A
SHEET NUMBER 1 OF 1

* QUANTITY AS REQUIRED
** ESTIMATED QUANTITY

MATERIAL LIST

SHEET 1 OF 2

ITEM NO.	QTY	UNIT OF MEASURE	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NO.	CMP STOCK CODE
DEAD END INSULATOR ASSEMBLY						
19	*	FT	1590 MCM, FALCON ACSR, 54/19 STRAND COND, DIA. 1.545 IN	SOUTHWIRE	--	20-4845
82	*	EA	VIBRATION DAMPER, STOCKBRIDGE TYPE, FITS 1590 MCM 54/19 STRD COND	ACA	1708-14	--
181	*	EA	CONDUCTOR SPACER, 1590 MCM 54/19 "FALCON" ACSR (DIA. = 1.545 IN)	PREFORMED	CGTS-0123	--
191	12	EA	HOT LINE SOCKET Y-CLEVIS, GALV, INCLUDES SPHERE NUT, 30K	ANDERSON	HSYC-30-SN	27-2898
200	12	EA	Y-CLEVIS BALL, GALV, 30K	ANDERSON	YBC-30	27-3160
202	12	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
205	6	ASY	CORONA RING ASSEMBLY, AL, FOR 1590 MCM 54/19 "FALCON" ACSR	ANDERSON	TCR-4781-6	--
211	264	EA	INSULATOR, SUSP., PORCELAIN, NO. 70 GRAY, ANSI CLASS 52-5, 30K	NGK	30S295	--
224	6	EA	YOKE PLATE, TRIANGULAR, GALV, 80K	ANDERSON	YPD-80-18475	27-4132
225	6	EA	YOKE PLATE, RECTANGULAR, GALV, 60K	ANDERSON	YPR-60-19401	--
238	12	EA	ANCHOR SHACKLE, GALV, BNK, 3-3/4 IN LENGTH, 80K	ANDERSON	AS-60-BNK	27-4377
239	12	EA	STRAIN CLAMP, AL, COMPRESSION, 2-DIE, 1590 MCM 54/19 "FALCON" ACSR, INCLUDES 15° JUMPER TERMINAL, STAINLESS STEEL TERMINAL HARDWARE	ANDERSON	SEDA5724-SS	--
310	24	EA	FLANGE BOLT, DIA 1/2 IN, 1-1/2 IN LENGTH, 13 UNC THREAD, FOR CORONA RING INSTALLATION	HUBBELL	1003160000	--
JUMPER INSULATOR ASSEMBLY						
19	*	FT	1590 MCM, FALCON ACSR, 54/19 STRAND COND, DIA. 1.545 IN	SOUTHWIRE	--	20-4845
180	3	ASY	JUMPER YOKE ASSEMBLY, AL. ALLOY, FITS 1590 MCM 54/19 ACSR, INCLUDES 2 PAIR OF 50 LB WEIGHTS	ANDERSON	YPJ2-10-23260-200	--
181	12	EA	CONDUCTOR SPACER, 1590 MCM 54/19 "FALCON" ACSR (DIA. = 1.545 IN)	PREFORMED	CGTS-0123	--
201	3	EA	HOT LINE Y-CLEVIS BALL, GALV, 30K	ANDERSON	HYBC-30	27-2910
202	3	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
211	57	EA	INSULATOR, SUSP., PORCELAIN, NO. 70 GRAY, ANSI CLASS 52-5, 30K	NGK	30S295	--
213	3	EA	SOCKET Y-CLEVIS, GALV, INCLUDES SPHERE NUT, 30K	ANDERSON	SYC-30-SN	27-2900
AERIAL DEAD END - OHGW						
10	*	FT	AERIAL SHIELD WIRE, 7 NO. 8 A/W, DIA. 0.385 IN	AFL	--	20-5428
42C	2**	EA	SPIRAL VIBRATION DAMPER, 7 NO. 8 A/W, DIA. 0.385 IN	PREFORMED	5050104	22-2185
157	1	EA	BONDING BOLT, DIA. 1/2 IN, 1-1/2 IN LENGTH, INCLUDES NUT & LOCKNUT	HUGHES	GWB51-1/2	11-3714
189	2	EA	CLEVIS THIMBLE, GALV, DIA. 3/4 IN BOLT, 25K	MACLEAN	CT-88H	27-2902
202	2	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
209	2	EA	GUY GRIP, 7 NO. 8 ALUMOWELD	PREFORMED	AWDE-4122	25-0966
222	3	EA	LOKTAP COMPRESSION TAP CONNECTOR (7 NO. 8 A/W TO 7 NO. 8 A/W)	BURNDY	YHO-10	11-3868
AERIAL DEAD END - OPGW						
21	*	FT	OPGW TYPE "E" FIBER OPTIC CABLE, 72 FIBER, DIA. 0.602 IN	AFL	DNO-8538 S4-83/42/602	--
40B	2	ASY	DEADEND, OPGW, DIA. 0.602 IN, INCLUDES 1/2 IN GROUNDING BOLT, NUT, & WASHER	PREFORMED	2801313	11-0926
42B	2**	EA	SPIRAL VIBRATION DAMPER, OPGW, DIA. 0.602 IN	PREFORMED	5050106	22-2181
65	1	EA	GROUNDING LEAD, CU. #4 - 7 STRAND CU., DIA. 0.232 IN, 72 IN LENGTH, INCLUDES ONE SINGLE HOLE	PREFORMED	710013558	--
66	1	EA	GROUNDING LEAD, 4/0- 19 STRAND AAC, DIA. 0.512 IN, 120 IN LENGTH, INCLUDES ONE SINGLE HOLE	PREFORMED	710010882	20-5494
67	1	EA	TERMINAL, COMPRESSION, SINGLE HOLE FOR DIA. 1/2 IN BOLT	BURNDY	YA28A3	--
71	2	EA	SIGN, WRAP AROUND, FIBER OPTIC CABLE, 4 x 7 IN	WILLIAM FRICK	SA2-BRUGGS-4X7	81-5504
157	1	EA	BONDING BOLT, DIA. 1/2 IN, 1-1/2 IN LENGTH, INCLUDES NUT & LOCKNUT	HUGHES	GWB51-1/2	11-3714
202	2	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327

NOTES:
1. OPGW ASSEMBLY IDENTIFIED ABOVE IS TYPICAL. ALTERNATE ASSEMBLIES MAY BE REQUIRED AS OPGW SPLICES OCCUR. WHEN IDENTIFIED ON THE STRUCTURE LIST, SUBSTITUTE OPGW ASSEMBLY AS SPECIFIED.
2. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
3. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

TITLE: 345kV TRANSMISSION LINE
TYPE EDR-3 75°-90° ANGLE STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER 275025
DRAWING NUMBER 982-T345R-17B
REVISION A
SHEET NUMBER 1 OF 1

MATERIAL LIST

SHEET 2 OF 2

* QUANTITY AS REQUIRED
** ESTIMATED QUANTITY

ITEM NO.	QTY	UNIT OF MEASURE	MATERIAL DESCRIPTION	MANUFACTURER	CATALOG NO.	CMP STOCK CODE
HEAD GUY ATTACHMENT						
10	12	FT	AERIAL SHIELD WIRE, 7 NO. 8 A/W, DIA. 0.385 IN	AFL	--	20-5428
14	75	FT	19 NO. 8 ALUMOWELD, DIA. 0.642 IN	AFL	--	25-2362
110	1	EA	TURNBUCKLE, 7/8 x 27 IN (+/- 6 IN), JAW & ROD END FITTINGS, 35K	HUGHES	AS2545-D	27-4527
157	2	EA	BONDING BOLT, DIA. 1/2 IN, 1-1/2 IN LENGTH, INCLUDES NUT & LOCKNUT	HUGHES	GWB51-1/2	11-3714
202	4	EA	ANCHOR SHACKLE, GALV, INCLUDES SPHERE NUT, 2-25/32 IN LENGTH, 40K	ANDERSON	AS-35-BNK-SN	27-4327
229	2	EA	GUY ROLLER, DUCTILE IRON, FOR 1 IN BOLT	HUGHES	28083	25-1375
230	2	EA	GUY GRIP, 19 NO. 8 ALUMOWELD	PREFORMED	BG-4176	--
235	2	EA	COMPRESSION TAP CONNECTOR, TYPE WR (0.520 IN - 0.858 IN) TO (0.162 IN - 0.447 IN)	BLACKBURN	WR815	11-3887
GUY ASSEMBLY						
9	1500**	FT	19 NO. 5 ALUMOWELD, DIA. 0.910 IN	AFL	--	25-2360
229	14	EA	GUY ROLLER, DUCTILE IRON, FOR 1 IN BOLT	HUGHES	28083	25-1375
238	28	EA	ANCHOR SHACKLE, GALV, BNK, 3-3/4 IN LENGTH, 80K	ANDERSON	AS-60-BNK	27-4377
258	14	EA	GUY GRIP, 19 NO. 5 ALUMOWELD	PREFORMED	BG-4187	--
291	28	EA	WASHER, ROUND, GALV, 3 IN FOR DIA. 1 IN BOLT	HUGHES	RW3-100	--
406	14	EA	GUY MARKER, 8' LENGTH, 2-1/2" O.D., YELLOW	ALLIED BOLT	12011	--
SIGNAGE						
70	1	EA	SIGN, FIBER OPTIC CABLE, 2 x 3 IN	TECH PRODUCTS	EL3KO063	81-5502
73	1	EA	POLE TAG, AL., 3 IN x 4 IN, SPECIFIC TO SECTION AND STRUCTURE NO.	TECH PRODUCTS	TBD	--
74	*	EA	EVERLAST AERIAL SIGNAGE TAG, 6 IN, FITS TYPE AHE605 AERIAL SIGNAGE BRACKET	TECH PRODUCTS	EL6XX-XX	--
75	*	EA	AERIAL SIGNAGE BRACKET, VERT. CONFIGURATION, AL., 3/4 IN ATTACH HOLES, FITS 6 IN SIGNAGE TAGS	TECH PRODUCTS	AHE605VP-H0.75	--
261	8	EA	BOLT MACHINE, STAINLESS STEEL, HEX, 1/4 x 1-1/2 IN	ALLIED BOLT	1024	27-0650
263	*	EA	BOLT MACHINE, GALV, HEX, DIA. 5/8 IN, 11 UNC THREAD, 1-1/2 IN LENGTH	--	--	27-1690
270	*	EA	NUT, GALV, HEX, 5/8 IN	--	--	27-3610
286	16	EA	NUT, STAINLESS STEEL, HEX, 1/4 IN	ALLIED BOLT	24410	27-3640
POLE BASE GROUNDING / BURIED GROUND WIRE						
8	*	FT	GROUND WIRE, NO. 2 AWG COPPER, 7 STRAND, DIA. 0.258 IN	--	--	20-5819
12	750**	FT	GROUND WIRE, NO. 2 AWG C/W, DIA. 0.258 IN	--	--	20-6605
157	3	EA	BONDING BOLT, DIA. 1/2 IN, 1-1/2 IN LENGTH, INCLUDES NUT & LOCKNUT	HUGHES	GWB51-1/2	11-3714
163	10	EA	GROUND CLAMP, BRONZE, NO. 2 AWG C/W TO DIA. 3/4 IN GROUND ROD	BURNDY	GRC34	11-2662
164	3	EA	VISE PARALLEL GROOVE GROUND CONNECTOR, BRONZE, NO. 2 AWG C/W	ANDERSON	GC8002-LO	11-3712
166	10	EA	GROUND ROD, COPPERBONDED, DIA. 3/4 IN, 8 FT LENGTH	ERICO	613480	--

NOTES:
1. REFER TO THE FOLLOWING SHEETS FOR ANCHOR DETAILS AND MATERIAL LIST:
   SCREW ANCHOR AND BONDING ASSEMBLY 982-T345R-58
   ROCK ANCHOR AND BONDING ASSEMBLY 982-T345R-60
   DEADMAN ANCHOR AND BONDING ASSEMBLY 982-MISC-06
   ANCHOR AND BONDING ASSEMBLY IDENTIFIED ABOVE IS TYPICAL. WHEN IDENTIFIED IN THE CONSTRUCTION DOCUMENTS, SUBSTITUTE ALTERNATE ANCHOR AND BONDING ASSEMBLY AS SPECIFIED.
2. GROUND WIRE BENEATH GROUND SURFACE SHALL BE NO. 2 COPPER (ITEM #8) WHERE A PIPELINE IS LOCATED WITHIN THE SAME TRANSMISSION CORRIDOR. IN ALL OTHER LOCATIONS NOT OTHERWISE SPECIFIED, GROUND WIRE SHALL BE NO. 2 COPPERWELD (ITEM #12).
3. CONDUCTOR HARDWARE SUBJECT TO CHANGE UPON SELECTION OF CONDUCTOR SIZE.
4. POLE AND PHASE SPACING MAY BE MODIFIED SUBJECT TO RIGHT OF WAY CONFIGURATION AND SPACE AVAILABLE.

SGC Engineering, LLC
a part of Senergy

TITLE: 345kV TRANSMISSION LINE
EDR-3 75°-90° ANGLE STRUCTURE

PROJECT: EMERA MAINE TRANSMISSION SOUTH
HAYNESVILLE TO HOULTON, AROOSTOOK COUNTY, MAINE

CLIENT: EMERA MAINE
TELCOM DRIVE, BANGOR, MAINE 04401

DATE: SEPTEMBER 30, 2014
DRAWN: SJF
SCALE: N.T.S.
DESIGN: DLH
APPD: TMH

SGC PROJECT NUMBER 275025
DRAWING NUMBER 982-T345R-17C
REVISION A
SHEET NUMBER 1 OF 1

EXHIBIT C
OPTION

OPTION TO PURCHASE

OPTION TO PURCHASE granted this _____ day of _____20__, by **NUMBER NINE WIND FARM LLC**, a Delaware limited liability company with a mailing address of c/o EDP Renewables North America LLC, 808 Travis Street, Suite 700, Houston, Texas 77002 (hereinafter "Grantor" or "Number Nine") to **_____,** a Maine corporation having its principal place of business at _____, its successors and assigns (hereinafter "Grantee"). Reference is made to that certain "Transmission Corridor Rights Agreement" between Central Maine Power Company, Emera Maine and Maine Electric Power Company, Inc. and Grantee dated _____, 2014. Capitalized terms not defined herein shall have the definition set forth in said Transmission Corridor Rights Agreement.

1. **GRANT OF OPTION.** Grantor hereby grants Grantee the exclusive and irrevocable right and option effective as of the date hereof to purchase the Houlton to Haynesville Project for the Option Purchase Price (collectively the "Option Agreement" or the "Option"). The Option shall expire automatically and without the need for any further act, notice or recording on the seventh (7th) anniversary of the date the Houlton to Haynesville Project is energized. The parties agree that this Option shall not be recorded. Instead, the parties agree to execute and record in the Southern Aroostook County Registry of Deeds, at Grantee's expense, a "Memorandum of Option" in a form substantially similar to the form attached hereto as **EXHIBIT A**. Within 10 business days of the Houlton to Haynesville Project being energized, Grantor shall provide Grantee written notice of the date of such energization, and the parties shall record an amendment to the Memorandum of Option to reflect such date. Notwithstanding the automatic expiration of this Option as provided above, within 10 business days after the expiration or earlier termination of the Option, the Parties shall execute and record an amendment to the Memorandum of Option to reflect the expiration or termination of the Option.

2. **NOTICE OF EXERCISE.** Written notice of the exercise of this Option by Grantee shall be given to Grantor by delivering the same to the following address on or before the expiration date of this Option:

Number Nine Wind Farm LLC
c/o EDP Renewables North America LLC
808 Travis Street, Suite 700
Houston, Texas 77002
Attention: Executive Vice President, Eastern Region
CC: General Counsel

or to such other address as Grantor may designate by notice to Grantee in writing, or delivering the same in person to Grantor. If notice of the exercise of this Option is given by mail or express service, this Option shall be deemed validly and effectively exercised when such notice is deposited in the mail or with said express service. Notices to Grantee shall be delivered to the

following address or to such other address as Grantee may designate by notice to Grantor in writing:

[INSERT NAME AND ADDRESS OF GRANTEE]

3. **CONDITIONS OF CLOSING**. The obligation of Grantor and Grantee to close following the exercise of the Option shall be conditioned on the following (which may only be waived by the mutual agreement of Grantor and Grantee): (a) Grantee shall have obtained all necessary regulatory approvals to acquire the Houlton to Haynesville Project and to cause it to become part of the transmission system managed by ISO-NE; (b) Grantee shall have obtained all necessary approvals to recover the costs for and related to the acquisition of the Houlton to Haynesville Project on a regionalized basis under the ISO-NE Tariff; (c) Number Nine shall have amended the Number Nine Power Purchase Contract to change the "Delivery Point" thereunder to a new delivery point in or about Houlton, Maine, or the Parties shall have reached another mutually agreeable solution; (d) either (i) Number Nine and Grantee shall have entered into a new a standard form Large Generator Interconnection Agreement (with such changes as Number Nine and Grantee may mutually agree) with respect to the connection of the Number Nine Project to the Houlton to Haynesville Project at a point of interconnection in or about Houlton, Maine, or (ii) Number Nine and Grantee shall have amended the then existing Large Generator Interconnection Agreement to reflect the relocation of Number Nine's point of connection from the Haynesville Node to a new point of interconnection in or about Houlton, Maine; and (e) Number Nine shall have received approval from FERC under Section 203 of the Federal Power Act and any other necessary Permits and approvals from Governmental Authorities to sell the Houlton to Haynesville Project to Grantee. All costs of the new interconnection at Houlton, include for any necessary interconnection studies and transmission system upgrades required to permit the relocation of the interconnection to Houlton shall be Grantee's responsibility, excepting any costs related to specific facilities necessary to interconnect Number Nine's remaining generator lead to the new facilities near Houlton, Maine, which shall be at Number Nine's cost.

4. **PURCHASE PRICE**. The purchase price for the Option (the "Option Purchase Price") shall be paid by Grantee to Number Nine at the Option Closing (as described below) in immediately available funds and shall be calculated as follows: the sum of (a) 80% of the "Net Book Value" of the Houlton to Haynesville Project (not including the Haynesville Substation) as of the date of the Option Closing, or such lesser amount that the parties may agree in order for Grantee to obtain all necessary regulatory approvals and the recovery of the costs for and related to the acquisition of the Houlton to Haynesville Project on a regionalized basis under the ISO-NE Tariff, plus (b) 100% of unamortized balance (calculated in the same manner as "Net Book Value"), as of the date of the Option Closing, of Number Nine's capitalized costs of the substantion owned by MEPCO in Haynesville, Maine where the Houlton to Haynesville Project interconnects to the existing MEPCO transmission line (the "Haynesville Substation"). "Net Book Value" is defined as Number Nine's original cost for the Houlton to Haynesville Project, including the costs of real property rights and easements, the cost of all structures, conductors, equipment and facilities, and all costs, including internal costs, of designing, permitting, financing, procuring equipment, constructing and commissioning the Houlton to Haynesville

Project, less accumulated depreciation, as calculated under applicable FERC accounting requirements and standards.

5. **RESTRICTIONS DURING OPTION TERM.** During the term of this Option, any conveyance, transfer or mortgage of the Houlton to Haynesville Project or any interest therein by Grantor shall be subordinate to Grantee's rights under the Option.

6. **CONDITION OF PREMISES.** Grantor shall convey title to the Houlton to Haynesville Project to Grantee free of liens, conditions, restrictions or encumbrances created by, through or under Grantor, excepting permits obtained by Grantor with respect to the construction, ownership and/or operation of the Houlton to Haynesville Project and other covenants, conditions that are consistent with the use, operation and maintenance of the Houlton to Haynesville Project and with Good Utility Practices, which permits, and the obligations thereunder shall be transferred to Grantee at closing. Otherwise, Grantee shall acquire the Premises pursuant to this Option in their existing condition, as is, without warranty or representation of any kind, and Grantor hereby disclaims any warranties of merchantability or fitness for a particular purpose and all other warranties of any kind. Provided that following the exercise of the Option and prior to the closing: (i) Grantor shall certify to Grantee that to the best of its knowledge and belief, Grantor is in compliance Applicable Laws and Permits pertaining to the location and use of Houlton to Haynesville Project and there are no outstanding notices of any material violations with respect thereto; and, (ii) Grantees are reasonably satisfied following inspection of the premises and facilities that the Houlton to Haynesville Project is in good working order and capability of meeting any operational obligations under any Applicable Laws and Permits.

7. **RIGHT TO INSPECT, SURVEY AND TEST.** During the term of the Option, Grantee shall have access to the Premises to conduct such inspections, surveys, tests, investigations and similar activities at reasonable times and upon reasonable advance notice to Grantor. Any such access and activities shall be at Grantee's own risk, and Grantor shall not be liable for any losses, damage or injuries incurred by Grantee in access or conducting activities on the Premises, including as a result of the condition of the Premises, except to the extent arising out of Number Nine's gross negligence or willful misconduct. Prior to entering on to the Premises, Grantee shall deliver to Grantor certificates of insurance reflecting that Grantee has comprehensive liability insurance covering any loss, damage or injury resulting from Grantee's entry on to the Premises and activities thereon and naming Grantor as an additional insured under such insurance. Grantee and its representatives and contractors shall comply with all applicable site safety and security rules and procedures in accessing and conducting activities on the Premises. Grantee shall repair and restore any damage to the Premises resulting from such access or the conduct of such activities and shall indemnify and hold Grantor, its employees, directors, members, shareholders, agents, contractors, successors and assigns from any cost, damage, loss, injury or liability arising out of such access or the conduct of such activities.

8. **CLOSING.** In the event Grantee exercises this Option, the "Option Closing" shall take place within 60 days of notice of the exercise of this Option at a time and place convenient to the parties hereto and payment of the Option Purchase Price shall be made at that time. All instruments of transfer and other closing documents shall be mutually acceptable in form and

substance to Grantor and Grantee, and Grantor and Grantee will cooperate in executing and delivering such documents, instruments and agreements and taking such actions as may be reasonably necessary to close the purchase and sale of the Houlton to Haynesville Project pursuant to this Option. Upon closing, Grantee shall assume all obligations on a going forward basis under Applicable Laws and Permits with respect to the Houlton to Haynesville Project from and after the Option Closing and shall indemnify and hold Grantor harmless from all such obligations and liabilities related thereto. Grantor shall remain liable for any obligations under Applicable Laws and Permits with respect to the Houlton to Haynesville Project arising prior to the Option Closing and shall indemnify and hold Grantee harmless for all such obligations and liabilities related thereto. Except as may otherwise be provided herein, Grantee shall be responsible for all expenses and fees incurred in closing this transaction, except for Grantor's expenses for legal and consultant services (if any) arranged for and obtained by Grantor. If applicable, property taxes with respect to the Premises will be prorated as of the closing, based on the most recently available tax bill, and the parties shall each pay 50% of the transfer taxes due with respect to the Premises.

9. **SUCCESSORS.** This Option Agreement shall inure to the benefit of and be binding upon the heirs, administrators, executors, successors, personal representatives and assigns of the respective parties hereto.

10. **MISCELLANEOUS.**

A. This Option Agreement shall not be modified or amended except by an instrument in writing executed by Grantor and Grantee.

B. This Option Agreement may be executed in any number of counterparts, each of which when so executed shall be an original; but such counterparts shall constitute but one and the same instrument.

C. This Option Agreement shall be construed and enforced in accordance with the laws of the State of Maine.

D. All section headings in this Option Agreement are for convenience only and are of no independent legal significance.

F. Any disputes or allegations of default hereunder shall be resolved in accordance with the dispute resolutions provisions of the Line Ownership Agreement, which are incorporated herein by reference.

IN WITNESS WHEREOF, the parties have executed this Option on the date first written above.

WITNESS: **GRANTOR:**

NUMBER NINE WIND FARM LLC

_____ By:_____
Name:
Its:

_____ By:_____
Name:
Its:

GRANTEE:

[INSERT NAME OF GRANTEE]

_____ By:_____
Name:
Its:

EXHIBIT A TO OPTION

MEMORANDUM OF OPTION

1.	Date of Option	_____
2.	Name and Address of Grantor:	**NUMBER NINE WIND FARM LLC** c/o EDP Renewables North America LLC 808 Travis Street, Suite 700 Houston, Texas 77002
3.	Name and Address of Grantee:	
4.	Description of Option Property:	See property description attached as **Exhibit A.**
5.	Term of Option:	The Option shall expire automatically and without the need for any further act, notice or recording on the seventh (7th) anniversary of the date the Houlton to Haynesville Project is energized, which shall be evidenced by an amendment to this Memorandum to be recorded following such event.
6.	Condition of Option	During the term of the Option, any conveyance, transfer or mortgage of the Premises or any interest therein by Grantor shall be subject to MEPCO's rights under the Option.

IN WITNESS WHEREOF, the undersigned have executed this Memorandum as of this _____ day of _____, 20__.

WITNESS:

_____

GRANTOR:

NUMBER NINE WIND FARM LLC

By:_____
Name:
Its:

_____ By:_____
Name:
Its:

GRANTEE:

_____ By:_____
Name:
Its:

State of _____
County of _____

Personally appeared the above-named _____and _____ in his/her said capacity and acknowledged the foregoing instrument to be his/her free act and deed and the free act and deed of NUMBER NINE WIND FARM LLC.

Before me,

Date:_____

_____
Notary Public

_____
Printed Name

State of Maine
County of _____

Personally appeared the above-named _____ in his/her said capacity and acknowledged the foregoing instrument to be his/her free act and deed and the free act and deed of _____.

Before me,

Date:_____

_____

Notary Public

_____

Printed Name

EXHIBIT A

[LEGAL DESCRIPTION]

EXHIBIT D
RIGHT OF FIRST REFUSAL

KNOW ALL BY THESE PRESENTS, that **NUMBER NINE WIND FARM LLC,** a Delaware limited liability company with a mailing address of c/o EDP Renewables North America LLC, 808 Travis Street, Suite 700, Houston, Texas, 77002 ("Grantor"), for good and valuable consideration paid, by _____., a _____ corporation with a mailing address of _____ ("Grantee") the receipt and sufficiency of which are hereby acknowledged, hereby grants to Grantee the right to purchase the "Premises" (as such term is defined below) on the terms and provisions set forth herein, and agrees not to sell or otherwise convey the Premises or any portion thereof without complying with the provisions herein. Reference is made to that certain "Transmission Corridor Rights Agreement" between Central Maine Power Company, Emera Maine and Maine Electric Power Company, Inc. and Grantee dated _____, 2014. Capitalized terms not defined herein shall have the definition set forth in said Transmission Corridor Rights Agreement.

1. Description Of Premises. The Premises subject to this Right of First Refusal is the Houlton to Haynesville Project as defined in the Transmission Corridor Rights Agreement.

2. Notice Of Offer To Buy Premises. During the term of the Right of First Refusal, if Grantor (or an Affiliate thereof to which ownership of the Houlton to Haynesville Project has been transferred) proposes to enter into any agreement to convey the Houlton to Haynesville Project, or any portion thereof, to a third party (a "Third Party Transfer"), Grantor shall first give written notice thereof to Grantee (the "Transfer Notice"). The Transfer Notice shall include a copy of the proposed purchase and sale agreement; provided however, that if no purchase and sale agreement exists, then the Transfer Notice shall include the name and identity of the prospective purchaser, the date upon which such sale is to be consummated, and the price and terms of the sale. Grantee will have the irrevocable and exclusive right of first refusal to enter into an agreement for any such transfer at the price and on the terms specified in the Transfer Notice, which Right of First Refusal is exercisable by providing written notice to Grantor within 30 days after Grantee receives the Transfer Notice (such period, the "ROFR Exercise Period"). Grantee shall have the right, but not the obligation, to substitute cash in lieu of any deferred payments set forth in the Transfer Notice and may substitute equivalent credit for guarantees or letters of credit to be provided by the third party. If any such offer includes seller financing, Grantee shall have the right, at its option, to either accept such seller financing or to finance the acquisition in some other manner and pay Grantor the full purchase price in cash. If Grantee fails to affirmatively exercise the Right of First Refusal within the ROFR Exercise Period, Grantor will have the right to enter into the transaction contemplated by the Transfer Notice on terms equal to or more favorable than (from Grantor's perspective) those set forth in the Transfer Notice and upon consummation of such Third Party Transfer, the rights of Grantee under the Right of First Refusal shall be terminated. Should such a sale to a third party not be timely consummated as aforesaid within one hundred eighty (180) days after the date of the Transfer Notice, then the Houlton to Haynesville Transmission Project (or such portion thereof) shall again become subject to the Right of First Refusal; provided, however, that if there is a binding purchase and sale agreement in effect as of the end of such one hundred eighty (180) day

period, Number Nine shall have ninety (90) additional days to complete such sale, and the Houlton to Haynesville Project shall not again become subject to the Right of First Refusal until the earlier of the expiration of such ninety (90) period or the termination of such purchase and sale agreement. Any purported conveyance in violation of the provisions of this Agreement shall be void.

3. **Term**. The term of the Right of First Refusal will commence on the expiration or termination of the Option between Grantor and Grantee of even date, and shall expire automatically and without the need for any further act, notice or recording on the third anniversary of the date the Right of First Refusal commences; provided that if the Option Holder acquires the Houlton to Haynesville Project prior to the commencement of the term of the Right of First Refusal, the Right of First Refusal will terminate upon the closing of such acquisition. Within 10 business days of the Option expiring or terminating, the parties shall record an amendment to the Memorandum of Right of First Refusal to reflect that the Right of First Refusal has commenced. In addition, notwithstanding the automatic expiration of this Right of First Refusal as provided herein, within 10 business days after the expiration or earlier termination of the Right of First Refusal, the Parties shall execute and record an amendment to the Memorandum of Right of First Refusal to reflect the expiration or termination of the Right of First Refusal..

4. **Notices**. All notices and other communications required under this Agreement shall be in writing and shall be personally delivered or be given by registered or certified mail, return receipt requested, addressed to the parties at their respective addresses set forth above. Any such notice shall be effective only upon receipt. Any party may change the address to which its future notice shall be sent by notice given as provided above.

5. **Recording.** The parties agree that this Right of First Refusal shall not be recorded. Instead, the parties agree to execute and record in the Aroostook County Registry of Deeds, at Grantee's expense, a "Memorandum of Right of First Refusal" in a form substantially similar to the form attached hereto as EXHIBIT A. The parties also agree to amend the Memorandum of Right of First Refusal to reflect the date the Option expires or is terminated as provided in Section 3.

5. **Binding On Heirs and Assigns**. The provisions of this Agreement shall run with the land and shall be binding upon the Grantor and its successors and assigns for the benefit of Grantee and Grantee's successors and assigns until it expires as provided in Section 3.

6. **Governing Law.** This Agreement shall be governed by and interpreted in accordance with the laws of the State of Maine

IN WITNESS WHEREOF, the parties have caused this instrument to be executed this __ day of _____, 20__.

Number Nine Wind Farm LLC
a Delaware limited liability company

By:_____

Name:_____

Title:_____

By:_____

Name:_____

Title:_____

_____
a Maine corporation

By:_____

Name:_____

Title:_____

By:_____

Name:_____

Title:_____

EXHIBIT A

MEMORANDUM OF RIGHT OF FIRST REFUSAL

1. Date of Right of First Refusal _____

2. Name and Address of Grantor: NUMBER NINE WIND FARM LLC
c/o EDP Renewables North America LLC
808 Travis Street, Suite 700
Houston, Texas 77002

3. Name and Address of Grantee:

4. Description of Property: See property description attached as Exhibit A.

5. Term of Right of First Refusal: The Right of First Refusal shall commence on the expiration or termination of the Option between Grantor and Grantee of even date herewith between Grantor and Grantee, a memorandum of which was recorded concurrently with this Memorandum, and shall expire automatically and without the need for any further act, notice or recording on the third anniversary of the commencement date, which may but need not be evidenced by an amendment to this Memorandum to be recorded following the expiration or termination of the Option; provided that if the Option Holder acquires the property described on Exhibit A attached hereto prior to the commencement of the term of the Right of First Refusal, the Right of First Refusal will terminate upon the closing of such acquisition.

IN WITNESS WHEREOF, the undersigned have executed this Memorandum as of this _____ day of _____, 20__.

WITNESS: GRANTOR:

NUMBER NINE WIND FARM LLC

_____ By:_____
Name:
Its:

_____ By:_____
Name:
Its:

GRANTEE:

_____ By:_____
Name:
Its:

State of _____
County of _____

Personally appeared the above-named _____ and _____ in his/her said capacity and acknowledged the foregoing instrument to be his/her free act and deed and the free act and deed of NUMBER NINE WIND FARM LLC.

Before me,

Date:_____

_____
Notary Public

_____
Printed Name

State of Maine
County of _____

Personally appeared the above-named _____ in his/her said capacity and acknowledged the foregoing instrument to be his/her free act and deed and the free act and deed of _____.

Before me,

Date:_____

_____
Notary Public

_____
Printed Name

EXHIBIT A

[LEGAL DESCRIPTION]

EXHIBIT E

MEMORANDUM OF AGREEMENT

1.	Date of Agreement:	December 30, 2014
2.	Name and Address of Granting Parties:	**CENTRAL MAINE POWER COMPANY** 83 Edison Drive Augusta, ME 04336 **EMERA MAINE** 970 Illinois Avenue Bangor, Maine 04401 **MAINE ELECTRIC POWER COMPANY, INC.** 83 Edison Drive Augusta, ME 04336
3.	Name and Address of Grantee:	**NUMBER NINE WIND FARM LLC** c/o EDP Renewables North America LLC 808 Travis Street, Suite 700 Houston, Texas 77002
4.	Description of Property:	See property description attached as **Exhibit A**.
5.	Term of Agreement:	The Agreement shall expire automatically and without the need for any further act, notice or recording in the event the Easement Closing has not occurred by January 1, 2018 for a reason other than a default by the Granting Parties.
6.	Condition of Agreement	During the term of the Agreement, any conveyance, transfer or mortgage of the Premises or any interest therein by the Granting Parties shall be subject to Grantee's rights under the Agreement.

IN WITNESS WHEREOF, the Parties have executed this Memorandum as of this 30th day of December, 2014.

WITNESS:

GRANTING PARTIES:

CENTRAL MAINE POWER COMPANY, a Maine corporation

_____ By:_____
Name:
Its:

_____ By:_____
Name:
Its:

State of Maine
County of _____

Personally appeared the above-named _____ in his/her said capacity and acknowledged the foregoing instrument to be his/her free act and deed and the free act and deed of Central Maine Power Company.

Before me,

Date:_____

_____
Notary Public

_____
Printed Name

WITNESS:

EMERA MAINE, a Maine corporation

_____

By:_____
Name:
Its:

_____

By:_____
Name:
Its:

State of Maine
County of _____

Personally appeared the above-named _____ in his/her said capacity and acknowledged the foregoing instrument to be his/her free act and deed and the free act and deed of Emera Maine.

Before me,

Date:_____

_____
Notary Public

_____
Printed Name

MAINE ELECTRIC POWER COMPANY, INC, a Maine corporation

WITNESS:

_____ By:_____
Name:
Its:

_____ By:_____
Name:
Its:

State of Maine
County of _____

Personally appeared the above-named _____ in his/her said capacity and acknowledged the foregoing instrument to be his/her free act and deed and the free act and deed of Maine Electric Power Company, Inc.

Before me,

Date:_____

_____
Notary Public

_____
Printed Name

GRANTEE:

NUMBER NINE WIND FARM LLC, a Delaware limited liability company

WITNESS

_____ By:_____
Name:
Its:

_____ By:_____
Name:
Its:

State of _____
County of _____

Personally appeared the above-named _____and _____ in his/her said capacity and acknowledged the foregoing instrument to be his/her free act and deed and the free act and deed of NUMBER NINE WIND FARM LLC.

Before me,

Date:_____

_____
Notary Public

_____
Printed Name

EXHIBIT A

HOULTON TO HAYNESVILLE CORRIDOR

CMP Property: described in a deed from Lakeville Shores, Inc. to Central Maine Power Company dated November 26, 2014 and recorded in the Southern Aroostook Registry of Deeds in Book 5377, Page 10.

MEPCO Property: to be acquired prior to closing on Assignment Agreement. Property is described in and pertaining to a Memorandum of Option by and between Earl F. and Janice L Wilder, dated November 16, 2011, as from time to time amended or extended, and recorded in the Southern Aroostook Registry of Deeds in Book 5241, Page169.

Emera Easements: Easement rights affecting Easternmost and southeastern most ninety six feet of two-hundred twenty five foot easement right of way described on the deeds referenced in the attached table together with thirty three foot wide common easement area adjacent thereto on the westerly side and a one-hundred and fifty foot wide vegetation management area affecting the easternmost and southeastern most one hundred and fifty feet of such two hundred twenty-five foot easement, and together with additional easement crossing rights concerning easement listed as Parcel 51 on said table

The recording information set forth below is for the "MPS Deeds" recorded at the Southern Aroostook County Registry of Deeds. The parcel number set forth in the first column below corresponds with those shown on the survey plan set recorded at said Registry in Plan Book 41, Pages 66A through 79A.

Parcel	Original (1966) Land Owner	Town	Book	Page
1	Putnam, Fred	Houlton	1010	48
2	VanTassel, Helen	Houlton	1010	168
3	Callnan, Lewis and Paula	Houlton	987	310
4	Putnam, Willard & Nora	Houlton	987	312
5	Annett, Fred and Martha	Houlton	1035	573
5A	Hagan, Donald A. and Phyllis	Houlton	1010	358
6	Houlton Ready Mix, Inc.	Houlton	987	467
7	Hagan, Fred P., Mildred Hagan	Houlton	1008	314
		Houlton	997	91
7A	Holmes, Glenn & Shirley	Houlton	989	245
8	Wiggins, Bert K., et al	Houlton	985	41
9	McGinley, Cecil H.	Houlton	984	264
9A	Boutilier, Mary A. and James W.	Houlton	997	178
10	Long, Charles S. and Edith E.	Houlton		
		Hodgdon	990	130
11	Long, Harvey and Irene	Houlton	984	262
12	Gough, Lawrence W. & Barbara	Linneus	984	260
13	Kervin, Frank D.	Linneus	986	115
14	Kervin, Margaret, Eugene F. and Vera A.	Linneus	984	427
15	Folsom, Miles et al	Linneus	989	54
16	Bither, Vincent I.	Linneus	986	463
17	Nason, Philip and Florence M.	Linneus	986	191
17A	Clark, Lionel	Linneus	1059	150
18	Smith, Ronald and Marietta L.	Linneus	1027	666
20	Little, Merton F. and Jean C.	Linneus	1010	360[1]
			2312	9
21	Sanders, Samuel and Emma	Linneus	1037	57[2]
			2312	15

[1] As affected by Releases dated August 22, 1990 and recorded at the Southern Aroostook County Registry of Deeds in Book 2312, Pages 1, 3 and 5.
[2] As affected by Release dated August 22, 1990 and recorded at the Southern Aroostook County Registry of Deeds in Book 2312, Page 7.

22	Henderson, Irving T. and Gertrude S.	Linneus	1010	166[3]
		Linneus	993	108
		Linneus	2312	12
23	Hutchinson, Roger and Frances	Linneus	986	113
23A	Scott, Roger A. and Patricia A.	Linneus	1027	664
24	Alexander, Perley and Margaret A.	Linneus	987	200
25	Smith, Garfield and Vallie M.	Linneus	1011	132
26	Logie, Paul W. and Phyllis; Thelma	Linneus	1012	317
27	Young, Robert and Elsie	Linneus	1010	356
28	Richards Realty Company	Linneus	987	461
29	Bither, Maurice H. and Beryl	Linneus	986	417
30	Doescher, J. Frederick II and Virginia C.	Linneus	987	100
31	Gove, Vaughn L. and Audrey M. Gove	Linneus	989	247
32	Byron, Melissa E.	Linneus	986	419
33	Davis, Jr., Walter D.	Linneus	987	104
34	Boyd, Arthur and Mildred	Linneus	986	453
35	Clark, Lionel R. and Ada	Linneus	986	459
36	Lawlis, Alice F. M.	Linneus	987	102
37	Cole, George and Phyllis	Linneus	986	457
38	Tapley, Vincent and Birdena	Linneus	986	455
39	Chambers, Thomas	Linneus	988	151
42	Great Northern Paper Company et al	TA R2	1018	351
44	State of Maine	T3 R2	990	214, 217
45	Great Northern Paper Company, James M. Pierce, Ina N. Moulton, Virginia M. Emery, Robert M. Moulton, Gardner N. Moulton	T3 R2	1018	351
46	Eastman, Lizzie M.	T3 R2	988	283
47	State of Maine	T3 R2	990	214, 217
48	Webber, Anne et al	T3 R2	996	150
48A	St Croix Pulpwood Co.	Haynesville	1031	188
			1127	21
			1627	91
			2614	270
			3908	146
50	Fitzpatrick, Don E. and Masha N.	Haynesville	1039	463
50A	Malone, Arthur J. and Catherine E.	Haynesville	1027	660
51	Diamond International Corporation	Haynesville	1033	233

Further reference is made to the instrument between Maine Electric Power Company, Inc. and Maine Public Service Company dated December 28, 1967 and recorded at said Registry in Book 1019, Page 35.

[3] As affected by Release dated August 22, 1990 and recorded at the Southern Aroostook County Registry of Deeds in Book 2312, Page 3.

GUARANTY AGREEMENT

This GUARANTY AGREEMENT (this "Guaranty"), by **EDP RENEWABLES NORTH AMERICA LLC**, a limited liability company organized under the laws of the State of Delaware with a mailing address of 808 Travis Street, Suite 700, Houston, Texas 77002 ("Guarantor"), is in favor of **CENTRAL MAINE POWER COMPANY**, a corporation organized under the laws of the State of Maine, **EMERA MAINE**, a corporation organized under the laws of the State of Maine, **MAINE ELECTRIC POWER COMPANY, INC.**, a corporation organized under the laws of the State of Maine and [INSERT NAME OF OPTION HOLDER WHEN DETERMINED IF NOT ALREADY A GUARANTEED PARTY], as their respective interests may appear (each a Guaranteed Party and collectively, the "Guaranteed Parties"). In consideration of the Guaranteed Parties' grant of easement rights to **NUMBER NINE WIND FARM LLC** ("Number Nine"), a limited liability company organized under the laws of the State of Delaware (collectively with its successors and assigns, the "Obligor") as set forth in that certain Assignment and Grant of Easement Rights of near or even date by the Guaranteed Parties to Number Nine (the "Easement"), Guarantor agrees as follows:

1. DEFINITIONS. Capitalized terms used but not defined in this Guaranty have the meaning given to them in that certain Transmission Corridor Rights Agreement dated _____ between the Obligor and the Guaranteed Parties, as the same has been hereafter be renewed, modified, consolidated, supplemented or extended (the "Transmission Corridor Agreement").

2. GUARANTY OF PAYMENT AND PERFORMANCE. Subject to Section 4 hereof, Guarantor hereby guarantees to each Guaranteed Party, and to the Guaranteed Parties collectively, as and to the extent the Obligations described below are owed by Obligor to such Guaranteed Party, the full and punctual payment when due (whether at maturity, by acceleration or otherwise) and the performance of all liabilities, agreements and other obligations of the Obligor to the Guaranteed Parties, whether direct or indirect, absolute or contingent, due or to become due, secured or unsecured, which arise under or relate to (i) that certain "Option" given by the Obligor to [INSERT NAME OF OPTION HOLDER] of near or even date (the "Option"); (ii) that certain "Right of First Refusal" given by the Obligor to [INSERT NAME OF OPTION HOLDER] of near or even date (the "ROFR"); and (iii) the payment by Obligor of the "Value Payments" set forth in Section 4.10 of the Transmission Corridor Agreement, including, without limitation, all damages that become due and payable as a result of any breach of the Option, or the ROFR or the failure of Obligor to pay the Value Payments (collectively, the "Obligations"). This Guaranty is an absolute, unconditional and continuing guaranty of the full and punctual payment and performance of the Obligations and not of their collectability only and is in no way conditioned upon any requirement that the Guaranteed Parties, or any one of them, first attempt to collect any of the Obligations from the Obligor or any other guarantor or resort to any security or other means of obtaining their payment. Should the Obligor default in the payment or performance of any of the Obligations, the obligations of Guarantor hereunder shall become immediately due and payable to the Guaranteed Parties, without demand or notice of any nature, all of which are expressly waived by Guarantor. Payments by Guarantor hereunder may be required by the Guaranteed Parties on more than one occasion.

3. GUARANTOR'S AGREEMENT TO PAY. Guarantor further agrees, as a principal obligor and not as a guarantor only, to pay to the Guaranteed Parties, on demand, all reasonable costs and expenses (including court costs and reasonable legal expenses) incurred or expended by the Guaranteed Parties in connection with enforcement of the Obligations or this Guaranty, together with interest on amounts recoverable under this Guaranty from the time such amounts become due until payment, at an annual interest rate equal to the "U.S. prime rate' as published in the *Wall Street Journal* plus three percent (3%).

4. LIMITED GUARANTY. The liability of Guarantor under this Guaranty shall not in any event or for any reason exceed [_____] United States Dollars ($[_____])] (the "Guaranty Cap"). ***[Note: Exact amount to be to be determined at the Easement Closing and adjusted upon completion of construction of the Houlton to Haynesville Project, as provided in the Transmission Corridor Rights Agreement.]***

5. WAIVERS BY GUARANTOR; GUARANTEED PARTY'S FREEDOM TO ACT. Guarantor agrees that the Obligations will be paid and performed strictly in accordance with their respective terms regardless of any law, regulation or order now or hereafter in effect in any jurisdiction affecting any of such terms or the rights of the Guaranteed Parties with respect thereto. Guarantor waives presentment, demand, protest, notice of acceptance, notice of Obligations incurred and all other notices of any kind, all defenses which may be available by virtue of any valuation, stay, moratorium law or other similar law now or hereafter in effect, any right to require the marshalling of assets of the Obligor, and all suretyship defenses generally. Without limiting the generality of the foregoing, Guarantor agrees to the provisions of any instrument evidencing, securing or otherwise executed in connection with any Obligation and agrees that the obligations of Guarantor hereunder shall not be released or discharged, in whole or in part, or otherwise affected by (i) the failure of any of the Guaranteed Parties to assert any claim or demand or to enforce any right or remedy against the Obligor; (ii) any extensions or renewals of any Obligation; (iii) any rescissions, waivers, amendments or modifications of any of the terms or provisions of any agreement evidencing, securing or otherwise executed in connection with any Obligation; (iv) the substitution or release of any entity primarily or secondarily liable for any Obligation; (v) the adequacy of any rights the Guaranteed Parties may have against any collateral or other means of obtaining repayment of the Obligations; (vi) the impairment of any collateral securing the Obligations, including without limitation the failure to perfect or preserve any rights the Guaranteed Parties might have in such collateral or the substitution, exchange, surrender, release, loss or destruction of any such collateral; or (vii) any other act or omission which might in any manner or to any extent vary the risk of Guarantor or otherwise operate as a release or discharge of Guarantor, all of which may be done without notice to Guarantor; provided, however, that Guarantor may assert any defenses that would have been available to Number Nine under the terms of the Obligations if Guarantor had been in the same contractual position as Number Nine, other than defenses, (w) arising from the insolvency, reorganization or bankruptcy of Number Nine, (x) arising under any applicable bankruptcy, insolvency, reorganization or other similar laws affecting creditors rights generally, and (y) expressly waived in this Guaranty.

6. UNENFORCEABILITY OF OBLIGATIONS. If for any reason the Obligor has no legal existence or is under no legal obligation to discharge any of the Obligations, or if any of the

Obligations have become irrecoverable from the Obligor by operation of law or for any other reason, this Guaranty shall nevertheless be binding on Guarantor to the same extent as if Guarantor at all times had been the principal obligor on all such Obligations. In the event that acceleration of the time for payment of the Obligations is stayed upon the insolvency, bankruptcy or reorganization of the Obligor, or for any other reason, all such amounts otherwise subject to acceleration under the terms of any agreement evidencing, securing or otherwise executed in connection with any Obligation shall be immediately due and payable by Guarantor.

7. SUBROGATION. Until the payment and performance in full of all Obligations and any and all obligations of the Obligor to any affiliate of any Guaranteed Party, Guarantor shall not exercise any rights against the Obligor arising as a result of payment by Guarantor hereunder, by way of subrogation, exoneration, or otherwise, and will not prove any claim in competition with any Guaranteed Party or its affiliates in respect of any payment hereunder in bankruptcy or insolvency proceedings of any nature; Guarantor will not claim any set-off or counterclaim against the Obligor in respect of any liability of Guarantor to the Obligor; and Guarantor waives any benefit of and any right to participate in any collateral for the Obligations which may be held by any Guaranteed Party or its affiliates.

8. TERMINATION; REINSTATEMENT. This Guaranty shall terminate upon the earlier of (i) the Obligations having been paid and performed in full or (ii) the payments under this Guaranty having reached the Guaranty Cap, but shall continue to be effective or be reinstated, as applicable, if at any time any payment made or value received with respect to an Obligation is rescinded or must otherwise be returned by any Guaranteed Party upon the insolvency, bankruptcy or reorganization of the Obligor, all as though such payment had not been made or value received.

9. SUCCESSORS AND ASSIGNS. This Guaranty shall be binding upon Guarantor, and each of Guarantor's permitted successors and assigns, and shall inure to the benefit of and be enforceable by each Guaranteed Party and its successors, transferees and assigns. Notwithstanding anything herein to the contrary, Guarantor may assign and delegate its rights and obligations hereunder to any corporation, partnership, limited liability company, trust or other entity that acquires or succeeds to all or substantially all of Guarantor's assets and business, whether by merger where such entity is the surviving entity, acquisition, contribution or otherwise, and that assumes Guarantor's existing and future obligations hereunder, by contract, operation of law or otherwise. Upon such assignment and delegation, Guarantor (but not Guarantor's assignee) shall be relieved of and fully discharged from all obligations hereunder, whether arising before or after the date of such assignment and delegation.

10. AMENDMENTS AND WAIVERS. No amendment or waiver of any provision of this Guaranty nor consent to any departure by Guarantor therefrom shall be effective unless the same shall be in writing and signed by each Guaranteed Party. No failure on the part of any Guaranteed Party to exercise, and no delay in exercising, any right hereunder shall operate as a waiver thereof; nor shall any single or partial exercise of any right hereunder preclude any other or further exercise thereof or the exercise of any other right.

11. NOTICES. All notices and other communications called for hereunder shall be made in writing and, unless otherwise specifically provided herein, shall be deemed to have been duly made or given when delivered by hand or mailed first class mail postage prepaid or, in the case of telegraphic or telexed notice, when transmitted, answer back received, addressed as follows:

If to Guarantor:

EDP Renewables North America LLC
808 Travis Street, Suite 700
Houston, Texas 77002
Attention: Executive Vice President, Finance

with a copy to:

EDP Renewables North America LLC
808 Travis Street, Suite 700
Houston, Texas 77002
Attention: General Counsel

If to the Guaranteed Parties:

Central Maine Power Company
83 Edison Drive
Augusta, ME 04336
Attention: Legal Department

with a copy to:

President and Chief Operating Officer
Emera Maine
970 Illinois Avenue
Bangor, Maine 04401

12. TIME TO ENFORCE GUARANTY. To ensure that the rights and benefits of the Guaranteed Parties under this Guaranty are not impaired or diminished in any way as a result of the insolvency, bankruptcy or reorganization of the Obligor, any time-related defense that may be applicable to any action or proceeding commenced by any Guaranteed Party to enforce the terms of this Guaranty, including but not limited to, any statute of limitations defense, laches defense, estoppel defense, waiver defense, and/or any other similar legal or equitable defense, denial or objection, is hereby knowingly and voluntarily waived by Guarantor so long as such action or proceeding is commenced within the period of time the Option and ROFR would be in effect without regard to any rejection of such agreements in an insolvency, bankruptcy or reorganization of Obligor. Without limiting the generality of the forgoing, Guarantor acknowledges and agrees that it will be estopped hereby from arguing that this provision is ineffective to extend the time within which a Guaranteed Party may commence an action or

proceeding to enforce the terms of this Guaranty. The rights of the Guaranteed Parties under this Section 12 are in addition to, and not in lieu or substitution of, the rights of the Guaranteed Parties set forth above in Section 8. Guarantor shall, within five (5) business days after any written request made by a Guaranteed Party, ratify and confirm in writing the waiver set forth in this Section 12.

13. FINANCIAL STATEMENTS. So long as this Guaranty is in effect, Guarantor shall deliver to the Guaranteed Parties (a) copies of its unaudited quarterly financial statements, including a consolidated balance sheet and a consolidated statement of income for Guarantor and its subsidiaries, prepared in accordance with the International Financial Reporting Standards ("IFRS") promulgated by the International Accounting Standards Board, within sixty (60) days after the end of each fiscal quarter, and (b) copies of its audited annual financial statements, including a consolidated balance sheet and a consolidated statement of income for Guarantor and its subsidiaries, prepared in accordance with IFRS, within one hundred twenty (120) days after the end of each fiscal year. In the event that such financial statements show that Guarantor has total equity of less than Five Hundred Million United States Dollars ($500,000,000), then, within [fifteen (15)] Business Days after receipt of a written request by the Guaranteed Parties, Guarantor shall deliver to the Guaranteed Parties a letter of credit in a face amount equal to the Guaranty Cap issued by a bank or other financial instruction rated A- or better by Standard & Poor's Financial Services LLC or Fitch Ratings Ltd. or A3 or better by Moody's Investors Services, Inc. at the time of issuance of the letter of credit and at all times thereafter while outstanding, which shall be drawable upon any failure by Guarantor to make any payment due under this Guaranty within five (5) days after demand and otherwise reasonably acceptable in form and substance to the Granting Parties. Guarantor shall maintain such letter of credit in force until the earlier of (i) the termination or expiration of this Guaranty or (ii) delivery of financial statements from Guarantor showing total equity of Five Hundred Million United States Dollars ($500,000,000) or more,

14. GOVERNING LAW; CONSENT TO JURISDICTION. This Guaranty is intended to take effect as a sealed instrument and shall be governed by, and construed in accordance with, the laws of the State of Maine without reference to any conflict of laws provisions that might dictate application of the laws of another state. Guarantor agrees that any suit for the enforcement of this Guaranty may be brought in the courts of the State of Maine or any Federal Court sitting therein and consents to the non-exclusive jurisdiction of such court and to service of process in any such suit being made upon Guarantor by mail at the address specified herein. Guarantor hereby waives any objection that it may now or hereafter have to the venue of any such suit or any such court or that such suit was brought in an inconvenient court.

15. MISCELLANEOUS. This Guaranty constitutes the entire agreement of Guarantor with respect to the matters set forth herein. The rights and remedies herein provided are cumulative and not exclusive of any remedies provided by law or any other agreement, and this Guaranty shall be in addition to any other guaranty of the Obligations. The invalidity or unenforceability of any one or more sections of this Guaranty shall not affect the validity or enforceability of its remaining provisions. Captions are for the ease of reference only and shall not affect the meaning of the relevant provisions. The meanings of all defined terms used in this Guaranty shall be equally applicable to the singular and plural forms of the terms defined.

16. JURY WAIVER. THE GUARANTOR AND OBLIGOR HEREBY IRREVOCABLY AND UNCONDITIONALLY WAIVES ANY AND ALL RIGHTS, WHETHER ARISING UNDER THE CONSTITUTIONS OF THE UNITED STATES OR OF ANY STATE, ANY RULES OF CIVIL PROCEDURE, COMMON OR STATUTORY LAW, OR OTHERWISE, TO DEMAND A TRIAL BY JURY IN ANY ACTION, SUIT, PROCEEDING OR COUNTERCLAIM INVOLVING THE GUARANTEED PARTY ARISING OUT OF OR IN ANY WAY CONNECTED WITH THIS GUARANTY OR ANY OF THE INSTRUMENTS RELATED TO THE OBLIGATIONS.

17. ACKNOWLEDGMENT. Guarantor represents that Guarantor is affiliated with, and has a direct or indirect economic interest in the Obligor, and Guarantor has access to financial information of the Obligor in order to assess the risks associated with the Obligations. Guarantor acknowledges that the Guaranteed Parties would not enter into the Easement with Obligor but for the guaranty of Guarantor.

IN WITNESS WHEREOF, Guarantor has executed this Guaranty at Houston, Texas on _____, 20___.

EDP RENEWABLES NORTH AMERICA LLC, a Delaware limited liability company

By: _____

Print Name: _____

Its: _____

By: _____

Print Name: _____

Its: _____